
December 19, 2016**Item Name:** Review of Tobacco Restrictions**Program:** Total Fund**Item Type:** Action**Recommendation**

This item identifies several options related to the CalPERS tobacco investment restrictions for consideration and action by the Investment Committee (Committee):

1. Remove all of the tobacco investment restrictions; or
2. Broaden the restrictions through one or both of the following:
 - a. Extending the divestment requirement to the externally managed portfolios of publicly traded assets for the Public Employees' Retirement Fund (PERF); and/or
 - b. Extending all the restrictions to the externally managed Affiliate Fund portfolios currently invested in institutional commingled index funds; or
3. Affirm the existing hybrid approach in which internally managed portfolios remain divested, external managers for the PERF continue to have discretion to include tobacco-related securities as "out of benchmark" investments, and the Affiliate Fund portfolios continue to invest in institutional commingled index funds.

Staff recommends Option 1, that the investment restrictions on tobacco-related securities be removed. We base this recommendation primarily on the following:

- CalPERS' past experience with divestment in terms of its impact on investment performance;
- CalPERS' current circumstances as a mature, cash-flow negative pension plan with increasing demands on investment returns to fund benefits; and
- The inherent difficulty in reconciling divestment – as a form of active investment decision making that is both static and highly public – with our Investment Beliefs, our Portfolio Priorities, or our duties as fiduciaries.

Executive Summary

At the direction of the Committee at its April 2016 committee meeting, staff has conducted a comprehensive review and analysis of the existing tobacco restrictions, and presents this item to the Committee for consideration and action.

Divestment, as an active investment decision, represents a form of active risk taking that must be considered, first and foremost, within the context of the CalPERS Board of Administration's fiduciary duty. As a mature, cash-flow negative system, CalPERS is obligated to seek out and implement the portfolio construction methods that best serve our mission – the sustainable delivery of promised benefits. In efficient markets, however, limiting the opportunity set for investments has generally been shown to have a detrimental effect on performance, and CalPERS' experience with its tobacco investment restrictions over the past 15 years has been no exception to the general rule.

On the other hand, while tobacco securities continue to exhibit many attractive qualities, there are also many reasons, as an investor, to be cautious. And while the broader social implications of the tobacco industry may not be directly relevant to an analysis of our duties as portfolio managers, they can and should be factored into the analysis in terms of the likely continued sustainability of this industry.

This item will seek to address the following topics:

- Background information on the CalPERS mission, the Board's fiduciary duty, current divestment policy, and current implementation of the tobacco restrictions
- CalPERS' experience to date with the tobacco investment restrictions
- External investment analysis of the tobacco industry
- Broader considerations related to tobacco
- Insights into how other funds address divestment issues
- Stakeholder engagement and feedback

Additional information is provided in a series of attachments:

1. Perspectives on potential investment risks and outlooks for the tobacco industry from Allianz Global Investors, Fidelity Investments, and MSCI (Attachment 1)
2. Updated information on CalPERS tobacco divestment experience from Wilshire Associates (Attachment 2)
3. A presentation and letter from Professor Stanton Glantz, Director of the University of California San Francisco Center for Tobacco Control Research and Education, along with several articles providing insights into the impacts and outlook of the tobacco industry (Attachment 3)
4. A summary of the results from a collaborative survey between Wilshire Associates and CalPERS focusing on how other funds address divestment-related issues (Attachment 4)
5. Opinion letters from the Board's general pension consultants, Wilshire Associates and Pension Consulting Alliance (Attachments 5 and 6, respectively)
6. The Total Fund Statement of Investment Policy containing the current divestment section and CalPERS Investment Beliefs (Attachment 7)
7. Formal position papers and reports received from stakeholders and members of the public (Attachment 8)

Strategic Plan

This item supports the CalPERS Strategic Plan's goal to improve long-term pension benefit sustainability. A periodic review of the existing CalPERS divestments, including tobacco, supports the key objective of delivering our target risk-adjusted investment returns.

Investment Beliefs

Management of a public pension fund's investments often requires the balancing of multiple, sometimes conflicting priorities. The CalPERS Investment Beliefs are a guide to staff in managing through such situations. They provide context for CalPERS' actions, reflect CalPERS' values, and acknowledge CalPERS' responsibility to sustain its ability to pay benefits for generations. This item reflects several key Investment Beliefs and sub-beliefs, as explained below.

Investment Belief 1 – Liabilities must influence the asset structure.

Sub-belief: Ensuring the ability to pay promised benefits by maintaining an adequate funding status is the primary measure of success for CalPERS.

Sub-belief: CalPERS has a large and growing cash requirement and inflation-sensitive liabilities; assets that generate cash and hedge inflation should be an important part of the CalPERS investment strategy.

In the context of the CalPERS tobacco investment restrictions:

- Reviewing CalPERS investment decisions and portfolio construction, including active investment decisions such as divestment, is vital to supporting CalPERS primary success measure, our ability to pay promised benefits.
- When defining our investment opportunity set, CalPERS must consider factors beyond historical volatility or level of returns. Portfolio construction decisions should reflect our Portfolio Priorities to:
 - Protect the funded ratio
 - Stabilize employer contribution rates
 - Achieve the long-term required rate of return

Investment Belief 2 – A long investment time horizon is a responsibility and an advantage.

Sub-belief: A long time horizon requires that CalPERS consider the impact of its actions on future generations of members and tax payers, encourage investee companies and external managers to consider the long-term impact of their actions, favor investment strategies that create long-term, sustainable value...

In the context of the CalPERS tobacco investment restrictions:

- Tobacco use is linked to numerous serious health conditions. According to the Surgeon General, there are no "safe levels" of exposure to tobacco smoke. The tobacco industry continues to face significant pressures calling into question the long-term sustainability of the industry.
- CalPERS is uniquely situated to employ investment strategies that extend far beyond the horizon of an individual investor. At CalPERS' scale, and over extended time periods, even moderate over- or under-performance can result in material economic impacts.

Investment Belief 3 – CalPERS investment decisions may reflect wider stakeholder views, provided they are consistent with its fiduciary duty to members and beneficiaries.

Sub-belief: CalPERS primary stakeholders are members/beneficiaries, employers, and California taxpayers as these stakeholders bear the economic consequences of CalPERS investment decisions.

Sub-belief: As a public agency, CalPERS has many stakeholders who express opinions on investment strategy or ask CalPERS to engage on an issue. CalPERS preferred means of responding to issues raised by stakeholders is engagement.

In the context of the CalPERS tobacco investment restrictions:

- Divestment is increasingly a feature of the investment landscape for many asset owners and investors and of keen interest to many of our various stakeholders and constituencies.
- CalPERS believes that engagement is the first call to action and the most constructive form of communicating concerns with companies. While CalPERS has been progressive in fighting for corporate board diversity, climate risk reporting, and shareholder rights, corporate engagement with tobacco companies premised upon the drastic reduction or elimination of tobacco use is not seen as a particularly viable option.

Investment Belief 4 – Long-term value creation requires effective management of three forms of capital: financial, physical and human.

Sub-belief: Strong governance, along with effective management of environmental and human capital factors, increases the likelihood that companies will perform over the long-term and manage risk effectively.

In the context of the CalPERS tobacco investment restrictions:

- There are many risks facing the tobacco industry that may inhibit profitability and value creation over the long term, including supply chain and labor standards risk, water stress, and land use.

Investment Belief 7 – CalPERS will take risk only where we have a strong belief we will be rewarded for it.

Sub-belief: CalPERS will use index tracking strategies where we lack conviction or demonstrable evidence that we can add value through active management.

Sub-belief: CalPERS should measure its investment performance relative to a reference portfolio of public, passively managed assets to ensure that active risk is being compensated at the Total Fund level over the long term.

In the context of the CalPERS tobacco investment restrictions:

- CalPERS Global Equity Program uses a combination of market-based strategies and systematic and fundamental strategies to enhance risk-adjusted returns (adding “alpha”) to construct a portfolio that is aligned with our targeted risk and return profile.
- The role of CalPERS’ external managers is to add value through active investment management, acting with high conviction, primarily on the basis of finding the best risk-adjusted returns given their investment processes.

- Divestment is an active “point in time” investment decision, and as such must be reevaluated over time as market conditions evolve and valuations change. Periodic review of active investment outcomes through disciplined processes supports accountability and provides an opportunity for corrective action if warranted.

Investment Belief 8 – Costs matter and need to be effectively managed.

Sub-belief: CalPERS will balance risk, return and cost when choosing and evaluating investment managers and investment strategies.

Sub-belief: Transparency of the total costs to manage the CalPERS portfolio is required of CalPERS business partners and of CalPERS itself.

In the context of the CalPERS tobacco investment restrictions:

- Valuations are an important consideration in the investment decision-making process. Valuations change over time, and “buying high” limits opportunities for future gains.
- Tobacco-related securities are trading at all-time highs on forward price-to-earnings multiples, and the premium relative to the market has rarely been higher. Like any other industry, tobacco has times when it is attractive as an investment. At the tactical level, investment professionals should use discretion, and consider valuation levels, when evaluating investment opportunities.
- While investment performance related to capital appreciation may fluctuate over time, the one-time costs associated with a divestment action are “gone for good.” Approximately \$1,400,000 in transaction costs were incurred by the CalPERS PERF as a result of the 2000 divestment action. Potential reestablishment of tobacco exposures, or further divestment by external managers, would impose additional trading costs.
- Periodic review of the impacts of one-time trading costs, and of ongoing “foregone opportunity” costs associated with the tobacco restrictions, is consistent with our Investment Beliefs and supports the CalPERS Board members in fulfilling their fiduciary duty.
- Maintaining the externally managed Affiliate Fund portfolios in institutional commingled index funds is cost-advantaged compared to the establishment of separate accounts.

Investment Belief 9 – Risk is multi-faceted and not fully captured through measures such as volatility or tracking error.

Sub-belief: As a long-term investor, CalPERS must consider risk factors ... that emerge slowly over long time periods, but that could have a material impact on company or portfolio returns.

In the context of the CalPERS tobacco investment restrictions:

- All investments entail accepting a level of risk. A key function of the CalPERS Investment Office is to manage investment risks effectively, and to maximize the amount of return gained for every unit of risk taken.
- The amount of litigation facing the tobacco industry at the time of the CalPERS divestment was unprecedented. The Master Settlement Agreement of 1998 remains one of the largest civil litigation settlements in U.S. history. While the industry has survived, pressures continue and the future is uncertain.

A complete set of the CalPERS Investment Beliefs is included within Attachment 7.

Background

Background information on the CalPERS mission, the specific provisions of the California Constitution on fiduciary duty, and current CalPERS divestment policy, as well as the implementation and current state of the CalPERS tobacco restrictions, are outlined in this section.

Our Mission

The CalPERS mission is to provide responsible and efficient stewardship of the System to deliver promised benefits while promoting wellness and retirement security for members and beneficiaries.

California Constitution

The California Constitution addresses the Board's fiduciary duty in several sections, including:

"The retirement board of a public pensions or retirement system shall have the sole and exclusive fiduciary responsibility over the assets of the public pension or retirement system. The retirement board shall also have sole and exclusive responsibility to administer the system in a manner that will assure prompt delivery of benefits and related services to the participants and their beneficiaries. The assets of a public pension or retirement system are trust funds and shall be held for the exclusive purposes of providing benefits to participants in the pension or retirement system and their beneficiaries and defraying reasonable expenses of administering the system." (CA Const. §17(a).)

"The members of the retirement board of a public pension or retirement system shall discharge their duties with respect to the system solely in the interest of, and for the exclusive purposes of providing benefits to, participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the system. A retirement board's duty to its participants and their beneficiaries shall take precedence over any other duty." (CA Const. §17(b).)

"The members of the retirement board of a public pension or retirement system shall discharge their duties with respect to the system with care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims." (CA Const. §17(c).)

"The members of the retirement board of a public pension or retirement system shall diversify the investments of the system so as to minimize risk of loss and to maximize the rate of return, unless under the circumstances it is clearly not prudent to do so." (CA Const. §17(d).)

Fiduciary Duty

The essence of a fiduciary relationship is the confidence, reliance, and trust that one group in a position of vulnerability reposes in another for aid, advice, or protection. It is the highest standard of care, and sets a very high bar, requiring, where CalPERS is concerned, that staff and the Board maintain a laser-like focus on striking the right balance between risk and return.



It is also important to note that our role as administrators of the health insurance program is distinct from our role as fiduciaries for the retirement portfolios. The Board and staff have been entrusted with funds from the State of California, public agencies, and their employees for the sole purpose of providing promised retirement benefits to our members. This primary mission is what guides our investment strategy at all times.

CalPERS Divestment Policy

Divestment as a catalyst for social change and an investment strategy has been a controversial topic within the public pension industry for decades. As a California state agency, CalPERS is sensitive to public policy issues, and recognizes that our primary duty and obligation is to our members. Current CalPERS divestment policy, accordingly, acknowledges the following:¹

- CalPERS Board members and staff have fiduciary duties of loyalty and prudence pursuant to the California Constitution (as outlined above) and California Government Code Section 20151.
- While CalPERS wants companies in which it invests to meet high corporate governance, ethical, and social conduct standards, an investment in a company does not signify that CalPERS approves of the company's policies, products, or actions.
- Divestment almost invariably harms investment performance by compromising investment strategies and increasing transaction costs.
- There is considerable evidence that divesting is an ineffective strategy for achieving social or political goals. This is because the usual consequence is often a mere transfer of ownership of divested assets from one investor to another.
- Investors that divest lose their ability as shareowners to influence a company to act responsibly.

As part of the Policy Revision Project, initiated in 2014, staff proposed revisions to the divestment section of the Total Fund Policy through a series of agenda items from February to April of 2016. Staff's initial proposal in February 2016 included revisions to:

- Request up-front reimbursement of transaction costs when divestment is pursuant to legislative mandates.
- Incorporate "stop loss" provisions similar to Florida's Iran/Sudan divestment law, establishing a dollar-based threshold that would trigger automatic reinvestment.
- Add an annual review requirement for divestment activities, to be conducted by the Board's Investment Consultants.
- Incorporate a review process for any new or potential policy-level divestment mandates, in consideration of the Board members' fiduciary duties.

Following feedback from the Committee and the Board's investment consultants, staff returned in March with an updated proposal that:

¹ See § VII of the Total Fund Investment Policy, a complete copy of which is included as Attachment 7 to this memorandum.

- Simplified the proposed divestment loss thresholds and formula for determining when the cumulative loss would trigger automatic reinvestment; and
- Added notification to the Committee prior to reinvestment activities, allowing for an exception process at the Committee's discretion.

Following additional discussion, the Committee decided in April 2016 to adopt the revised Total Fund Policy as proposed, with the exception of the divestment section, which would remain as previously approved in 2015, and directed staff to undertake a separate review and analysis of the CalPERS tobacco restrictions. Further review of the divestment policy was deferred pending the review of the tobacco restrictions. Staff plans to return to the Committee with any requested revisions to the divestment policy in early 2017 as part of the annual update of the Total Fund Policy.

Establishment of Tobacco Restrictions and Current State of Holdings

In the late 1990s there was widespread opinion that the tobacco industry was on the verge of collapse due to an ongoing barrage of litigation and regulatory actions. In a review of the industry presented to the Committee on June 19, 2000, it was noted that:

- Tobacco stock prices had declined over 45% in the prior two years.
- The *Engle v. the Tobacco Industry* suit had the potential for huge punitive damages, possibly keeping tobacco stock prices depressed.
- A survey of CalPERS external domestic equity managers revealed that, despite a favorable Wall Street outlook, most of the managers were not investing in the industry because of the uncertainty associated with litigation.

In October 2000 the Committee recommended and approved divestment of tobacco-related securities and adoption of tobacco-free benchmarks for the CalPERS passive international and domestic equity portfolios and the CalPERS internal fixed income portfolios with respect to primary tobacco companies. External active managers were not required to divest from tobacco-related securities, though they were, however, required to adopt tobacco-free benchmarks. In February 2002 staff reported to the Committee on the completion of the tobacco divestment activities and implementation of tobacco-free benchmarks.

As of June 30, 2016, the PERF held approximately \$547,000,000 in tobacco-related securities through its external managers. These securities are primarily common stock holdings as part of the Global Equity Program, with some fixed income securities exposure within the Opportunistic Program. There are no tobacco-related exposures within the Real Assets, Private Equity, Global Fixed Income, or Inflation Assets programs. External managers, operating based on their expertise and conviction, are expected to add value through active investment management, and this includes making "out of benchmark" investments such as tobacco.

The Affiliate Funds consist of defined benefit programs (such as the Judges' Retirement System and Legislators' Retirement System), defined contribution programs (such as the Supplemental Income Plans), and other programs (such as the Health Care Fund, Long Term Care Fund, and California Employers' Retiree Benefits Trust). It should be noted that some portions of the Affiliate Funds are managed internally, and some are managed externally. Portfolios managed

externally for the Affiliate Funds are currently invested in institutional commingled index funds. These funds hold undivided positions on behalf of all fund participants and CalPERS cannot direct specific investment actions in these funds.

Analysis

The Committee has requested that this review include a wide range of viewpoints. To that end, staff has solicited input from a variety of external sources whose views and insights are reflected in the following analysis from staff, and whose written materials are included as attachments to this item. Staff's analysis is organized under the following subheadings:

1. Recent Risk Mitigation Initiatives
2. Implications of Divestment for CalPERS Portfolio Construction
3. CalPERS' Experience – Tobacco Restrictions
4. Investment Considerations – Tobacco Performance and Characteristics
5. Investment Considerations – Industry Pressures and Challenges
6. Social Considerations
7. Divestment Issues and Other Investment Funds
8. Stakeholder Outreach and Feedback
9. Summary – Options and Recommendation

In terms of social considerations, staff has the following preliminary observations. First, staff does not interpret its fiduciary duties to permit prioritizing social goals over investment considerations. And, while the social cost of tobacco is undeniable, there is room for debate in terms of the effectiveness of divestment as a tool for driving social change. For example, it would not appear that the CalPERS tobacco divestment has had any discernible impact on the industry's market capitalization, access to capital markets, or financial performance. Nor have we seen a convincing case for the effect of divestment on tobacco consumption rates, which in the U.S. appear to have been in a relatively steady decline since the 1960s.² As discussed in more detail below, however, while perhaps not directly relevant, these greater societal impacts may be important factors in assessing the ultimate sustainability of the industry.

1. Recent Risk Mitigation Initiatives

In recent years the CalPERS Board of Administration and staff have collaborated on several initiatives to strengthen the System and support the sustainability of the PERF. These include:

- Adopting the Funding Risk Mitigation Policy as a means of gradually reducing the level of equity risk in the portfolio;

² We do however note the argument of anti-smoking advocates that tobacco divestment decisions by institutional investors such as CalPERS contribute to the "denormalization" of the tobacco industry over the long term. Professor Stanton Glantz, Director of the University of California, San Francisco Center for Tobacco Control Research and Education, for example, argues that the denormalization of the tobacco industry has been an important factor in discouraging commencement of smoking among youth.

- Exploring ways to enhance our Asset Liability Management and benchmark selection processes;
- Reducing complexity and focusing on repeatable, predictable, and scalable portfolio practices; and
- Defining our “Portfolio Priorities,” which are the goals and objectives that are specific to CalPERS and should influence our portfolio construction, as:
 1. Protecting the funded ratio;
 2. Stabilizing employer contributions rates; and
 3. Achieving the long-term required rate of return.

Many of these efforts are focused on adding options and clarity for the Committee and staff as we consider how best to meet the challenges facing CalPERS.

2. Implications of Divestment for CalPERS Portfolio Construction

As the largest public defined-benefit pension fund in the U.S., CalPERS is, of necessity, a market investor, in the sense that prudent investment of approximately \$300,000,000,000 requires exposure to a broad range of market segments having the depth and capacity to be material to the PERF.

To understand the impact divestment has on portfolio management, it is useful to consider first the portfolio construction methods staff employs, or, in other words, how we invest. Consistent with Investment Belief 7 (that we take risk only where we will be rewarded for it), CalPERS uses a mix of investment strategies to diversify sources of risk and alpha while minimizing costs. For example, in Global Equity the internal portfolios are by and large systematic investment strategies that are intended to provide broad market exposure or exposure to a specific style factor at a very low cost. The external strategies offer a combination of systematic, quantitatively driven strategies and fundamental, “bottom-up” stock-picking strategies. These strategies seek to provide alpha through either stock selection or active tilts towards particular market segments. Given that the external portfolios are largely “fundamentals driven,” they carry a corresponding expectation of greater manager reliance on research and judgment. And these active judgments, based as they are on current market conditions and relative valuations, require constant reevaluation as market conditions dictate.

A divestment mandate, on the other hand, represents a relatively static investment decision that unfolds comparatively slowly on a timetable of its own, and well in view of the rest of the investing public. The elements normally required for a successful “active bet” against our benchmarks are therefore lacking. Rather than support the portfolio manager’s need for nimbleness and stealth vis-à-vis the rest of the market, divestment does the opposite by both telegraphing our intent and tying the hands of investment staff, thereby severely hampering staff’s ability to re-evaluate and reinvest as market conditions warrant. In these important respects divestment runs counter to both our active and our passive management strategies.

As discussed in the September 2016 Finance & Administration Committee meeting, the funded status of the System is estimated to be less than 70%. Like many defined benefit pension plans, CalPERS continues to mature, and as benefit outflows for the System increase, the path of

returns matters more than ever. Staff's view is that maintaining a static exclusion, such as the tobacco investment restrictions, impairs the System's ability to maximize risk-adjusted returns, by taking options and choices "off of the table" when investment staff are seeking the best possible portfolio construction to reflect CalPERS' risk and return goals.

CalPERS experience to date, moreover, has shown that divestment tends to harm investment performance and increase the System's transaction costs. As discussed below, the tobacco restrictions have yet to prove an exception to that general rule.

3. CalPERS' Experience – Tobacco Restrictions

The CalPERS tobacco restrictions were decided in October 2000 and implemented by January, 2002. As noted above, at the time of the Committee's divestment decision there was much speculation that the tobacco industry was about to collapse under the weight of the ongoing barrage of litigation and regulatory actions. The Board's decision at the time was firmly grounded in its concern over the ongoing financial risk posed to the fund. And several other institutions – including state and county pension funds – were known to have implemented divestment or tobacco restrictions, creating the appearance of a gathering momentum in this direction.

Most other institutional investors, however, were slow to follow suit, and the industry did not collapse. Those investors who continued to invest in tobacco have in fact seen over 900% in cumulative returns over the past 15 years, making the tobacco industry the second highest performing industry over that time period and significantly outperforming the broad market.

In October 2015, Wilshire Associates presented a review of CalPERS divestments affecting the Global Equity Program. As of December 31, 2014, the potential impacts related to the CalPERS tobacco divestment, including foregone performance and transaction costs, were estimated to exceed \$3,000,000,000. Wilshire Associates has updated its analysis as of June 30, 2016, and the new estimate indicates that the amount of foregone performance has continued to grow. Additional information is available in Attachment 2.

4. Investment Considerations – Tobacco Performance and Characteristics

The investment environment for tobacco is complex, and as with all investments, historical performance is no guarantee of future results. Focusing on risk and return, tobacco-related securities present several positive characteristics, including strong performance, high dividend yield, drawdown protection, and consistent cash flows. There are no ready replacements for tobacco-related securities that offer the same fundamental characteristics and performance. Table 1 below provides illustrative metrics comparing the tobacco industry to a broad global equities market index using data from December 31, 2002 through June 30, 2016.

Table 1: MSCI AC World Tobacco vs. MSCI AC World

Metric	MSCI AC World Tobacco <i>(tobacco only, rounded)</i>	MSCI AC World <i>(broad market, rounded)</i>
<i>Long-term Average Fundamentals</i>		
Dividend Yield	4.3%	2.5%
Net Profit Margin	16.2%	7.4%
Gross Profit Margin	42.2%	27.2%
Return on Equity	52.0%	12.6%
Free Cash Flow Margin	14.1%	7.1%
<i>Performance & Risk</i>		
Cumulative Return	914.5%	162.4%
Annualized Return	18.6%	7.4%
Standard Deviation	17.2%	15.5%
Sharpe Ratio	1.0	0.4
Down Capture <i>A number less than 100% means that asset returns don't fall as much as the broad market in market downturns.</i>	64%	100%
Beta (vs. broad market) <i>A number less than 1 indicates the asset is less volatile than the broad market.</i>	0.65	1.0

Tobacco-related securities valuations, as measured by price-to-earnings, are currently higher than the broad market. Like any other industry, these valuation levels vary over time.

When evaluating the standard deviation of returns, tobacco-related securities appear more volatile than the broad equity market. However, when the efficiency, or the return-per-unit of risk such as the Sharpe ratio, is reviewed, the risk is well compensated for the time period noted above.

Staff conducted a review of analysis from several major investment banks. Overall the analysis indicated that the tobacco industry outlook is favorable, and that tobacco tends to be a solid performer and diversifier, exhibiting defensive characteristics in economic downturns. Historically these stocks have performed well in market downturns. Table 2 below provides illustrative examples of tobacco performance versus the broad market in three sample bull/bear markets.

Table 2: Market Environments – Annualized Returns

Example Market (Period)	MSCI AC World Tobacco Annualized Returns	MSCI AC World Annualized Returns
Bull Market (10/2002-10/2007)	21.7%	17.4%
Bear Market (10/2007-3/2009)	-16.9%	-32.7%
Bull Market (3/2009-6/2016)	21.4%	13.3%

5. *Investment Considerations – Industry Pressures and Challenges*

While tobacco-related securities exhibit many attractive qualities, there are also many reasons to be cautious. As a long-term investor, CalPERS considers risk factors that, while emerging slowly over long time periods, could have a material impact on company or portfolio returns. Attachment 1 provides an overview of risks and pressures facing the tobacco industry prepared by Allianz Global Investors and Fidelity Investments at the request of CalPERS staff. Attachment 1 also includes an overview of the tobacco sector prepared by MSCI as of December 2015 focusing on different risk metrics relating to the tobacco industry.

The analysis by Allianz, Fidelity, and MSCI indicates that overall, while the positive dynamics of the industry may lead to continued strong performance in the short term, increasing long-term pressures may significantly strain the industry.

Factors that could make investment in the tobacco industry unattractive from an investment risk and return perspective include:

- A structural decline in tobacco sales volume in developed, and some emerging, markets as a function of declining participation and consumption per individual.
- The fact that price increases for tobacco products, which have helped maintain profitability despite slowing sales volumes, are expected to grow more challenging over time.
- Demographic challenges in terms of a younger generation around the world that seems less interested in smoking.
- The fact that tobacco securities are currently trading at all-time highs, with forward price-to-earnings multiples of 19.7x, and a premium relative to the market of 20%.
- Potential negative impacts to industry margins and cash flows due to development and marketing costs for alternative “next generation products.”
- Increasing regulation around the world, including increasing
 - Taxation – Governments around the world have imposed significant taxes on the tobacco industry, putting pressure on prices, which in turn affects demand. For example, California’s Proposition 56, which passed on the November 8, 2016 ballot, added an additional \$2.00-per-pack tax for cigarettes, with an equivalent increase on other tobacco products and electronic cigarettes (e-cigarettes). The proposition also classified e-cigarettes as “other tobacco products” under state law, making them subject to the same taxes as conventional tobacco products.
 - Additive bans and reformulation risk – It is unknown what regulation might be created that could hinder the burgeoning e-cigarette market.
 - Pressures on marketing – Europe has taken the lead on plain packaging, which makes it harder for companies to differentiate their products, create brand loyalty, and sell premium brands.

- General smoking restrictions – Most countries in the world now have national or some local level “smoke free” legislation.
- Litigation – While litigation is down from where it was, especially in the U.S., there are still cases where tobacco companies have to pay significant sums. As recently as 2015, a Quebec court ordered a number of tobacco companies to pay the equivalent of \$12,500,000,000 to product consumers. If this case survives on appeal, this may cause other countries to follow suit.
- Disclosure requirements – There are increasing requirements to identify and take action on poor labor practices in the supply chain.

6. *Social Considerations*

As noted by Allianz in Attachment 1, the regulatory pressures, litigation risk, and volume declines facing the tobacco industry are largely attributable to the negative societal implications of tobacco, with the primary negative externality being the health implications of using the product and the related costs across society. For example, as of 2014 the Centers for Disease Control and Prevention (CDC) estimate the total economic cost of smoking is more than \$300,000,000,000 each year, including nearly \$170,000,000,000 in direct medical care for adults and over \$150,000,000,000 in lost productivity. The World Health Organization estimates that, worldwide, tobacco use causes nearly 6,000,000 deaths per year, with current trends indicating an increase to more than 8,000,000 deaths annually by 2030.

Professor Stanton Glantz, Director of the University of California, San Francisco Center for Tobacco Control Research and Education, cites a number of social issues as important risk factors signaling an impending decline in the investment performance of this industry sector, namely:

- The tobacco industry is in long term decline.
- Proposition 56 is estimated to result in \$250,000,000 fewer cigarette sales every year.
- The tobacco industry undermines the health and infrastructure of California and will continue to face regulatory pressures.
- Tobacco companies are not committed to transparency, accountability, or ethical standards.

A letter and supporting articles from Professor Glantz are included as Attachment 3.

7. *Divestment Issues and Other Investment Funds*

CalPERS partnered with Wilshire Associates to conduct a confidential survey of various asset owners on the subject of divestment considerations in the investment process. Approximately 30 funds participated in the survey, of which approximately 50% indicated that they had divested, or had actively considered divestment. The survey sought to gain insights into how funds address divestment issues, including how divestment actions are initiated, considered, and tracked over time.

Additional information on the survey results specific to tobacco divestment is included in Attachment 4.

8. Stakeholder Outreach and Feedback

CalPERS conducted stakeholder outreach including discussion and education, and solicited a broad spectrum of view-points. Staff engaged with key stakeholder groups including member and employer associations, individual members and employers, public health organizations, and California Legislature committee consultants.

On October 18, 2016, CalPERS hosted a live webinar featuring Chief Operating Investment Officer Wylie Tollette who presented information on historical CalPERS actions related to tobacco divestment, general investment considerations, some of the broader implications of divestment, and public policy considerations related to tobacco. Over 460 individuals from a variety of stakeholder organizations were invited to participate in the webinar and were encouraged to provide their comments on the future of the CalPERS tobacco restrictions. The webinar was recorded and posted to the CalPERS website. As of November 30, 2016, approximately 300 individuals have viewed the live or recorded webinar.

Invitations were sent stakeholders representing:

- 28 member and beneficiary associations
- 5 public health organizations
- 89 participating employer organizations
- 32 private sector organizations

Additionally, CalPERS promoted the webinar through the CalPERS News database of over 17,000 subscribers, and sent out messages to over 27,500 followers through CalPERS social media channels.

Letters opposing CalPERS investment in tobacco or supporting CalPERS' current divestment policy came from the following organizations (provided in Attachment 8):

- Action on Smoking and Health
- California Faculty Association
- American Lung Association in California
- American Heart Association
- American Cancer Society Cancer Action Network
- Tobacco Education and Research Oversight Committee (TEROC)
- Americans for Nonsmokers' Rights
- Truth Initiative
- Corporate Accountability International
- Senator Richard Pan
- SEIU Local 1000
- Tobacco Free Portfolios

- Commissioned Officers Association of the U.S. Public Health Service
- UCSF Center for Tobacco Control Research and Education

CalPERS received another 156 comments from individuals including active and retired members who strongly opposed reinvestment or supported our currently policy on divestment. CalPERS received two emails supporting reinvestment in tobacco-related securities. CalPERS also received a report from Cenkos Securities examining the issues of ethics and tobacco from multiple perspectives (provided in Attachment 8).

9. Summary – Options and Recommendation

This item outlines several alternatives for the Committee’s consideration, as follows:

1. Remove all of the tobacco investment restrictions; or
2. Broaden the restrictions through one or both of the following:
 - a. Extending the divestment requirement to the externally managed portfolios of publicly traded assets for the PERF; and/or
 - b. Extending all the restrictions to the externally managed Affiliate Fund portfolios currently invested in institutional commingled index funds; or
3. Affirm the existing hybrid approach in which internally managed portfolios remain divested, external managers for the PERF continue to have discretion to include tobacco-related securities as “out of benchmark” investments, and the Affiliate Fund portfolios continue to invest in institutional commingled index funds.

Staff recommends Option 1, removal of all restrictions on tobacco-related securities. The historical performance and characteristics of tobacco-related securities since 2002 are supportive of the CalPERS Portfolio Priorities; however, market conditions going forward are difficult to predict, and the only guarantee is that the past is not completely predictive of the future. As noted by Fidelity Investments in Attachment 1, it is possible that once interest rates start to increase, the “defensive, cash-flow generating, high-dividend yielding” characteristics of the tobacco industry “will become less attractive” as investors pursue higher growth prospects. Staff believes that although tobacco valuations may be extended at present, restoring tobacco securities to the investable universe, with the time and method of reinvestment subject to staff’s discretion, supports achievement of the System’s investment objectives.

Additional information on potential next steps and impacts are outlined in the sections below. Each potential action poses a variety of potential benefits and risks that are further explored in the *Benefits and Risks* section of this item.

Potential Next Steps & Impacts - Option 1 (Remove Tobacco Restrictions)

Should Option 1 be selected, staff would develop a transition plan to reinstate tobacco-related securities exposures in a manner designed to minimize costs and market impacts. Staff estimates that re-establishment of tobacco-related exposures could cost approximately \$11,000,000 in commissions, taxes, and potential price spread impacts. Should the Committee select this option, staff recommends that discretion be provided to staff to reinvest in such a way as to minimize market impacts and costs.

As of June 30, 2016, Table 3 below outlines the weight of tobacco-related securities in the regional FTSE indices, along with the potential exposure for the PERF should the Committee choose to reinvest.

Table 3: Potential PERF Exposures

FTSE Index	Tobacco Industry Weight	Est. Potential Exposure
FTSE All World, All Cap U.S.	1.58%	\$803,000,000
FTSE All World All Cap – Developed International (ex U.S.)	1.57%	\$495,000,000
FTSE All World All Cap – Emerging Markets	0.43%	\$13,000,000

Potential Next Steps & Impacts - Option 2 (Broaden Restrictions)

a. Extend the divestment requirement to the externally managed portfolios of publicly traded assets for the PERF

Based on the PERF external public equity manager holdings, staff estimates that extending the divestment to the external portfolios could result in approximately \$2,800,000 in trade costs. Should the Committee select this option, staff recommends that discretion be provided to the managers to divest in such a way as to minimize market impacts and costs.

b. Extend all the restrictions to the externally managed Affiliate Fund portfolios currently invested in institutional commingled index funds

In addition to trade costs, extending the tobacco restrictions to the externally managed Affiliate Fund portfolios will require the establishment of a separate account structure and transition of those funds to the new account structure. The establishment and transition to a new separate account structure will result in additional operational costs, and require a material investment of staff and vendor resources. In addition to the one-time costs associated with this option, on an ongoing basis, a separate account structure is expected to be more costly to the System.

Should the Committee select this option staff would undertake the development of a transition plan addressing the investment, operational, solicitation and contracting, and participant outreach requirements.

Potential Next Steps & Impacts - Option 3 (Affirm Existing Approach with No Change)

Staff does not anticipate any additional tobacco-specific activities will need to be undertaken if the Committee determines to affirm the existing tobacco restrictions with no change. Internally managed passive equity and debt portfolios will continue to exclude tobacco-related securities, and tobacco-free benchmarks will remain in place. For the PERF, Wilshire Associates estimates that the existing tobacco restrictions may result in approximately \$329,600,000 to \$504,000,000 in ongoing “performance at risk” compared to the unconstrained Global Equity benchmark.

Budget and Fiscal Impacts

Legal opinion costs related to this review are estimated not to exceed \$25,000. Ancillary travel costs are also anticipated for presenters at the December 19, 2016 Committee meeting.

Potential transaction costs associated with each of the options posed for the Committee's consideration, as discussed in the previous sections, are summarized in Table 4 below.

Table 4 – Proposed Options and Potential Costs Summary

#	Option	Potential Costs
1	Remove all of the tobacco investment restrictions	Approximately \$11 million in transaction costs
2	Broaden Restrictions	
	a. Extend the divestment requirement to the externally managed portfolios of publicly traded assets for the PERF	Approximately \$2.8 million in transaction costs
	b. Extend all the restrictions to the externally managed Affiliate Fund portfolios currently invested in institutional commingled index funds	Due to the complexity of this option, a cost estimate will require a detailed analysis and development of potential project scope with affected vendors and entities.
3	Affirm Existing Hybrid Approach with No Change	\$0

Benefits and Risks

Potential risks and benefits associated with each of the options are outlined below.

Option 1 – Remove Tobacco Restrictions

Should CalPERS remove the tobacco restrictions, staff anticipates the following benefits could be realized:

- CalPERS will have a portion of the investment universe restored to its opportunity set, which is expected to facilitate CalPERS achievement of our investment objectives compared to a constrained opportunity set over the long term.
- If the tobacco industry continues to outperform the broader market, the PERF would realize additional returns through access to that portion of the global investment opportunity set.

Should CalPERS remove the current tobacco restrictions, staff anticipates several risks may arise:

- If the tobacco industry begins to underperform the broader market, the PERF could experience reduced returns compared to having the value of the tobacco exposure invested across the remaining benchmark universe.
- CalPERS could incur reputational risk and be seen as undermining efforts to denormalize tobacco use in California.

Option 2 – Broaden the Restrictions (through one or both of the following):

- a. *Extending the divestment requirement to the externally managed portfolios of publicly traded assets for the Public Employees' Retirement Fund (PERF); and/or*
- b. *Extending all the restrictions to the externally managed Affiliate Fund portfolios currently invested in institutional commingled index funds.*

As previously noted, tobacco-related public equity and fixed income securities are held by external active managers on behalf of the PERF. Those exposures have been additive to CalPERS performance. Should the Committee direct the current restrictions be broadened, the following benefits might occur:

- CalPERS may avoid public criticism from anti-smoking advocates associated with the presence of any tobacco-related security exposure.
- Should the tobacco industry begin to underperform the broader market, the PERF and Affiliate Funds could experience enhanced returns by not having an exposure to the underperforming assets through the external managers.

Should the current restrictions be broadened, staff anticipates the following risks:

- If tobacco stocks continue to outperform the broader market, CalPERS may miss out on additional potential performance and/or diversification benefits from having tobacco-related exposures in the external portfolios.
- CalPERS may be seen as essentially “doubling down” on an active decision to exclude tobacco securities at a time when the decision has yet to evidence added value to the PERF risk and return profile.
- Expansion of the restrictions to the Affiliate Funds will reduce the investment opportunity set for the Affiliate Funds, which is expected to have a negative impact on performance over the long term.
- Additionally, due to the nature of the current Affiliate Fund account structure, such an expansion would require material resource allocation as well as increase operational complexity and risk, and increase costs on an ongoing basis.

Option 3 – Affirm Existing Hybrid Approach with No Change

Potential benefits associated with affirming the existing hybrid approach, in which internally managed passive portfolios remain tobacco free, and PERF external active managers can make “out-of-benchmark” investments, could include:

- As previously noted, if the tobacco industry begins to underperform the broader market, CalPERS could experience enhanced returns by not having exposure to the underperforming assets through the internally managed funds.
- PERF external managers could continue to apply their expertise and utilize tobacco exposures as active “out-of-benchmark” investments at their discretion, to generate active returns, while monitoring the ongoing risks in the industry and being poised to quickly sell out of their tobacco positions as circumstances warrant.

- CalPERS will continue to take advantage of the cost-savings offered through use of institutional commingled index funds for the externally managed Affiliate Fund portfolios. The publicly traded asset portfolios managed internally on behalf of the Affiliate Funds will continue to exclude tobacco securities.

Should the current status quo be maintained, staff anticipates the following risks will remain unchanged, or arise:

- CalPERS could be criticized for keeping the tobacco restrictions in place with respect to the internal portfolios in light of the evidence that, to date, these restrictions have harmed performance of the PERF.
- CalPERS may be criticized for continuing to allow its external managers the discretion to invest in tobacco-related securities.

Attachments

Attachment 1 – External Investment Perspectives: Tobacco Industry

Attachment 2 – Wilshire Associates Review of CalPERS Tobacco Restrictions

Attachment 3 – Materials from Professor Glantz, UCSF Center for Tobacco Control Research & Education

Attachment 4 – Wilshire/CalPERS Survey Results – Tobacco Divestment

Attachment 5 – Board Investment Consultant Opinion Letter – Wilshire Associates

Attachment 6 – Board Investment Consultant Opinion Letter – Pension Consulting Alliance

Attachment 7 – CalPERS Total Fund Statement of Investment Policy

Attachment 8 – Stakeholder Feedback – Formal Position Papers and Reports

Katherine H. Crocker

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Allianz Global Investors

Tobacco: long-term pressures



Jeremy Kent, CFA
Portfolio Manager

Executive Summary

Through the lens of Porter's Five Forces, the tobacco industry may appear to be an attractive prospect. It is a heavily consolidated industry which enables strong buying power for manufacturers who operate in a disciplined pricing manner. With limited substitutes and a highly addictive product, buyer power is very low. Well entrenched brands and strong loyalty have kept away the threat of any new entrants.

However, there is a strong factor putting pressure on most of these forces; the government. In the short term, the positive dynamics of the industry may well lead to strong performance of the companies during this period. Taking a longer term view, it seems inevitable that the negative pressures will put tremendous strain on the future prospects of the industry.

In this short piece, we explore a number of these pressure points and why tobacco companies may prove to be a poor investment for long-term investors. These pressures include:

- **Volumes:** Most indicators show the volume of tobacco sales in structural decline. This is not only a developed world phenomenon as some emerging markets are also experiencing negative volume trends.
- **Regulation:** Regulation continues to strengthen around the world with taxes used as the primary mechanism, but we also highlight increasing pressures on marketing, smoking restrictions and litigation costs.
- **Externalities:** Tobacco has an impact on society though the health and environmental implications of the product. The health implications are well researched and the contributions made through tobacco company taxes do not appear to outweigh the significant costs borne elsewhere in society such as the health care system. While environmental impacts are less well researched, there appears to be growing evidence on the negative costs to the environment from tobacco.

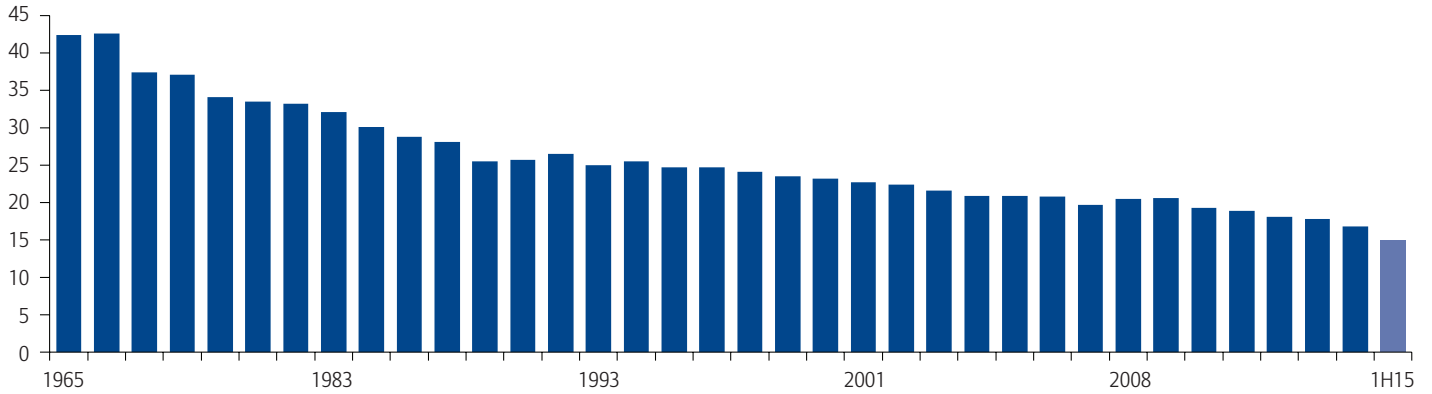
Volume declines

United States

Cigarette volumes peaked in the US in the 1980's and have experienced steady declines since. In 2015, cigarette volumes were more than half the peak 626.5 billion cigarettes sold in 1981. (Source: Company reports, BofA Merrill Lynch Global Research calculations.)

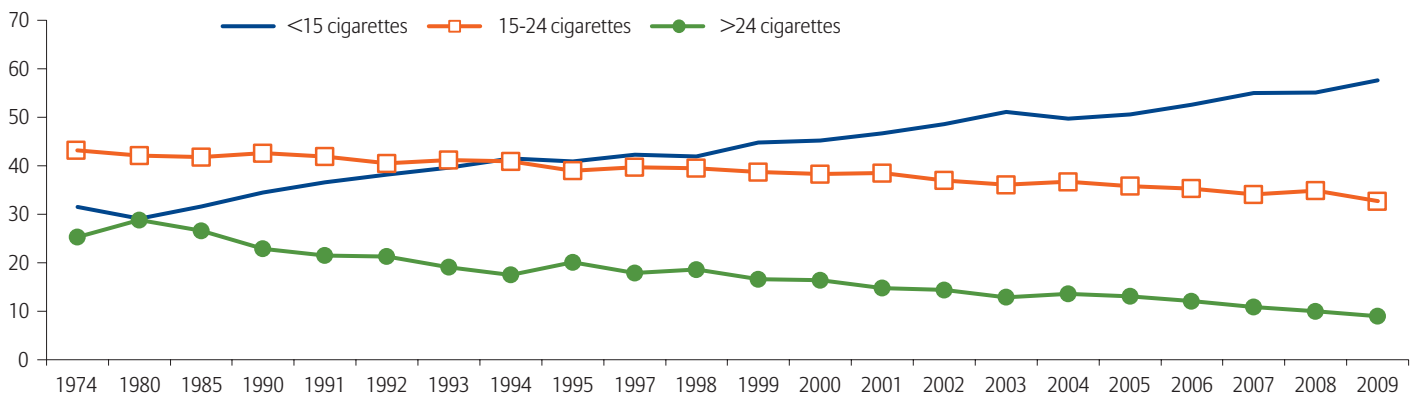
The market size for tobacco is contracting as the percentage of population smoking in the US declines rapidly. In 2015, according to the Center for Disease Control (CDC), less than 15% of the population were smoking. The smokers that remain are smoking less cigarettes per day. More than 60% of smokers smoke less than 15 cigarettes per day.

Historical smoking prevalence in the US (%)



Source: Center for Disease Control (CDC)

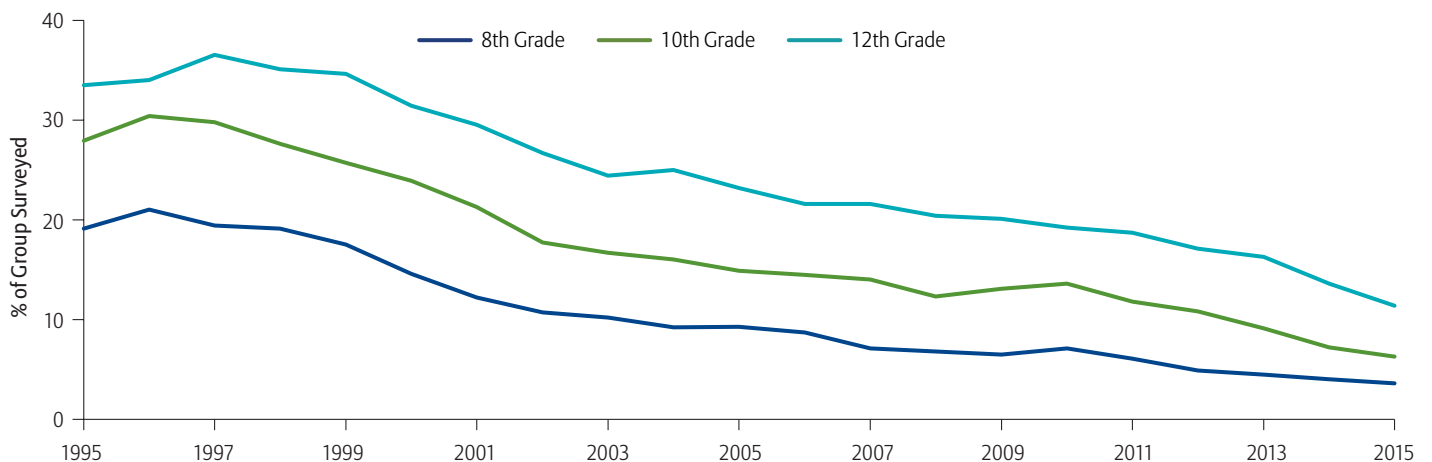
US smokers are smoking few cigarettes per day (%)



Source: American Lung Association, CDC.

The negative pressures on volumes do not show any signs of abating with the younger population less interested in smoking than generations before them. The 30-day cigarette use, % of sample that has smoked at least once in the last 30 days, among 8th, 10th and 12th graders in the US has dropped by more than 2/3rds.

30-day cigarette use trend



Source: Monitoring of the Future Study. As of December 2015.

International

Volume trends outside of the US show a similar picture with volumes in most countries around the world showing declines.

Geographies	2010	2011	2012	2013	2014	2015	5 year CAGR	3 year CAGR
World	-0.4%	0.4%	0.0%	-1.7%	-0.1%	-2.1%	-0.7%	-1.3%
World less China	-3.0%	-2.0%	-1.6%	-3.9%	-2.0%	-1.8%	-2.3%	-2.6%

Source: BofA Merrill Lynch Global Research.

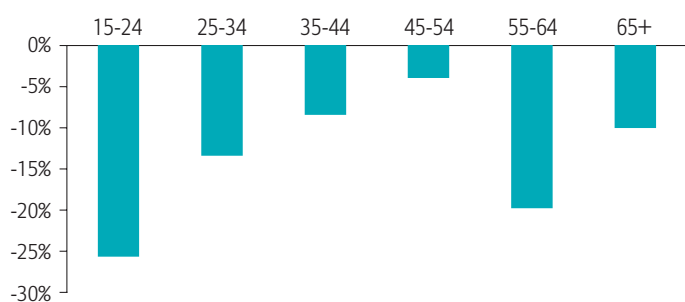
Philip Morris expects this trend to continue with projections for the medium term showing a decline of 1-2% in global ex-US cigarette volumes.

Market Groups	Cigarettes Industry Volume Dynamics				
	% of 2013 PMI Volume	% of 2013 Industry Volume	CAGR 2008–2012	Variance 2012–2013	2015+ Outlook
EU	22.0	16.0	(4.3)%	(7.5)%	(3)% – (5)%
Other OECD	19.0	16.0	(3.7)%	(2.6)%	(2)% – (4)%
Russia	10.0	11.0	(1.9)%	(7.6)%	(4)% – (6)%
Philippines	8.0	3.0	2.7%	(15.6)%	(1)% – (2)%
Other Non-OECD	41.0	54.0	0.2%	(0.1)%	Flat
Total	100.0	100.0	(1.4)%	(3.0)%	(1)% – (2)%

Source: PMI. As of June 2014.

Every country in Western Europe has shown 3 and 5 year CAGR declines to 2015 except for Turkey. But the youth in Turkey share the aversion to tobacco seen elsewhere in the world.

Turkey Statistics Institute, change in prevalence 08-12



Source: Turkey Statistics Institute, WHO. As of August 2012.

Even China, which now represents nearly 45% of global cigarette volumes, showed a fall in cigarettes smoked last year declining by 2.4%.

The tobacco industry has remained profitable and experienced top line growth in the face of declining volumes over time through the strong ability to increase prices, expand into new regions and consolidate the industry. As regional expansion and industry consolidation reaches full maturity, pricing becomes the only lever for these companies to maneuver. The inelasticity of tobacco can only be stretched so far and at some stage volume pressures will create headwinds on profitability and headline growth. With young populations around the world increasingly uninterested in tobacco, this may be sooner than expected.

Regulation

There is perhaps no other industry with as much regulatory pressures as tobacco. There are a number of regulatory pressure points which include; taxes, litigation, marketing and general restrictions on use. We briefly explore the industry impacts of each of these in the following section.

1. Marketing

General advertising bans of tobacco products gained traction in the 1990's with the US passing the Tobacco Master Settlement Agreement in 1997 and many countries following suit since. While the US led on advertising ban initiatives, Europe is taking a leading position in the next wave of marketing regulation through plain packaging. Plain packaging has the potential to be very material to tobacco companies as it removes some of the strong pricing ability held by these companies.

France and Ireland were among the first countries to pass legislation in 2015 that requires plain packaging from cigarette producers commencing in May of 2017. The UK followed shortly after, also mandating plain packaging from May 20th, 2017 onward. Several other countries such as Norway, Singapore, Turkey, South Africa, Canada and others are following suit.

There will not be a smooth adoption of plain packaging as legal action has been launched against the adoption of such laws. It is also unclear whether or not these measures are successful in combating the use of tobacco when implemented. However, plain packaging has serious potential of putting strain on the profitability of tobacco companies in regions implemented.

2. Litigation

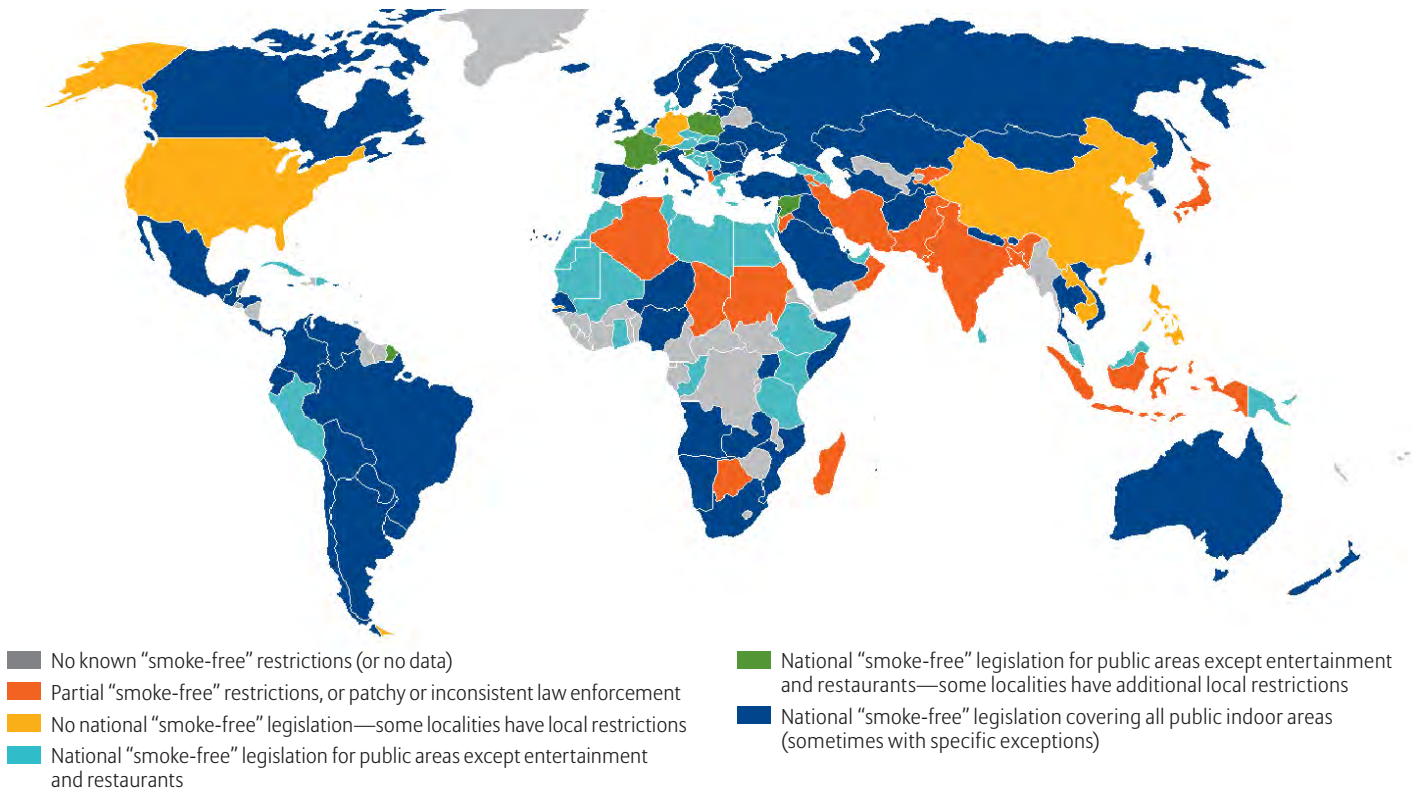
It is beyond the scope of this paper to explore the long list of litigation launched against the tobacco industry. While tobacco companies have historically been successful in overturning rulings against the industry, the litigation risk will likely persist as long as the industry operates.

The most recent and significant court ruling comes from Canada, where in 2015 a Quebec court ordered a number of tobacco companies to pay the equivalent of 12.5B US dollars to consumers of their product.

3. General smoking restrictions

Smoking bans impact nearly every country across the world with the scope of these bans ratcheting up over time.

Smoking bans by country



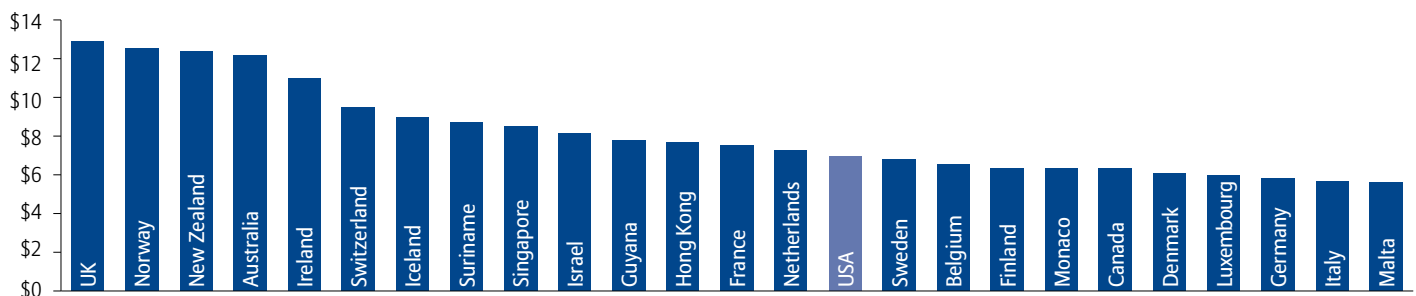
Source: Wikipedia. As of March 23, 2016.

4. Taxes

Taxation has been a popular tool of regulators to curb smoking as it generates government revenues while putting pressure on demand for tobacco. While taxation is rarely a positive in any industry, the oligopolistic and inelastic nature of the tobacco industry enables tax increases to act as a mechanism for ensuring price discipline among the large players and price increases above the mandated tax increases. However, as noted above, there are limits to the ability of tobacco companies to push through price increases without significantly impacting demand.

As one would expect, the chart below shows high taxation regions experience the highest price per pack of cigarettes.

Top 25 countries with the highest per pack price (20 cigarettes)



Source: Euromonitor. As of 2015.

Negative externalities—societal impacts

The regulatory pressures, litigation risk and volume declines are largely actions that have been encouraged due to the negative societal impacts of tobacco. The primary negative externality is the health implications of using the product and the related costs across society. Another aspect, though far less researched than the health issues, is the negative impact on the environment.

Health

The health implications of tobacco use have been researched extensively leading to a long list of data points on the negative effects. Below is a sample of statistics taken from the CDC (as of 2014):

- Cigarette smoking is responsible for more than 480,000 deaths per year in the US
- Smoking is the leading cause of preventable death in the US
- More than 16 million Americans are living with disease caused by smoking
- The total economic cost of smoking is more than \$300 billion a year with \$170 billion in direct medical care and \$150 billion in lost productivity—this compares to only \$25.8 billion collected by states from tobacco taxes and legal settlements
- Worldwide, tobacco use causes nearly 6 million deaths per year, and current trends show that tobacco use will cause more than 8 million deaths annually by 2030

Environment

While much less researched than the health effects, the environmental impact of tobacco manufacturers is increasingly being investigated. This may lead to increased regulation and higher litigation risk. At the moment environmental research is sparse and fragmented, but a few findings include:

- A report from International Coastal Cleanup suggested that cigarettes accounted for 28% of total marine debris items (Source: International Coastal Cleanup –2015)
- The City of San Francisco spends an estimated \$11 million per year on cigarette butt clean-up (Source: San Francisco –2009)
- While the net CO₂ emissions may be negligible as the smoking of tobacco is offset by the carbon sink through growing the plants, toxic chemicals from littered butts can pollute the soil and water where discarded

These negative externalities may not have a direct impact on the investment potential of tobacco companies, but they do feed directly into the mechanisms that put negative pressures on the industry.

Market expectations

Is the market factoring in these pressures? Looking at the consensus expectations for the next four years provides some insight on whether or not these pressures are being discounted currently.

Sales

The average consensus sales growth forecast for five of the largest global tobacco companies is shown in the table below. Consensus estimates show moderate growth over the next couple of years and negative revenues in 2019. Expectations do appear to incorporate some of the volume pressures noted throughout this paper.

	2016	2017	2018	2019
Sales Growth	11.22%	4.70%	3.66%	0.27%

Source: Bloomberg street estimates.

Earnings

The average consensus earnings growth forecast for the same tobacco companies is shown in the following table. The expectations show mid-single digit earnings growth is expected for the foreseeable future. This suggests that consensus is not expecting the industry pressures to meaningfully hurt pricing ability and instead factors in continued pricing rises.

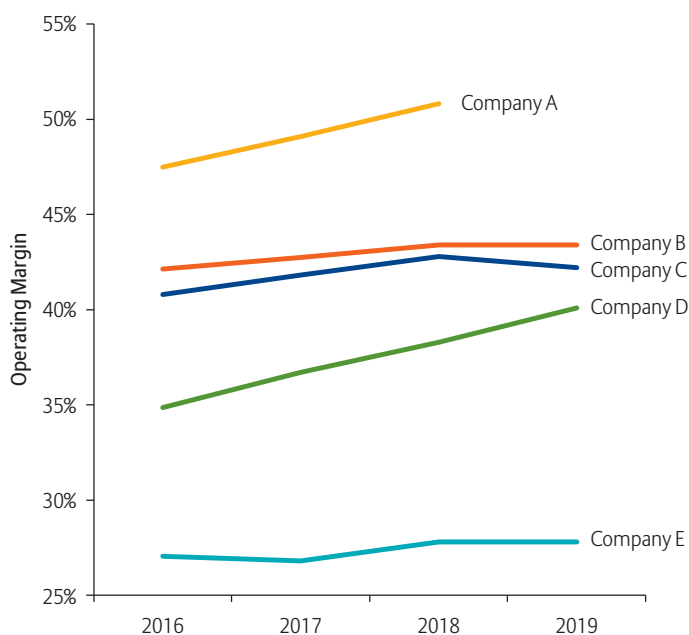
	2016	2017	2018	2019
Earnings Growth	12.70%	8.60%	7.70%	6.90%

Source: Bloomberg street estimates.

Operating Margin

Expectations for the operating margins of the five largest public companies shows a similar message, with consensus forecasting all tobacco companies to show margin expansion over the coming years.

Forecast Operating Margin

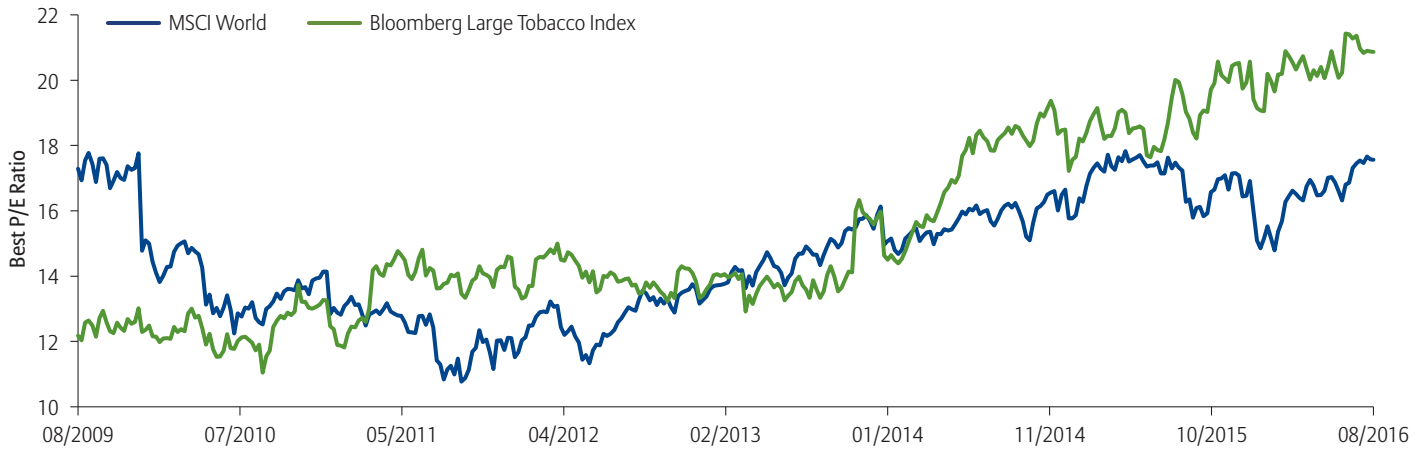


Source: Bloomberg street estimates.

Value of Earnings

Finally, we show what the market is paying for large tobacco company earnings. The chart below shows the multiple being paid for large global tobacco earnings (green line) is well above the P/E observed

for the MSCI World (blue line). While the P/E divergence is the most significant observed in recent history, the same is true for the wider consumer staples space as the perceived relative defensiveness of these earnings is attractive in the current market environment.



Source: MSCI World, Bloomberg Large Tobacco Index.

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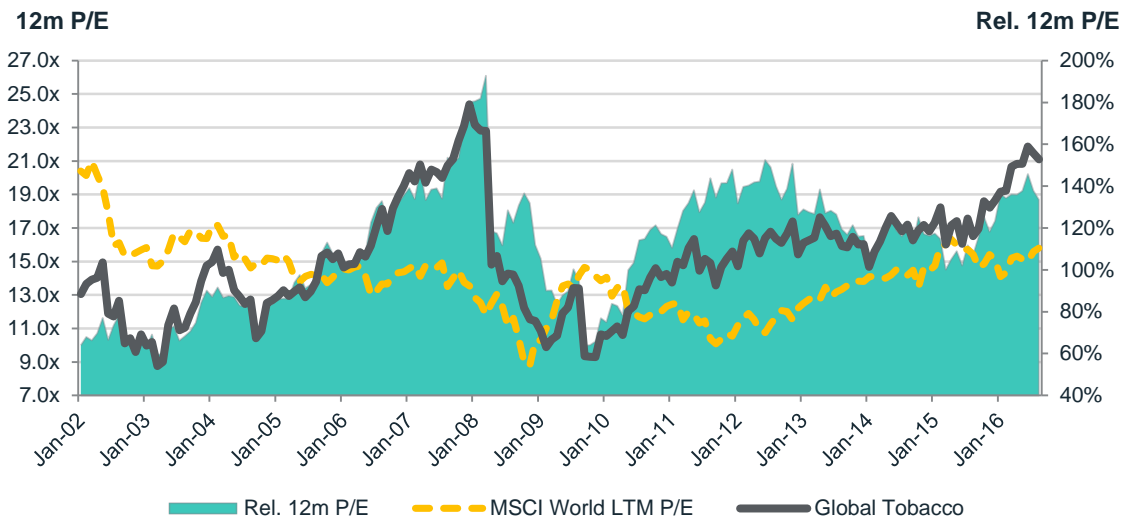
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Tobacco—why *not* invest today?

Key concerns one should have with respect to investing in the tobacco industry today:

Valuation

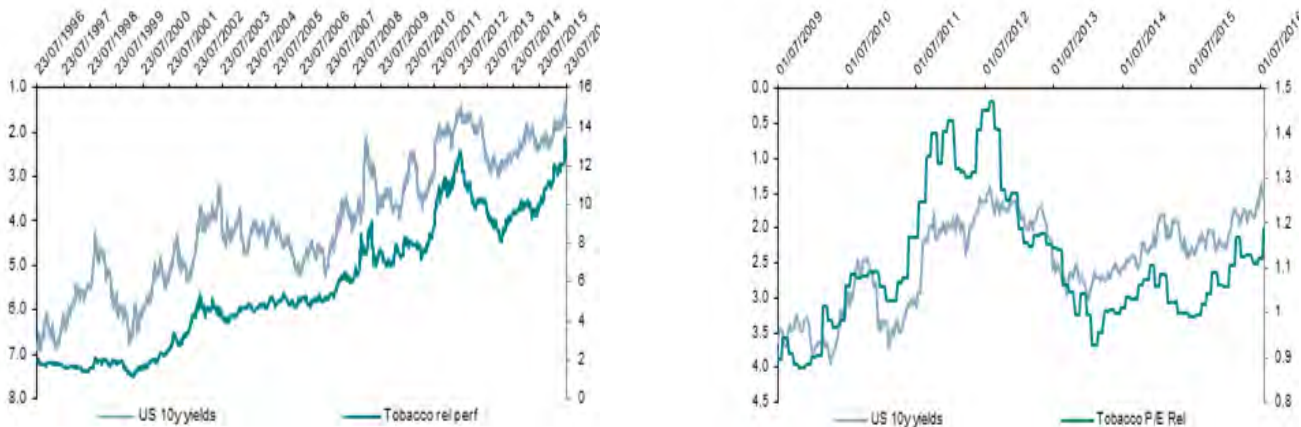
The tobacco industry has been a strong performer, and is currently trading at all-time highs on forward P/E multiples (19.7x). Additionally, the premium relative to the market has rarely been higher (currently 20%).



Source: FactSet, Bloomberg

Industry Rotation

In the current low growth and low interest rate environment, the tobacco industry has benefitted from the rotation to defensive, cash flow-generating, high-dividend-yielding areas of the market. Once interest rates start to increase, the characteristics of the tobacco industry will become less attractive as investors move out of the industry in search for higher growth prospects.



Source: Datastream

Declining volume trend may not last

In addition to sector rotation, one of the key reasons for the strong share price performance of the tobacco industry has been the slowing rate of volume declines since 2013. The main drivers of the improving trend include:

- In the U.S., slowdown in e-cigarettes and moist smokeless tobacco (MST) growth.
- In Europe, slowing growth in e-cigarettes and roll-your-own products (RYO), as well as better controls on illicit cross border trade.
- The slightly improved macroeconomic environment, lower unemployment rates, and lower gas prices have also helped.

However, recently reported tobacco results have indicated that we may be starting to see this moderation in the rate of volume decline reverse (tobacco companies expect the U.S. market volumes to return to the long-term trend decline of 2-4%) as the recent drivers of the volume moderation diminish.

The rate of volume decline may accelerate in emerging market countries as the consumer is under increasing spending pressure and governments look to repair their income streams by increasing duties on goods, including tobacco (e.g. Brazil, Argentina, Russia, Turkey).

Regulation/tax continues to be a challenge

Outside the U.S., tobacco regulation is looking increasingly challenging and provides uncertainty with respect to future earnings visibility. Recent regulation potentially impacting the industry includes:

Plain Packaging (PP) – PP has only been implemented in Australia to date, although a number of countries are looking to also implement PP (United Kingdom, France, Ireland, Norway), and we should expect this trend for countries outside the U.S. to continue. Although it has been difficult to gauge the true impact of Plain Packaging since its implementation in Australia (as tobacco tax has also been increased significantly at the same time), it does appear to have led consumers to down-trade (to lower priced products), thus it appears PP weakens the pricing power of the industry and likely ultimately leads to the dilution of premium brands (magnitude at this stage still unclear). The potential larger concern for the tobacco industry is that, over time, it is very possible PP destroys branding, which will likely have an impact on the recruitment of new smokers in the future.

PP may also accelerate the trend of illicit trade of tobacco products, which has recently been moderating (currently accounts for around 11% of global consumption). Illicit trade is clearly a challenge for the industry, impacting volumes and pricing.

Regulation/tax continues to be a challenge (continued)

Tobacco Products Directive – (TPD, adopted in April 2014 by the European Union) regulates the manufacture, presentation and sale of tobacco products in the European Union: key new requirements of TPD include larger health warnings on tobacco packaging, minimum pack sizes, and the banning of menthol cigarettes from 2020. These new rules are expected to cause some short term disruption (e.g. in recent years the industry has benefited from smaller pack sizes), however, most believe that, over time, these will have a minimal impact on consumption – the risk is that these new regulations accelerate the rate of volume decline.

Very recently it has been reported that the French Government is considering a decree to ban brands with suggestive brand names, including Vogue, Lucky Strike, Marlboro Gold, Fortuna, News, Gauloises. The ban is based on the logical conclusion of the European Tobacco directive which stipulates tobacco products “must not include any element that contributes to the promotion of tobacco or give an erroneous impression of certain characteristics”. For more information, see: <https://www.theguardian.com/world/2016/jul/20/french-smokers-fume-france-plans-ban-gitanes-gauloises-cigarettes>

The constant threat for the industry is disruptive tax increases. Although in most markets tax policy is benign, in recent times we have seen sharp tax increases in Malaysia (+40% in Nov '15 with volumes down 25%), Australia (+12.5% above inflation for the past four years with volumes down around 5%), and Argentina, highlighting that one cannot be complacent in terms of future tobacco tax policies.

Outside the U.S., litigation is a risk that is not priced in

The market knows and understands U.S. tobacco litigation, and the risks. However, the market is extremely complacent on tobacco litigation risks outside the U.S. A significant case currently is in Canada (C\$15.6bn of damages was awarded against three tobacco companies in June 2015, which is now going through the appeal process lasting at least 2-3 years, or longer). In addition, in the Provincial Healthcare Recovery cases in Canada, each province is suing the tobacco industry for tens of billions of healthcare costs, where there is a risk the industry could lose and lead to large awards against it. A litigation win in Canada against the industry, could lead to other countries (outside the U.S.) to follow suit.

Next generation products could have a negative impact on margins

Next generation products (NGP, generally described as ‘reduced harm’ products that delivers nicotine in place of regular cigarettes) is the new growth area for the tobacco industry. While this is a potential growth opportunity for the future for the industry, these new products require significant investment (in R&D and marketing) that will impact the industry margins, and impact the strong cashflow generation. A concern for the industry is that NGP cause consumers to switch from traditional combustible cigarettes, which at least in the short term (or longer) would lead to negative margin mix (and cashflow generation) as the industry invests more behind these products given the increased competition. In addition, the industry regulators (and income departments) have yet to fully regulate (still evolving) or tax these products – the outcome of future regulation and taxation could impact the future attractiveness of the NGP.

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Industry Report Brief: Tobacco

December 2015

INDUSTRY TRENDS

- Tobacco companies have recognized the **burgeoning market opportunity presented by e-cigarettes and are investing heavily** in e-cigarette brands. All major tobacco companies have positioned themselves to capture escalating e-cigarette demands and are developing or already have e-cigarettes on the market. Although e-cigarettes are likely here to stay and may bring about short-to medium profits that will help offset declined sales of cigarettes in developed countries, **companies are not immune to regulatory risks**.
- Companies are highly exposed to regulatory risks associated with chemical additives facing reformulation risks should specific chemicals and flavorings be banned (e.g., menthol is to be phased out beginning in 2020 in the EU). Most companies appear **unprepared to address reformulation risks in anticipation of potential additives bans**. We expect regulatory pressures aimed at phasing out chemical additives in tobacco products to increase in the medium term.
- As **tobacco marketing regulations continue to tighten e.g. via plain packaging laws** (Australia, Ireland), companies are less able to differentiate their products - significantly eroding brand value and increasingly challenging for companies to capture new market segments.
- The UK Modern Slavery Act (newly passed in 2015) places increased regulatory emphasis on company disclosure with regard to identifying and addressing poor labor practices in supply chains (slavery, human trafficking). Most **companies have low disclosure with regard to instances of non-adherence with labor standard practices in supply chains**. These companies face potential legal action and negative publicity.

RATINGS HIGHLIGHTS

▶ Swedish Match	A	Maintain
▶ Imperial Tobacco	BBB	Up
▶ British American Tobacco	BBB	Maintain
▶ Japan Tobacco	BB	Up
▶ Philip Morris	B	Up

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Industry Report: Food Products and Beverages

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AUTHORS

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	2014	2015		
Japan Tobacco	B	BB	↑	Japan Tobacco has made some slight improvements in its labor practice programs. In 2014 its agricultural labor practices applied to 7% of the company's directly contracted farmers, and the company reports that its labor practices will begin to cover third party leaf suppliers in 2016.
Imperial Tobacco	BB	BBB	↑	Along with specific water consumption reduction targets, Imperial Tobacco is among the few companies in the peer set to have taken steps to identify water risks along its supply chain.
KT&G	A	BB	↓↓	A former VP of KT&G is being investigated (as of November 2015), while a current executive has already been arrested in October 2015, by regulators over allegations of receiving kickbacks from contractors, both amounting to USD 1.1 million.

ESG Risk Intensity of Tobacco Industry vs. Other Industries



Global focus on e-cigarette and plain packaging regulations amidst ongoing regulatory pressure in all regions toward tobacco smoking driven by WHO FCTC

- **Electronic cigarettes (e-cigarettes) are booming but regulatory landscape increasingly restricted**

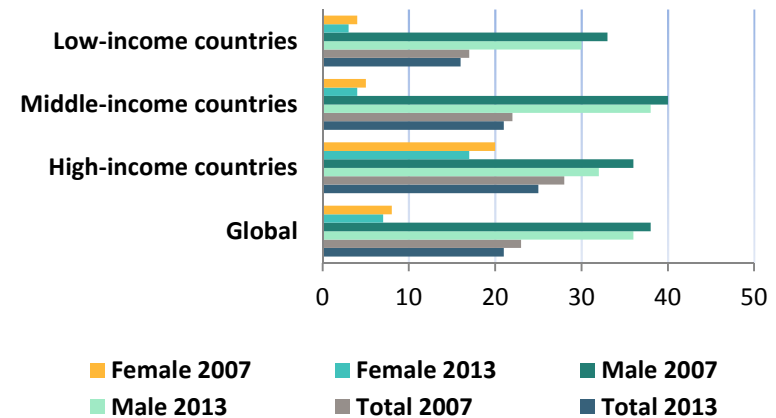
Regulators are increasingly becoming more aggressive in restricting tobacco ingredients and promotional activities. At the same time **more companies are shifting their focus from traditional combustion cigarettes to include e-cigarettes to respond to rapid shifts in consumer demand.** E-cigarettes are electrical devices that simulate cigarette smoking by inhaling nicotine-infused vapor produced by heating, rather than the burning, of nicotine. The extent of negative health impacts of e-cigarettes are as of yet unknown. The global market for e-cigarettes was roughly USD 7 billion in 2014, with an estimated USD 2.5 billion in the US.

Tobacco companies have recognized the burgeoning market opportunity presented by e-cigarettes and are investing heavily in e-cigarette brands. All major tobacco companies have positioned themselves to capture escalating e-cig consumer demands and are developing or already have e-cigarettes on the market: **Altria (Mark Ten), Imperial Tobacco (Puritane), British American Tobacco (Vype), Japan Tobacco (E-Lites), and Philip Morris (Nicolite).**

The growth trajectory of e-cigarettes will depend on the level of regulatory oversight of this sub-segment of the tobacco industry. Although tobacco companies are currently enjoying fairly lax regulatory oversight, **stricter regulations appear to be imminent.** While e-cigs are likely here to stay and may bring about short-to medium profits that will help offset declined sales of cigarettes in developed countries, **companies are not immune to regulatory risks.** In the EU, e-cigarettes will also be regulated; by May 2016, all 28 European Union Member States will regulate e-cigarettes as part of the EU Tobacco Products Directive (see figure 4 for more information on regulations worldwide). New York City banned e-cigarettes in many public places (restaurants, bars), which took effect in April 2014. Australia considers liquid nicotine a poison by law, where the retail sale of liquid nicotine is only allowed via permit. In the UAE, the Ministry of Health has banned e-cigarette, citing health concerns. Singapore has outlawed the importation, distribution, and sale of e-

cigarettes. Surprisingly, while China manufactures 95% of e-cigarettes, e-cigarette use in the country is very small. According to the World Health Organization (WHO), of the approximately 1 billion smokers globally, 80% live in low- and middle income markets, the majority of which have not yet been penetrated by e-cigarettes.

FIGURE 1 **Adult Smoking Prevalence (%), 2007-2013**



Source: MSCI ESG Research, WHO Report on Global Tobacco Epidemic 2015

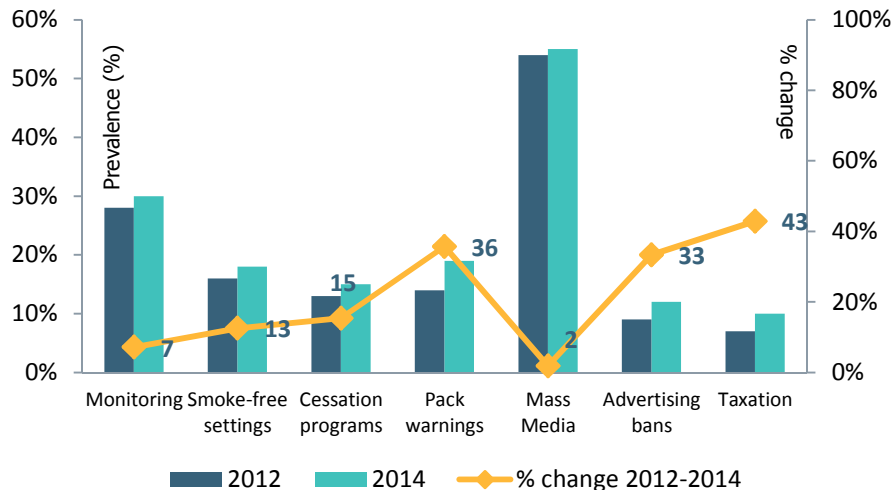
- **WHO Framework Convention on Tobacco Control (FCTC): Driver for More Stringent Tobacco Regulation Worldwide (see Product Safety & Quality – Responsible Marketing on page 7)**

Tobacco companies will face increased tobacco control policies in both developed and developing countries as national health budgets are burdened by the substantial health, social, and economic costs associated with cigarette smoking. Measures to reduce tobacco consumption include warning labels on cigarette packages to convey health risks, increased taxes to drive lower consumption, smoke-free environment laws, and curtailing the marketing of tobacco products via advertising bans (see figure 2).

Specifically related to e-cigarettes, marketing concerns are focused around marketing to youth (e.g., via attractive flavors and celebrity endorsements), ‘welcoming back’ ex-smokers, and unsubstantiated claims – i.e., users supposedly experiencing weight loss, increased energy, and improved sleep. As of January 2014, over 7,700 e-cigarette flavors were available, with roughly 200 new flavors introduced on a monthly basis. The fast-growing sub-segment is quickly gaining traction among consumers who are trying to quit or reduce health risks, thanks to the positioning of e-cigarettes as being less harmful. The wide range of “fruity” flavors further plays upon such perceptions, and according to some critics, lures young consumers into trying alternative smokeless tobacco options with ‘cherry crush’, ‘strawberry champagne’, or ‘bombshell’ flavorings.

We expect increased anti-tobacco regulation and tobacco control measures to negatively impact conventional tobacco sales volumes going forward. According to the WHO, over 2.3 billion people, or over a third of the global population, are covered by at least one of six types of tobacco control measures.

FIGURE 2 **Increase in Global Population Covered by Tobacco Control Policies, 2012-2014**

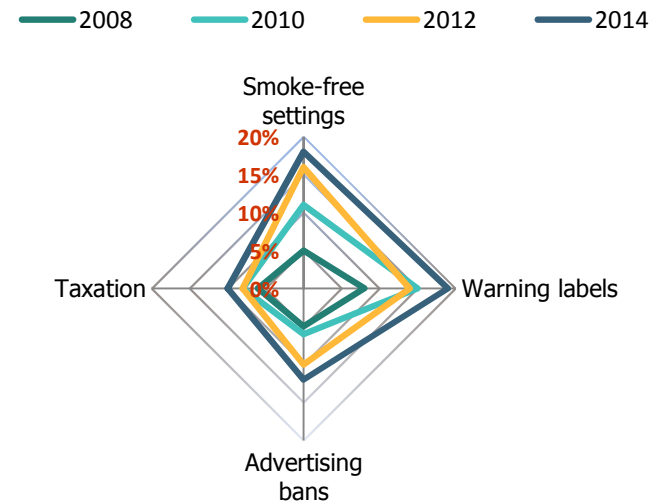


Source: MSCI ESG Research, WHO Report on Global Tobacco Epidemic 2015

While developing markets remain the strongest growth markets for the tobacco industry, we see even these traditionally unregulated markets following in the footsteps of the EU and US in establishing taxes, labeling requirements, and/or smoke-free environments. According to the World Health Organization, over the past five years, **most progress in tobacco regulation has occurred in low-and middle income countries.** In fact, worldwide, excluding China, the overall global volume of tobacco products is declining taking into consideration increases in absolute volume driven by population growth.

Increased regulation of conventional tobacco products in low-and middle-income countries could jeopardize companies’ long-term growth prospects in these markets, on top of already stagnant or declining sales in high income countries. Faced with declining sales in developed countries, underscored by heavy taxes (particularly in the EU) and increasing product regulation, many tobacco companies have expanded into developing regions (e.g. countries in Asia) to capture new market share and boost sales.

FIGURE 3 **Proportion of Global Population Covered by Tobacco Control Policies, 2008-2014**



Source: MSCI ESG Research, WHO Report on the Global Tobacco Epidemic, 2015, 2013 and 2011



- **Plain Packaging: Ireland and UK ban branded cigarette packaging, following in the footsteps of Australia**

Following Australia's lead to require that cigarettes be sold in plain, homogenous packages, (i.e. banning company trademarks, colors, and imagery on cigarette packaging), in May 2013 Ireland's Department of Health announced government approval to initiate plans to similarly launch plain packaging. Plain packaging requires

that brand and promotional aspects on cigarette packages be removed, inhibiting companies' abilities to differentiate their products. Should more countries follow the lead of Australia and introduce standardized packaging, **companies will have fewer opportunities to capture market segments via brand appeal and effectively promote their products, restricting their ability to capture new populations.**

FIGURE 4 Tobacco industry regulation landscape – select countries

Source: News reports and analyses, company disclosure, World Health Organization, Tobacco Control Journal. *N.B. Not an exhaustive list of tobacco control regulations.

Theme	Country/Region	Month/Year	Regulatory Development Snapshot
E-cigarettes*	US	April, 2014	The US Food and Drug Administration announced rules restricting e-cigarettes, including banning sales of e-cigs to children and requiring tobacco firms to disclose ingredient lists. The announcement did not ban flavoring or advertising. - Chicago, Illinois forbids "vaping" in restaurants, shops - NYC forbids vaping in NYC parks
	EU	February, 2014	The EU approved a revised EU Tobacco Products Directive, strengthening how tobacco products are manufactured and presented (including nicotine-containing e-cigarettes). The regulation of flavors, advertising, and age restrictions related to e-cigarettes is left to individual Member States. The new rules exclude medicinal e-cigarettes and e-cigarettes that do not contain nicotine.
	India	September, 2013	India: e-cigarettes banned in Punjab - Punjab becomes first state in India to illegalize e-cigarettes. - E-cigarettes are currently not regulated by any national authority in India. India is the sixth largest tobacco market globally (by cigarette volume), dominated by smokeless tobacco sales (75%).
Plain packaging*	UK	March, 2015	UK parliament voted to ban branding on cigarette packs; to be implemented May 2016
	Ireland	March, 2015	Ireland will become the first country in the EU to pass a plain packaging law (and second country globally after Australia) to ban branded cigarette packages
	Australia	December, 2012	Australia becomes first country to introduce plain packaging of cigarettes. - In July 2014 Australia reported that nation's smoking rate dropped by over 15% - from 15.1% (2010) to 12.8% (2013) driven by its plain packaging law. Australian health officials report that smokers find that cigarettes taste worse post introduction of plain packaging, despite no ingredient change. Possible future bans in UK, New Zealand, Ireland.
Menthol flavoring	Germany	March, 2013	Germany bans menthol capsules, citing Articles 9 and 10 of FCTC (regulating content of tobacco products and tobacco-related disclosure); EU to phase out menthol in cigarettes beginning in 2020
	US	December, 2013	Chicago, Illinois bans the sale of menthol cigarettes within 500 feet of Chicago schools; as of February, 2014, the city of Berkeley, California took similar steps to also ban flavored menthol cigarettes near schools
Other tobacco regulatory developments*	China	2013	China's cabinet, the State Council, banned officials from smoking in hospitals, schools, and public transport areas. - China is the world's largest cigarette market; retail cigarette market in 2013 was USD 205 billion. - Regulation will have minimal impact on multinational tobacco companies, due to a near-monopoly on tobacco sales in China by China National Tobacco Corporation.
	Russia	June, 2013	Russia, the second largest cigarette market by consumption volume globally (behind China) and with a retail cigarette market of USD 27 billion passed an anti-tobacco law that took effect in June 2013. The law seeks to lower smoking-related fatalities by 50% over the next decade by banning smoking in public places and placing restrictions on the sale and marketing of cigarettes. - Russia banned smoking in medical facilities, sports and cultural venues, other public areas (including hotels, cafes, bars, shopping centers) - Cigarette consumption fell by 12% (16 billion cigarettes) between the first quarter of 2013 and the first quarter of 2014. - Japan Tobacco is the market leader in Russia, with over 35% market share. PMI, BAT, and Imperial Tobacco also have a presence. Philip Morris reported a 9% decline in sales in Russia during Q1, 2014.
	Japan	July, 2013	Japan's Health Ministry sets new tobacco control targets.
	Hungary	July, 2013	Hungary limits distribution of tobacco products nationally to government licensed and designated retailers ('National Tobacco Shops'). Aim is to reduce youth smoking.
	Philippines	January, 2013	In January 2013, the Philippines government (the seventh largest country by tobacco volume consumption globally) passed a 'sin tax', or an increase in indirect taxes on cigarettes.



Companies' Performance on the Key Issues

Description: Key issue scores constitute 100% of the total companies' ranking. The table below indicates key issue weights and rankings for the Tobacco industry.

TOBACCO

Company	Environment	Environment	Social	Social	Social	Governance	Company Specific	ESG Rating and Trend
	Water Stress	Biodiversity & Land Use	Supply Chain Labor Standards	Product Safety & Quality	Chemical Safety	Corp. Governance		
	14%	18%	18%	21%	14%	15%		
BRITISH AMERICAN TOBACCO (MALAYSIA) BERHAD	●●●	●●●●	●●●●	●●●●	●●●	●●●●		AA ↔
Swedish Match AB	●●	●	●●●●	●●●●	●●	●●●●		A ↔
ITC LIMITED	●	●●●●	●●●●	●	●●●●	●●●		A ↑
IMPERIAL TOBACCO GROUP PLC	●●●●	●●●	●	●●●●	●●●	●●●●		BBB ↑
BRITISH AMERICAN TOBACCO P.L.C.	●●●●	●●●●	●●	●●●	●●	●●●	*BEF	BBB ↔
UNIVERSAL CORPORATION	●	●●●●	●●	●●	●●●●	●●●		BBB ↔
Altria Group, Inc.	●●●	●●	●●●	●●	●	●●●		BBB ↑
KT&G Corporation	●	●●	●●●	●●●	●●●●	●●	*BEF	BB ↓↓
REYNOLDS AMERICAN INC.	●●●	●●●	●●●	●●●	●	●		BB ↔
JAPAN TOBACCO INC.	●●	●●●	●●	●●	●●●●	●		BB ↑
VECTOR GROUP LTD.	●	●●●	●●	●●●●	●	●		BB ↑
Philip Morris International Inc.	●●●●	●	●	●	●	●		B ↑
PT Gudang Garam Tbk	●	●	●	●	●●●	●		CCC ↔

QUARTILE KEY: ● Bottom Quartile; ●● Third Quartile; ●●● Second Quartile; ●●●● Top Quartile

RATING TREND KEY: ↔ maintain ↑ upgrade ↑↑ two or more notch upgrade ↓ downgrade ↓↓ two or more notch downgrade

* Ratings, quartiles and company scores were correct at the date of publication of this report and may since have changed due to event-driven reviews. In cases of discrepancies between the company report and industry report, the company report should be considered definitive.

Product safety & quality – responsible marketing

Industry's Contribution to Externality	<p>HIGH IMPACT</p> <p>Tobacco advertising has been associated with an increase in tobacco product consumption, where aggressive marketing and unsubstantiated claims can not only encourage existing smokers to smoke more, but also decrease smokers' motivation to quit and encourage youth to start smoking (see Calls for the Period section, p. 2-3). Tobacco companies have been forced to adapt their marketing approaches to meet regulatory restrictions such as plain packaging particularly in developed countries (e.g., Australia).</p>
Time Horizon of Risk / Opportunities Resulting from Externality	<p>SHORT TERM RISK (<2 years)</p> <p>Tobacco companies are increasingly facing partial or total bans on advertising, marketing, and promotion of tobacco products not only in developed countries but also in emerging markets, especially focused on responsible marketing that prohibits the targeting of youth.</p> <p>Australia became the first country to introduce plain cigarette packaging in December 2012, followed by Ireland. As such, tobacco companies will have fewer opportunities to differentiate their products from those of competitors if more countries follow the lead of Australia and Ireland. To date, several other countries such as Ireland, New Zealand, the UK, and India - the second largest consumer of tobacco products worldwide – have indicated interest or are in the process of implementing similar measures in an effort to curtail cigarette smoking.</p>
Main Risks / Opportunities	<p>market share loss; lawsuits; brand damage</p>

KEY TAKEAWAYS

- **Nearly 60% of companies face controversies related to their marketing practices, or are facing consumer and government lawsuits seeking compensation for health problems and healthcare costs associated with cigarette smoking (e.g., Japan Tobacco, BAT, Philip Morris, and Altria).**
- **Most companies (65%) have marketing policies that address marketing of tobacco products and specifically prohibit marketing to youth, yet surprisingly, only 50% of companies state that they have audit mechanisms to help ensure compliance with marketing codes and identify potential breaches**

- **PMI has faced major product liability lawsuits in Canada, Argentina, Brazil, Columbia, Venezuela, Israel, and Nigeria; Japan Tobacco is facing lawsuits in Canada.**

We assess companies' marketing policies to respond to regulators' increased concerns around the consumption and branding of tobacco-related products, as exemplified by more plain packaging laws over the last several years (Australia, Ireland), regulatory concerns regarding the appeal of e-cigarettes to children, and the continued emphasis on marketing (along with other policies such as taxation) via the WHO FCTC. **Should companies be found to improperly market their tobacco products, they could face fines, penalties and legal costs from consumers and regulatory agencies** (e.g., claims that products were misbranded, companies making unsubstantiated claims, or downplaying of health risks associated with tobacco consumption). Without marketing restrictions, going forward technological advances could include cigarette packages that include varnishes with certain tactile experiences, pre-recorded messages, and various inks, ranging from phosphorescent to photochromic (light-sensitive) to thermochromic (heat-sensitive).

Most companies (65%) have marketing policies that address marketing of tobacco products and specifically prohibit marketing to youth; however, **ITC Ltd.** and **Alliance One** are among the few companies in the set that appear to lack such policies. Further, 57% of companies report training programs for employees to reduce underage tobacco access and use, yet surprisingly, only one-half of companies state that they have audit mechanisms to help ensure compliance with marketing codes and identify potential breaches (Altria, British American Tobacco, Imperial Tobacco, Japan Tobacco, and Swedish Match). At the same time, most of these same companies also face controversies regarding the safety or marketing of their products.

Third party evidence suggests that companies in this industry generally do not appear to uphold their marketing policies particularly in developing market countries where oversight of marketing approaches and where regulatory

enforcement mechanisms are typically less robust compared to developed economies. Violations include insufficient age verification procedures during promotional events and non-adherence regarding the size and position of health warnings on promotional items (e.g., using tactics such as delaying the delivery of cigarette packs such as by overstocking cigarette packs that are not yet in line with pictorial warnings). **Nearly 60% of companies face controversies related to their marketing practices, or are facing consumer and government lawsuits seeking compensation for health problems and healthcare costs associated with cigarette smoking.** This includes **Japan Tobacco, BAT, Philip Morris,** and **Altria.** For example, **BAT** has received criticism for targeting youth in its marketing practices, and **Philip Morris** for targeting upwardly mobile women to expand its market base. This suggests that companies' compliance mechanisms may be inadequate. As marketing restrictions tighten in developing countries and more low-and middle-income countries passed anti-tobacco control laws driven by the WHO FCTC, companies may be held more accountable.

In particular, **BAT** and **Philip Morris** have been accused of downplaying risks associated with smoking. They have faced repeated lawsuits filed by consumers particularly concerning the misleading marketing of cigarettes as "light", "mild" or "low tar". Such claims, it is argued, can result in consumers viewing certain types of cigarettes as 'safer' alternatives than others. This indicates that, on a broader level, companies may view the financial gains from violations of marketing compliance policies as outweighing the financial losses of fines incurred.

In general, companies have been successful in avoiding major fines that would threaten their cost structure. Yet, we believe they will continuously face litigation related costs to defend the various lawsuits in which they are involved. **PMI** has faced major product liability lawsuits in Canada, Argentina, Brazil, Columbia, Venezuela, Israel, and Nigeria; **Japan Tobacco** is facing lawsuits in Canada. We note that in September 2015 Japan Tobacco reached an agreement with Reynolds American, which gives Japan Tobacco rights to market the Natural American Spirit brand outside of the US.

BEST PRACTICES

Imperial Tobacco

Imperial Tobacco's marketing code addresses the content of marketing, the style, health warnings, and sponsorship of tobacco-related products. Notably, it is among only a few companies in the peer set that reports that it has established auditing mechanisms to oversee compliance with its marketing code, including a central monitoring system whereby it collects data on a monthly basis related to allegations of breaches.

BIGGEST CONCERNS

Philip Morris

Philip Morris has faced repeated controversies regarding its marketing practices, which could indicate structural issues at the management level. This includes allegations that the company's marketing of "light" brands is misleading (i.e., misinterpreted as a safer cigarette). Such controversies can not only compromise customers' health, but also raise questions regarding the company's commitment to uphold its marketing standards and result in fines or other legal costs.

FIGURE 5 **Company Performance on Product Safety & Quality – responsible marketing**

Description: Description: Risk exposure is evaluated based on a company's 2014 sales (as a proxy for volume of production). Risk management along the y-axis assesses companies' marketing policies (including the prohibition of marketing to youth), employee training on marketing policies, audit programs to ensure compliance, and level of transparency regarding instances of non-compliance.



Supply chain labor standards

Industry's Contribution to Externality	<p>HIGH IMPACT</p> <p>Like in other agricultural industries, poor labor practices are prevalent along tobacco companies' supply chains, primarily at tobacco leaf farms in developing countries where regulations on labor standards are often poor or non-existent but also in developed countries such as the US. Due to the disease-prone nature of tobacco leaves, tobacco leaf farmers are required to use large amounts of fertilizer, pesticides, and herbicides, which can have detrimental effects on human health (e.g., pesticides cause neurological damage and nicotine can result in green tobacco sickness (GTS)). Workers are often exposed to significant amounts of hazardous chemicals and often lack protective equipment and proper training on pesticide use. Tobacco growers, particularly children, are especially vulnerable to GTS, caused by the absorption of nicotine into the skin due to the handling of wet tobacco leaves.</p>
Time Horizon of Risk / Opportunities Resulting from Externality	<p>MEDIUM TERM RISK (2-5 years)</p> <p>Tobacco companies rely heavily on tobacco leaf farmers (approximately 33 million workers in farms globally vs. 1.2 million in tobacco manufacturing). Along with poor labor practices such as health and safety risks, in total, it is estimated that the agricultural sector employs almost 70% of all child labor worldwide (representing approximately 132 million children between ages 5 and 14). Companies are under constant pressure internally (as well as externally by labor watchdogs and higher regulatory scrutiny – via the UK Modern Slavery Act (passed in 2015) and the California Transparency in Supply Chains Act) to be held accountable for ensuring fair labor practices are upheld along their supply chain. Companies with poor supply chain labor management practices could face workflow disruptions and risk brand damage.</p>
Main Risks / Opportunities	<p>risks of production disruption; reputational/brand damage</p>

KEY TAKEAWAYS

- Transparency related to labor standard practices and instances of non-compliance at tobacco leaf farms remains low among the industry. However, increased regulatory emphasis (via the newly passed UK Modern Slavery Act in 2015) will require eligible companies to increase their level of disclosure with regard to efforts (if any) geared toward identifying and addressing poor labor practices along their supply chains. Altria,**

ITC Ltd, and Reynolds American have the highest level of disclosure related to violations of labor standards along their supply chains.

- Only 20% of companies including Reynolds American, ITC Ltd., and Philip Morris Reynolds American have established programs to audit suppliers' compliance with codes of conduct that includes both internal and third party auditing programs of tobacco leaf suppliers. Importantly, auditing scope is restricted to only direct (tier 1) suppliers, and excludes auditing of labor practices at the farm level where poor labor practices are common, with the exception of PMI. PMI is the only company in the set that has taken steps to monitor labor standards at the farm level.**

Tobacco companies will face increased regulatory and public scrutiny regarding poor labor practices along their supply chains; companies have already been targeted by NGO reports specifically with regard to poor labor standards at tobacco farms, where workers are exposed to pesticide and nicotine poisoning. The UK Modern Slavery Act (passed in Parliament in March 2015) and, in the US, the California Transparency in Supply Chains Act, require that companies disclose steps taken (if any) to help ensure that their supply chains are free from slave labor and human trafficking. The newly passed UK Modern Slavery Act applies to companies with sales or operations in the UK and with annual turnover at least GBP 36 million (roughly USD 56 million). In July 2015, the US House of Representatives also introduced an amendment to the Securities and Exchange Act, requiring that companies with more than USD 100 million in sales disclose efforts to identify and address forced labor, slavery, child labor, and human trafficking along their supply chains. Human Rights Watch's 2014 report already highlighted the global problem of child labor, focusing specifically on child labor on US tobacco farms.

Tobacco companies purchase most of their tobacco leaves from large international leaf suppliers, which in turn purchase tobacco leaf from farmers often located in

non-OECD countries. For example, more than 70% of PMI's tobacco is purchased from the following countries: Brazil, Turkey, the US, Malawi, Indonesia, China, Argentina, the Philippines, Mozambique, and Tanzania. The largest tobacco leaf exporters include countries such as Brazil, India, China, and Turkey. While the US is also a large tobacco leaf producer, most of its production is used locally by US-based companies. Overall, we estimate that a typical US-based company sources less than half of its tobacco leaves domestically, and as a result relies on emerging markets for a large share of its tobacco leaf supply. Consequently, tobacco companies are at risk of being associated with child labor and poor health standards (e.g., Green Tobacco Sickness) when sourcing from markets where there are poor regulatory frameworks regarding fair labor practices, and where labor regulation is rarely enforced.

Tobacco companies continue to have poor management programs in general to tackle this issue, which encompasses a complex dynamic of structures and power relations within the tobacco leaf market. The industry's overall failure to address poor labor practices is primarily due to the fact that companies have yet to identify the tobacco farms supplying them with tobacco. As a result, we believe these companies, including the largest players such as **Japan Tobacco** and **Philip Morris** are particularly at risk of being targeted by NGO reports in the future and could consequently face brand damage, despite some minor improvements in oversight of labor standards along their supply chains that we are seeing over time. Over 50% of companies face controversies related to labor practice standards.

Only 20% of companies including **Reynolds American, ITC Ltd.,** and **Philip Morris Reynolds American** have established programs to audit suppliers' compliance with codes of conduct that includes both internal and third party auditing programs of tobacco leaf suppliers. Importantly, auditing scope is restricted to only direct (tier 1) suppliers, and excludes auditing of labor practices at the farm level where poor labor practices are common, with the exception of **PMI**. PMI is the only company in the set that has taken steps to monitor labor standards at the farm level. However, the scope of auditing applies only to purchasing systems where PMI has contractual relationships directly with small scale farmers or large third party suppliers, and excludes tobacco purchased

through auction or middlemen systems, (covering 20% of its purchasing and including tobacco purchased from countries like Malawi, India, and Indonesia).

Japan Tobacco has made strides in the oversight of its labor practice programs, with third parties responsible for monitoring tier 1 suppliers' compliance with labor practices, although details regarding the scope of the audit programs remain limited. In 2014 its agricultural labor practices applied to 7% of the company's directly contracted farmers (tier 1 only), and Japan Tobacco reports that its labor practices will begin to cover third party leaf suppliers in 2016. Although an improvement, its efforts thus far are insubstantial to counter its high brand risk that it faces with regard to potential supply chain labor issues.

Less than one-half of companies (46%) disclose information on instances of non-compliance with labor standards along their supply chains; companies that are among those that disclose such information include **Altria, Imperial Tobacco, Reynolds American, Swedish Match,** and **ITC Ltd.** However, the scope of reporting is often limited to certain markets or only covers direct suppliers and does not extend to tobacco leaf farms, where poor labor practices are prevalent. Of most concern, there is no evidence that **PT Gudang Garam, Alliance One,** or **Vector Group** monitor or assess suppliers' compliance with labor standards.

BEST PRACTICES

Swedish Match,
Philip Morris

Swedish Match oversees compliance by auditing all tier 1 suppliers and training suppliers on labor standards. The company's major tobacco suppliers (defined as suppliers from which the company purchases greater than USD 100,000 per year) are required to commit to specific business ethics, human rights, and health and safety requirements.

Philip Morris is the only company in the set that has taken steps to monitor labor standards at the farm level; however this excludes tobacco purchased through auction or middlemen systems.

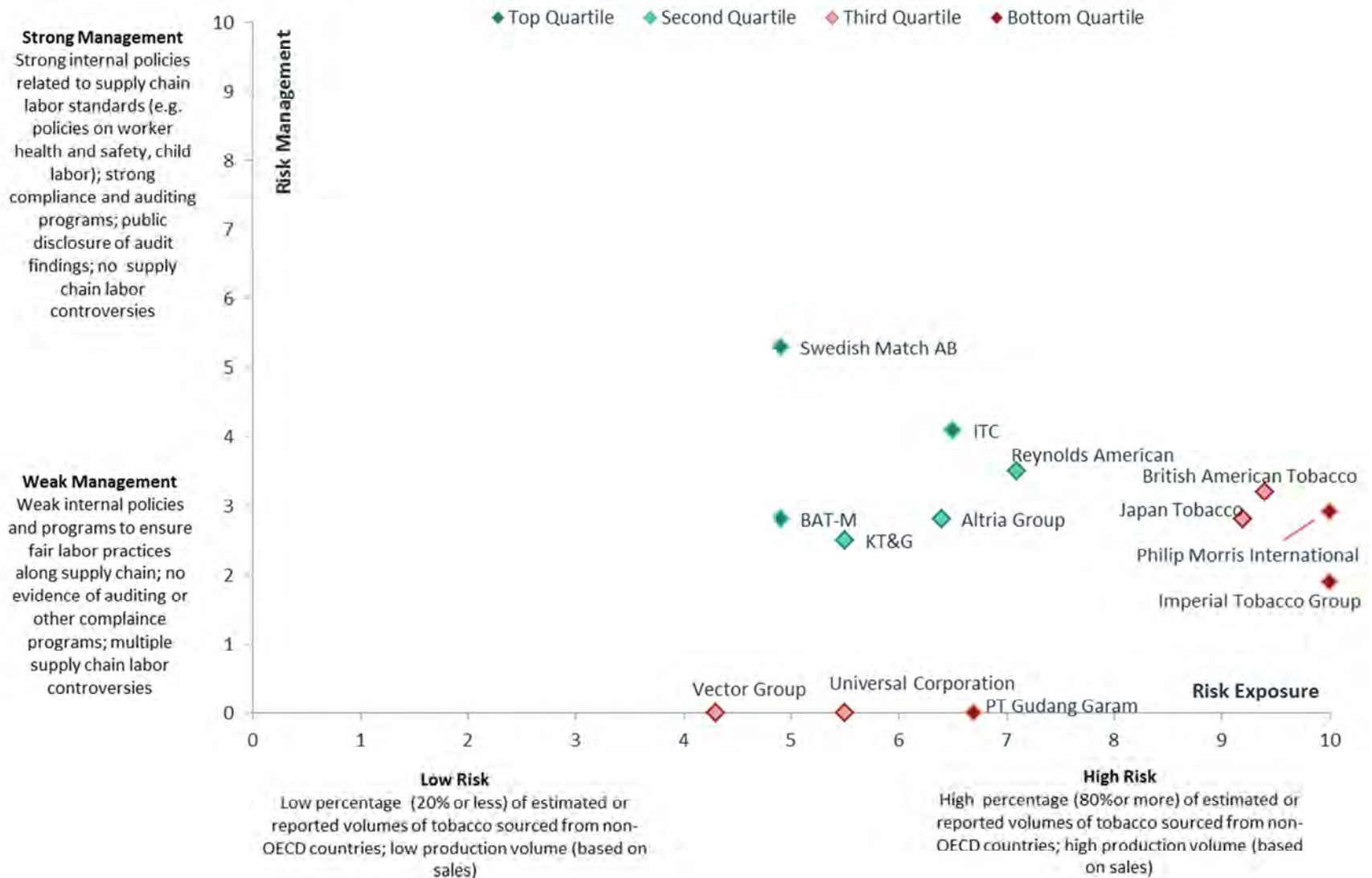
BIGGEST CONCERNS

PT Gudang
Garam

There is no evidence that the company audits labor practices at tobacco leaf farms, nor does its commit to supplier compliance training.

FIGURE 6 **Company Performance on Supply Chain Labor**

Description: Risk exposure is evaluated based on the estimated or reported volumes of tobacco sourced from non-OECD countries. Risk management along the y-axis combines an assessment of the strength of companies' internal policies and codes of conduct benchmarked against ILO standards, internal and external audits of supplier base (direct and also at the farm level), transparency on audit findings, and supply chain controversies.



Biodiversity & land use

KEY TAKEAWAYS

- **Most companies fail to address the deforestation and biodiversity problems occurring at the tobacco farm level.**
- **Roughly 15% of companies carry out community impact assessments prior to settling into new areas and have clear targets regarding land use in relation to protecting biodiversity (ITC, BAT PLC).**

Industry's Contribution to Externality	HIGH IMPACT The main environmental impacts of tobacco growing are related to deforestation as trees are cut down to make room for tobacco crops and for curing (drying) of tobacco leaves. Tobacco leaches the soil of various nutrients, requiring fertilizers and pesticides in tobacco production, creating runoff that pollutes the environment. In addition, tobacco leaf farming causes significant biodiversity losses including but not limited to land pollution (due to the heavy use of pesticides), water pollution, and deterioration of soils from the use of agrochemicals and intensive farming practices.
Time Horizon of Risk / Opportunities Resulting from Externality	MEDIUM TERM RISK (2-5 years) Resource depletion and land degradation are environmental factors compromising the continued availability of key agricultural commodities in large quantities and for a viable price. Companies are under pressure by third party watchdogs to be accountable for biodiversity losses and environmental damage due to their operations. Companies with poor biodiversity management practices could face operational disruptions, penalties, and risk brand damage.
Main Risks / Opportunities	penalties; increased costs due to land protection/reclamation; brand/reputational damage

We assess companies' programs and performance related to their management of agrochemicals, efforts to control pollution, and activities aimed at reducing wood consumption, along with reforestation programs at the farm level. **No companies have implemented programs aimed at reclaiming habitat/disturbed land**, although we find that nearly one-half of companies (46%) are at a minimum involved in efforts to minimize disturbances from their operations; e.g., **Imperial Tobacco** has internal programs that address biodiversity, including working with tobacco leaf

farmers in Madagascar, Vietnam, and Laos to reduce the use of pesticides, make improvements to flue-curing barns to improve fuel efficiency. **ITC Ltd.** also stands out positively in that it has outlined quantitative targets related to biodiversity, including achieving zero effluent discharge through treating and recycling wastewater, although it is not clear whether this extends to supplier's operations.

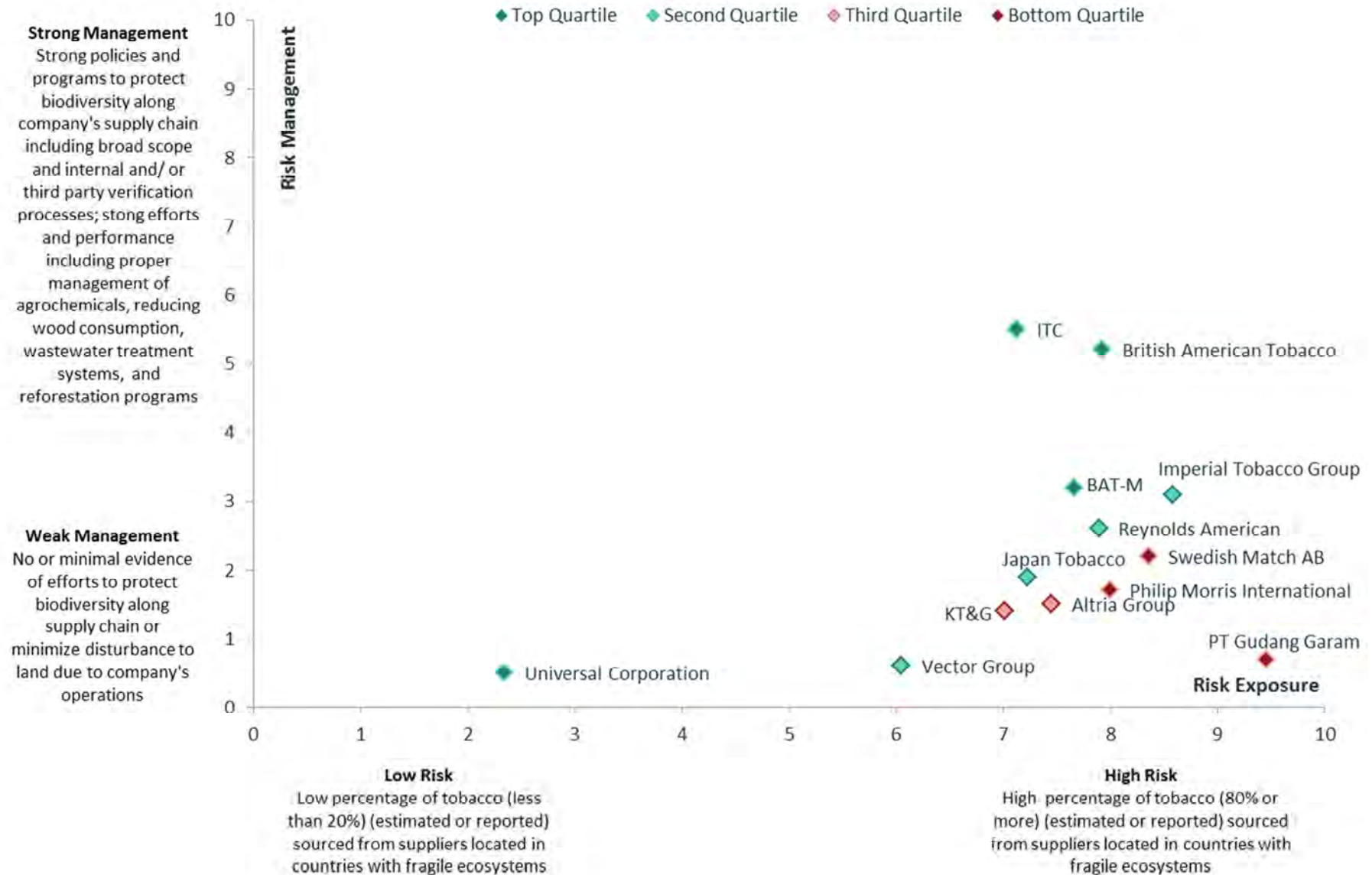
Only British American Tobacco and ITC Ltd. appear to go a step further and conduct both community and biodiversity impact assessments before settling into new areas, serving to protect their brand equity, while seeking to ensure long term land availability in a context of more stringent rules governing the acquisition or farming of tobacco and other agricultural goods. **Reynolds American** has also strategically positioned itself in the market of organic tobacco farming. The company's Santa Fe subsidiary manufactures Natural American Spirit additive-free tobacco products using organic certified tobacco or tobacco that meets certain environmental standards (including avoiding the use of the most hazardous pesticides), and utilizes sample testing to ensure that no residual pesticides reside in the final product.

Overall, **ITC** (based in India) and **British American Tobacco** positively stand out in their efforts to address biodiversity risks that some of the largest companies like PMI have failed to tackle.

BEST PRACTICES BAT	BAT aims to achieve zero use of natural forest for curing fuels used by directly contracted farmers by 2015, and in its main tobacco growing districts (Uganda, Hoima and Arua), BAT conducts biodiversity impact assessments (in partnership with three international NGOs).
BIGGEST CONCERNS PT Gudang Garam	The company does not appear to have comprehensive policies in place to manage its impact on biodiversity and local communities (beyond some reforestation programs). Its limited programs could not only compromise the long term fertility of tobacco crops, but could also result in reputational risk related to deforestation and biodiversity destruction, should poor environmental practices be uncovered along its supply chain.

FIGURE 7 **Company Performance on Biodiversity and Land Use**

Description: Risk exposure is evaluated based on the percent of tobacco leaf (estimated or reported) sourced from countries with territories in threatened ecoregions and with rich biodiversity. Risk management along the y-axis combines an assessment of biodiversity and land use policy, standards and verifications related to biodiversity standards, as well as programs and performance to minimize disturbances to land, water, and protection of natural ecosystems.



Water Stress

Industry's Contribution to Externality	MEDIUM IMPACT Globally, agriculture accounts for 70% of water withdrawal, with industry and domestic use accounting for the remaining 20% and 10% of water use, respectively. As a crop, tobacco requires 30% more water than regular grass (on par with sugarcane, bananas), and substantially more water than other crops such as tomatoes, cotton, beans, and maize (requiring 10% more water than ordinary grass). As such, agriculture and particularly tobacco contributes to growing water scarcity globally, and is by far the most affected sector that is and will be most impacted by water stress going forward.
Time Horizon of Risk / Opportunities Resulting from Externality	MEDIUM TERM RISK (2-5 years) With the global population rising (at a rate of approximately 80 million people/year), greater affluence, changes in lifestyles and eating habits, and a trend toward shifting water use from agriculture to higher value urban and industrial uses, pressure on water resources will increase. Companies that develop efficiencies in their water use in manufacturing and particularly at the farm level will be better prepared to face increased water scarcity risks.
Main Risks / Opportunities	Raw material cost increases, operational disruptions from water scarcity

KEY TAKEAWAYS

- **Companies' programs are largely focused exclusively on water scarcity risks within their own manufacturing operations; however, some companies have started to address water risks along their supply chains (Imperial Tobacco, BAT)**
- **Water stress will impact tobacco companies mostly through higher raw material prices, and in some cases in the form of operational costs or manufacturing disruptions**

Less than 50% of companies have implemented water efficiency measures in their production processes and display evidence of using alternative water sources. Although roughly 55% of companies have water reduction targets, targets are

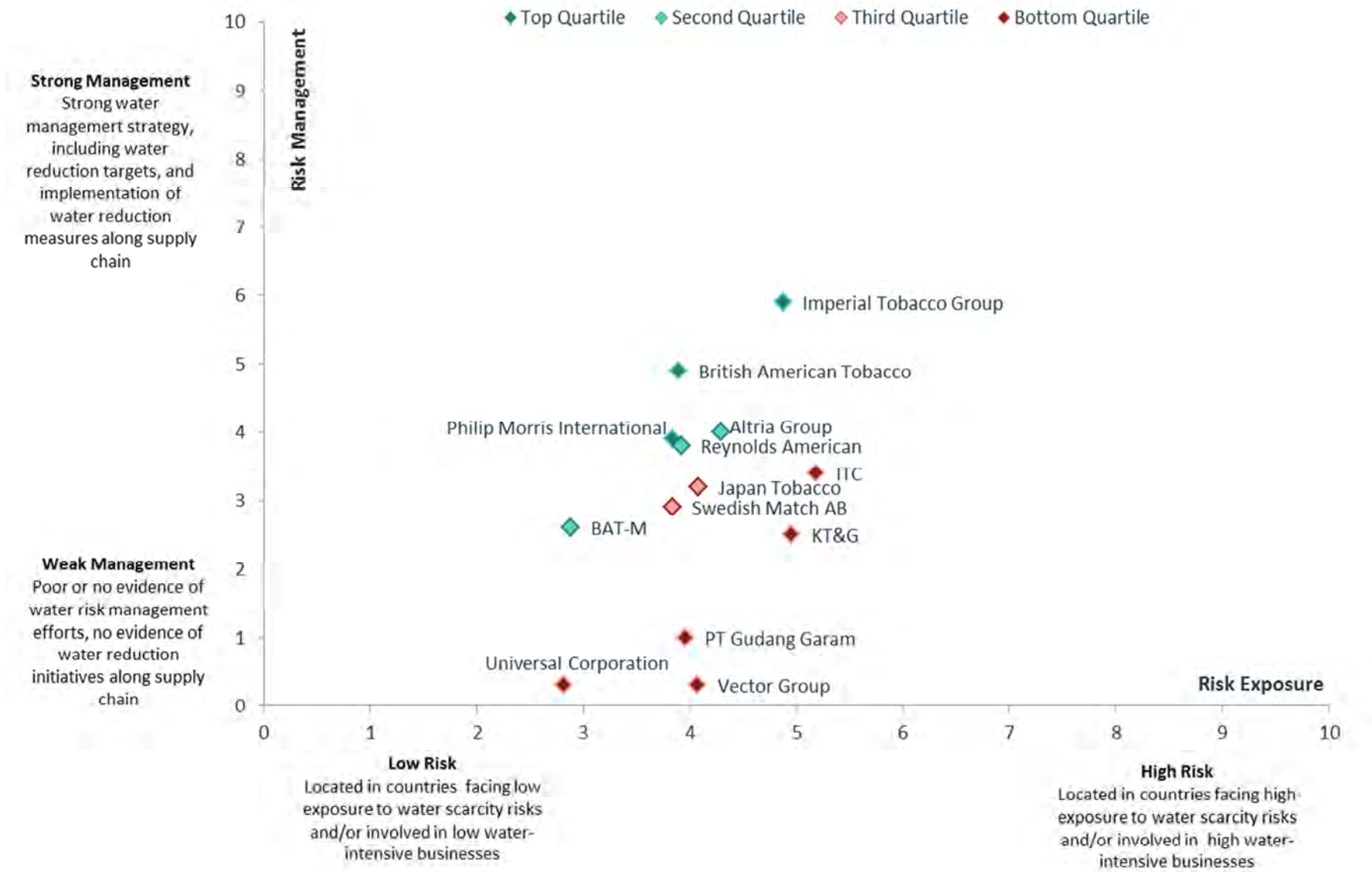
exclusively focused on companies' own operations (vs. along companies' supply chains at the tobacco growing level, where water scarcity risks are most acute).

Imperial Tobacco is the clear industry leader with regard to addressing water scarcity risks; on the opposite end of the spectrum, PT Gudang Garam fails to address water scarcity risks. Imperial Tobacco aims to reduce water use by 10% by 2020, with a baseline of 2009 by making improvements in waste water discharge systems, recycling air conditioning water, improving water metering, and using rainwater for sanitary facilities to reduce water consumption. Notably, Imperial Tobacco has also taken steps to identify water stress related risks along its supply chain; it reports that it has identified the majority of water-related impacts along its supply chain. BAT and PMI, which also perform above average compared to peers, have reported water reduction targets yet fail to address water consumption along their supply chains. PMI has various programs to achieve reductions in water use - installing water control valves, reducing equipment washing time, reusing manufacturing process water, revising irrigation procedures, and metering and building management systems. Importantly, BAT, however, states that it is conducting assessments related to its long-term water supply in high risk regions, which should position it to better mitigate potential water-related risks. Companies least well positioned to address water scarcity risks relate include PT Garam and ITC Ltd.

BEST PRACTICES Imperial Tobacco	Imperial Tobacco has outlined clear water reduction targets and programs for how it plans to achieve its targets. It has also begun to identify water-related risks along its supply chain (one of the few companies in the peer set to do so).
BIGGEST CONCERNS PT Gudang Garam	The company has not publicly articulated a strategy for achieving water reductions.

FIGURE 8 **Company Performance on Water Stress**

Description: Risk exposure is evaluated based on the water intensity of a company's business segments and the percentage of territory facing water stress in countries where a company has operations or sources its raw materials. Risk management along the y-axis combines an assessment of the strength of companies' mitigation strategies, the strength of reduction targets, and the company's water intensity and trend in its operations and supply chain, as well as controversies.



Chemical safety

KEY TAKEAWAYS

- **Reynolds American will face new chemical regulatory risks, driven by its acquisition of Lorillard due to its reliance on menthol-based products; the combined company owns over one-third tobacco market share in the US.**
- **Nearly 50% of companies including British American Tobacco, Reynolds American, Swedish Match, Imperial Tobacco, Japan Tobacco, and PMI have committed to integrate health standards into new products.**

<p>Industry's Contribution to Externality</p>	<p>MEDIUM IMPACT</p> <p>Tobacco companies operate under stringent regulatory scrutiny regarding the sale of tobacco products, which have been shown to cause diseases including various forms of cancer. Tobacco use is also a risk factor for some of the leading causes of death worldwide, including ischaemic heart disease, cerebrovascular disease, and lower respiratory infections. Tobacco smoke alone contains over 4,000 chemicals, at least 60 of which are known carcinogens. As a consequence, companies face constant risk of consumer and government lawsuits seeking compensation not only for the negative impacts of their products on human health but also for the resulting economic burdens placed on healthcare systems.</p>
<p>Time Horizon of Risk / Opportunities Resulting from Externality</p>	<p>MEDIUM TERM RISK (2-5 years)</p> <p>As the WHO's Framework Convention on Tobacco Control gains momentum globally as a tool to increase tobacco control in both developed and developing countries, companies are facing increasingly stringent regulatory environments. Articles 9 and 10 of the Treaty call for regulating the content of tobacco products and tobacco product disclosures. In the EU, the European Parliament recently voted to ban flavored tobacco (vanilla, fruit, and menthol). An emerging regulatory risk that investors will need to monitor is companies' ability to continue to use certain additives in their products, and risks of reformulation costs if specific ingredients are banned. The WHO has reported that flavored cigarettes encourage people to smoke more and develop tobacco-related diseases, such as cancers, cardiovascular disease, and chronic lung disease.</p>
<p>Main Risks / Opportunities</p>	<p>regulatory risks; potential reformulation costs; lawsuits</p>

With cigarette smoke containing over 4,000 hazardous chemicals and more than 43 cancer-causing agents, companies **could face reformulation risks should specific chemicals and additives (e.g., humectants, sugars and flavorings) be banned**. Menthol flavoring in particular has faced increased scrutiny by the US FDA and the EU as an additive to cigarettes because the associated mint-flavored and cooling sensation reduces the harshness of tobacco smoke and is therefore often cited as a popular option for those first beginning to smoke. Menthol flavored cigarettes have also been widely criticized for their disproportionate use by ethnic minorities, youth, and people of lower socio-economic status. Menthol cigarettes will begin to be phased out in the EU beginning in 2020 as part of the Tobacco Products Directive 2014. Although menthol has not been banned to date on a US federal level, some local governments in the US have already taken steps to curtail consumer exposure to menthol-based cigarettes (e.g. Chicago, Illinois and Berkeley, California), particularly around schools.

Reynolds American's merger with US competitor Lorillard, initially announced in July 2014 for USD 27.4 billion, introduced new chemical regulatory risks for the company, as former Lorillard faced substantial regulatory pressure from the sale of menthol cigarettes (via its key Newport brand). **The combined company will be more impacted than peers should bans on flavor additives in the US be expanded to include menthol.**

With the growing demand for e-cigarettes and as yet uncertain regulatory landscape, many companies have shifted to incorporate 'healthier' products such as e-cigarettes into their portfolios. Most companies have introduced or have already launched e-cigarettes as part of their product offerings, including **Reynolds American** (Vuse), **Altria** (MarkTen), and **Imperial Tobacco** (Puritane); however, for conventional tobacco companies, a shift from conventional cigarettes to new technologies including e-cigarettes represents a radical shift in business models. 'Vaping', the process of inhaling nicotine-infused vapor produced by heating, rather than burning, of tobacco, has been viewed by some as less harmful to health than traditional cigarettes. However, e-cigarettes are still subject to flavoring bans and other additive bans due to the presence of known carcinogens, toxins, and metal nanoparticles in e-cigarette vapor. As such, **any industry shifts to e-cigarettes will most likely not**

mitigate risks of potential reformulation costs if certain high risk additives or flavorings are banned.

We examine companies' R&D programs related to the elimination of certain additives from their products as well as companies' transparency with regard to the ingredients (additives, flavorings, filters, adhesives, hardening agents, and any genetically modified components that are smoked, inhaled, or chewed), as indicators of exposure to future lawsuits alleging hazardous ingredients to consumers and overall preparedness for regulatory changes. More companies are committing to incorporate health considerations into the design of new products since our last analysis, such as developing reduced toxicant cigarettes, or nicotine replacement alternatives. However, **no companies have set targeted, time-bound goals to phase out specific toxic additives or flavorings from their products.**

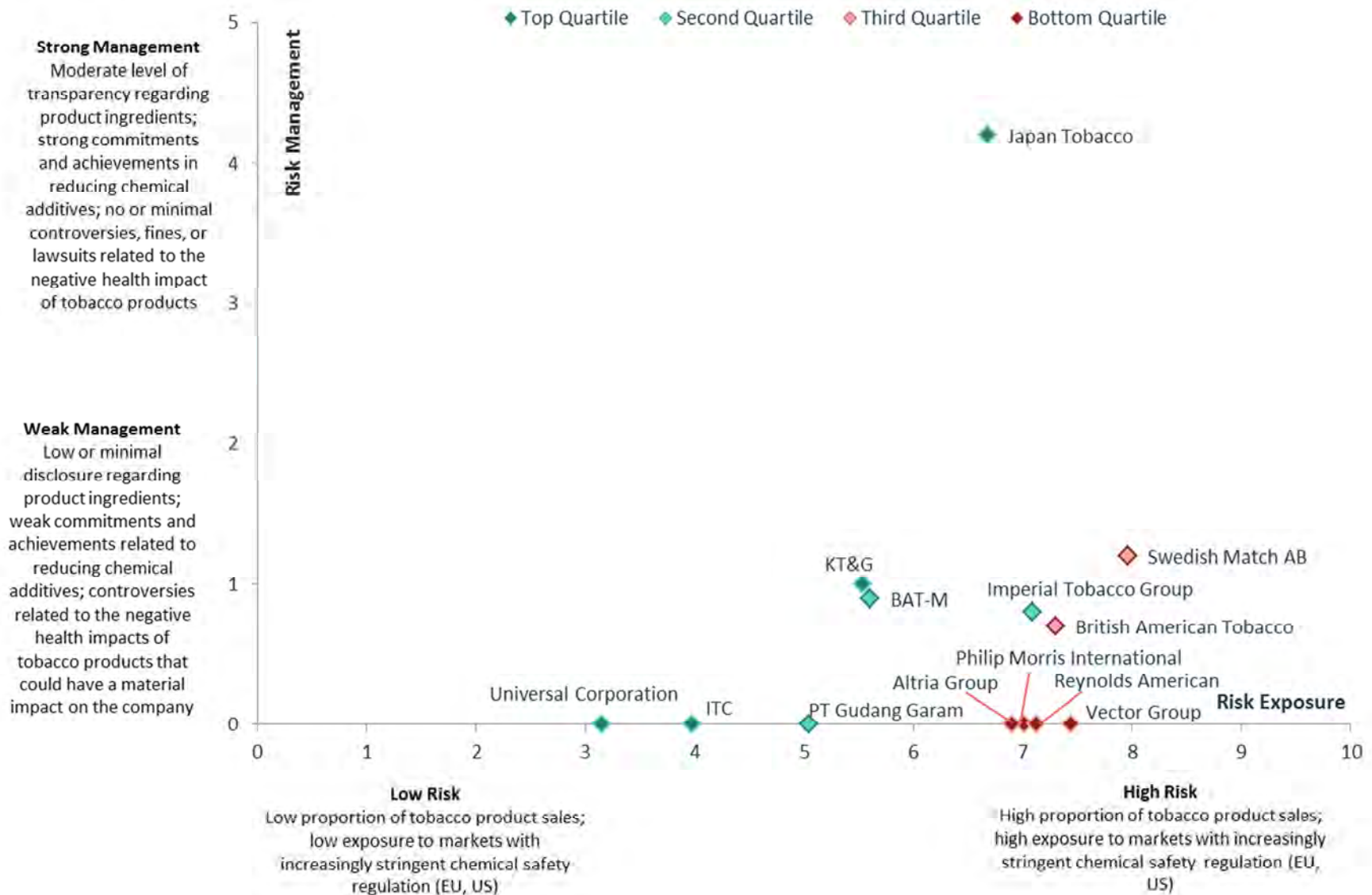
Nearly 50% of companies including **British American Tobacco, Reynolds American, Swedish Match, Imperial Tobacco, Japan Tobacco, and PMI** have committed to integrate health standards into new products. The establishment of R&D programs to develop 'healthier' tobacco product alternatives could create a competitive edge for these companies. **BAT** commits to explore the development of products that are allegedly less hazardous to health (substitute nicotine products), and recognized as such by consumers and regulatory agencies. To this end, in 2014 Nicoventures launched its first cigarette alternative device, Voke, which was approved

by UK regulatory authorities as a licensed medical device. Voke (based on asthma inhaler technology) delivers a nicotine formulation via a cigarette-sized medical device that requires no electronics, heat, or combustion. Alternative products such as these reduced toxicant cigarettes and other low toxicant smokeless options could create a competitive advantage for companies. Companies continue to lack full and comprehensive disclosure of product formulations beyond aggregate ingredient lists. **British American Tobacco** has among the highest (de-aggregated) level of disclosure compared to peers, e.g., disclosing additives by brand, product type, and variant.

<p>BEST PRACTICES BAT</p>	<p>BAT commits to incorporate less harmful substances in its product design. BAT has a relatively high level of transparency regarding ingredients in its products relative to peers, including disclosure of ingredients for brands sold in over 170 countries. The company discloses a list of ingredients in its tobacco products, including tobacco-related ingredients, non-tobacco ingredients, and the function of the ingredient.</p>
<p>BIGGEST CONCERNS Vector Group</p>	<p>Vector Group does not disclose product ingredient information, and as such could be ill-prepared to respond to any potential shifts in regulation that could place restrictions on additives in cigarettes.</p>

FIGURE 9 **Company Performance on Chemical Safety**

Description: Risk exposure is evaluated based on the percent of operations in countries with pending or strengthening regulations and in product segments with high intensity of chemical use. Risk management along the y-axis includes assessment of companies' level of transparency on product ingredients, commitment and performance in reducing the use of certain additives, and controversies related to the negative health impacts of tobacco products.



Corporate Governance

KEY TAKEAWAYS

Strong performers with respect to overall corporate governance practices include Imperial Tobacco and Swedish Match; Swedish Match in particular stands out, with Best in class performance with respect to both Pay and Ownership structures. On the other hand, poor performers include Vector Group, Reynolds American, and Japan Tobacco.

average compared to global peers) with respect to pay – including KT&G, PT Gudang Garam, Philip Morris International, and Vector Group.

Most corporate governance concerns in the Tobacco industry (compared to global peers) relate to Accounting practices. More than 15% of companies are considered worst in class compared to home market peers with regard to accounting (Japan Tobacco and Reynolds American). Vector Group is considered worst in class with regard to its board structures, and several companies perform poorly (below

FIGURE 10 **Companies' Governance Performance Relative to Global Peers**

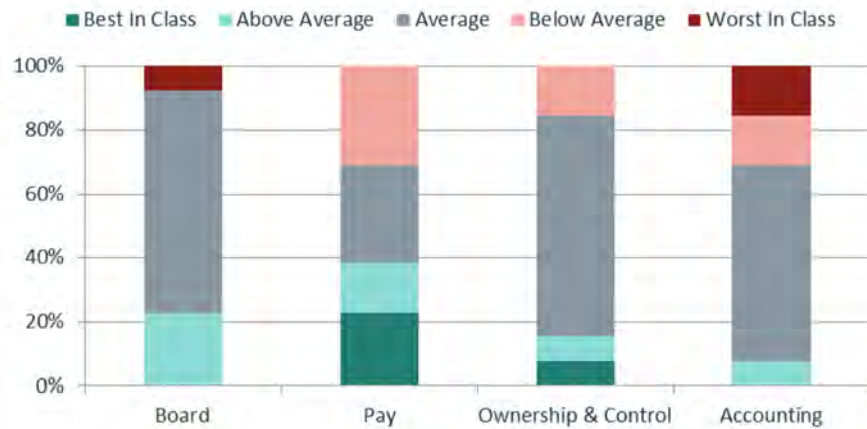




FIGURE 11 Key Data on Performance on Corporate Governance

Company	Corporate Governance Assessment								Controversies – Governance Structures	Corporate Governance Score
	Board Performance		Pay Performance		Ownership & Control Performance		Accounting Performance			
	vs. Home Market Peers	vs. Global Peers	vs. Home Market Peers	vs. Global Peers	vs. Home Market Peers	vs. Global Peers	vs. Home Market Peers	vs. Global Peers		
IMPERIAL TOBACCO GROUP PLC	Above Average	Above Average	Average	Best In Class	Average	Average	Average	Average	Green	8.7
Swedish Match AB	Above Average	Above Average	Best In Class	Best In Class	Average	Average	Average	Average	Green	8.3
BRITISH AMERICAN TOBACCO (MALAYSIA) BERHAD	Average	Average	Above Average	Above Average	Average	Average	Above Average	Above Average	Green	7.7
ITC LIMITED	Average	Average	Above Average	Above Average	Above Average	Above Average	Average	Average	Green	7.3
UNIVERSAL CORPORATION	Above Average	Above Average	Average	Average	Average	Average	Average	Average	Green	6.4
BRITISH AMERICAN TOBACCO P.L.C.	Average	Average	Average	Best In Class	Average	Average	Below Average	Below Average	Green	6.2
Altria Group, Inc.	Average	Average	Above Average	Average	Average	Average	Average	Average	Green	5.9
KT&G Corporation	Above Average	Average	Average	Below Average	Average	Average	Below Average	Below Average	Green	5.5
PT Gudang Garam Tbk	Average	Average	Average	Below Average	Below Average	Below Average	Average	Average	Green	4.3
Philip Morris International Inc.	Average	Average	Below Average	Below Average	Average	Average	Average	Average	Green	4.3
JAPAN TOBACCO INC.	Above Average	Average	Above Average	Average	Best In Class	Best In Class	Worst In Class	Worst In Class	Green	3.9
REYNOLDS AMERICAN INC.	Average	Average	Average	Average	Average	Below Average	Worst In Class	Worst In Class	Green	3.8
VECTOR GROUP LTD.	Worst In Class	Worst In Class	Below Average	Below Average	Best In Class	Average	Average	Average	Green	2.3

Appendix A: Analytical Set

The Tobacco industry peer set is comprised of the following:

		Country	Rating		
Tobacco			2014	2015	
PM	Philip Morris International Inc.	US	CCC	B	Upgrade
BATS	BRITISH AMERICAN TOBACCO P.L.C.	GB	BBB	BBB	Maintain
MO	Altria Group, Inc.	US	BB	BBB	Upgrade
2914	JAPAN TOBACCO INC.	JP	B	BB	Upgrade
ITC	ITC LIMITED	IN	BBB	A	Upgrade
IMT	IMPERIAL TOBACCO GROUP PLC	GB	BB	BBB	Upgrade
RAI	REYNOLDS AMERICAN INC.	US	BB	BB	Maintain
SWMA	Swedish Match AB	SE	A	A	Maintain
033780	KT&G Corporation	KR	A	BB	Downgrade
GGRM	PT Gudang Garam Tbk	ID	CCC	CCC	Maintain
BAT	BRITISH AMERICAN TOBACCO (MALAYSIA) BERHAD	MY	AA	AA	Maintain
VGR	VECTOR GROUP LTD.	US	B	BB	Upgrade
UVV	UNIVERSAL CORPORATION	US	BBB	BBB	Maintain

Appendix B: Key Issue Selection and Weight

To select Key ESG Issues for each industry and determine weights, we combine (1) the level of contribution of the industry to a given environmental or social externality and (2) the expected time frame for risks/opportunities to materialize. For more details on the methodology, see Methodology Document for further details.

	Tobacco			Tobacco*		
Short Term (<2 years)			Product Safety & Quality/responsible marketing (21%)			Product Safety & Quality/responsible marketing (20%)
Medium Term (2-5 years)		Water Stress (14%) Chemical Safety (14%)	Biodiversity & Land Use (18%) Supply Chain Labor Standards (18%)		Water Stress (13%) Chemical Safety (13%)	Biodiversity & Land Use (17%) Supply Chain Labor Standards (17%)
Long Term (>5 years)			Corporate Governance (15%)	Business Ethics & Fraud (7%)		Corporate Governance (13%)
	Low Contribution to Externality	Moderate Contribution to Externality	High Contribution to Externality	Low Contribution to Externality	Moderate Contribution to Externality	High Contribution to Externality

** For companies with notable controversies, Business Ethics & Fraud was added as a key issue, reducing the weight on the remaining issues*

Company-Specific Key Issues

A few of companies in the Tobacco Industry were analyzed using company specific key issues (i.e., Business Ethics & Fraud). The criteria for identifying company specific issues include significant level of involvement in business lines specific for these companies (at least 20% of revenue) or notable controversies around specific corporate practices (red flags).

Appendix C: Scoring Methodology

In summary, 100% of the assessment was based on the following key issues and indicators:

Key Issue	Risk Exposure Indicators	Risk Management Indicators
Water Stress	<ul style="list-style-type: none"> » Percent of operations in business segments with high water intensity <i>source: IERS' Comprehensive Environmental Data Archive (CEDA) data</i> » Percent of operations in countries with high % of territory affected by oversubscription of water resources <i>Source: University of New Hampshire's Water Systems Analysis Group</i> 	<ul style="list-style-type: none"> » Water efficiency targets and processes » % of alternative water used (grey water, rain water, etc.) » Water recycling / recirculation rate » Reported water efficiency performance <i>Source: company disclosure, NGO reports, news searches</i>
Chemical Safety	<ul style="list-style-type: none"> » Percent of operations in countries with pending or strengthening regulations <i>source: MSCI ESG Research</i> » Percent of operations in product segments with high intensity of chemical use <i>source: ChemSec SIN List and MSCI ESG Research</i> 	<ul style="list-style-type: none"> » Ingredient (additive) identification and screening strategy » Additive substances phase-out strategy » Product labelling and formulation transparency » Chemical safety controversies <i>source: company disclosure, NGO reports, news searches</i>
Product Safety and Quality	<ul style="list-style-type: none"> » Volume of products (using total sales as proxy) <i>Source: Company disclosure</i> » Companies' level of exposure to product quality issues according to business segments defined by Standard Industrial Classification (SIC) codes. <i>Source: MSCI ESG Research</i> 	<ul style="list-style-type: none"> » Existence of marketing policy, including prohibiting of marketing to youth » Existence of training programs » Audit or other control procedures to ensure compliance with marketing policy » Transparency on non-compliance <i>source: company disclosure</i>
Supply Chain Labor Standards	<ul style="list-style-type: none"> » Percent of raw materials sourced from non-OECD countries <i>Source: company disclosure, MSCI ESG Research estimates</i> » Brand visibility <i>Source: third party consumer rankings</i> » 3-year average revenues (in USD) <i>Source: company disclosure</i> 	<ul style="list-style-type: none"> » Strength of companies internal policies and codes of conduct, based on ILO standards » Compliance verification programs, including internal and external audits » Public disclosure of audit findings and remediation actions taken » Supply chain controversies <i>source: company disclosure, NGO reports, news searches</i>
Biodiversity and Land Use	<ul style="list-style-type: none"> » Percent of operations or raw materials (estimated or reported) sourced from countries facing high biodiversity risks <i>Source: % of territory in threatened ecoregions (Nature Conservancy and WWF); estimates of country richness and endemism in four terrestrial vertebrate classes and vascular plants (Convention on Biodiversity 2005); Composite index of relative biodiversity potential for each country (2008 World Bank WDI)</i> 	<ul style="list-style-type: none"> » Biodiversity and land use policy, scope of policy » Standards and verification processes related to biodiversity standards » Programs to minimize disturbance to land, address disturbed areas, or protect natural ecosystems » Recent biodiversity or land use controversies and company responses <i>source: company disclosure, NGO reports, news searches</i>


**Corporate
Governance**

» We do not measure exposure on this key issue;

» Board Pillar: Metrics that indicate independence of the board of directors and key board committees from company management, individual director qualifications;
 » Pay Pillar: Metrics that evaluate alignment of CEO and other executive pay practices with shareholder interests, including: pay figures where disclosed, sign-on and severance provisions, performance goals;
 » Ownership and Control Pillar: Metrics that highlight concerns regarding company ownership structure, such as controlling shareholders, dual class structure, takeover defenses, restrictions on shareholder action;
 » Accounting Pillar: Metrics that evaluate corporate transparency and reliability of reported financials Auditor, audit results, audit score, audit grade;
 » Controversies and corporate events.

Source: company disclosure, news searches



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Steven J. Foresti
Chief Investment Officer, Wilshire Consulting

November 23, 2016

Mr. Henry Jones
Chairman of the Investment Committee
California Public Employees' Retirement System
400 P Street, Suite 3492
Sacramento, CA 95814

Re: Tobacco Divestment Analysis

Dear Mr. Jones:

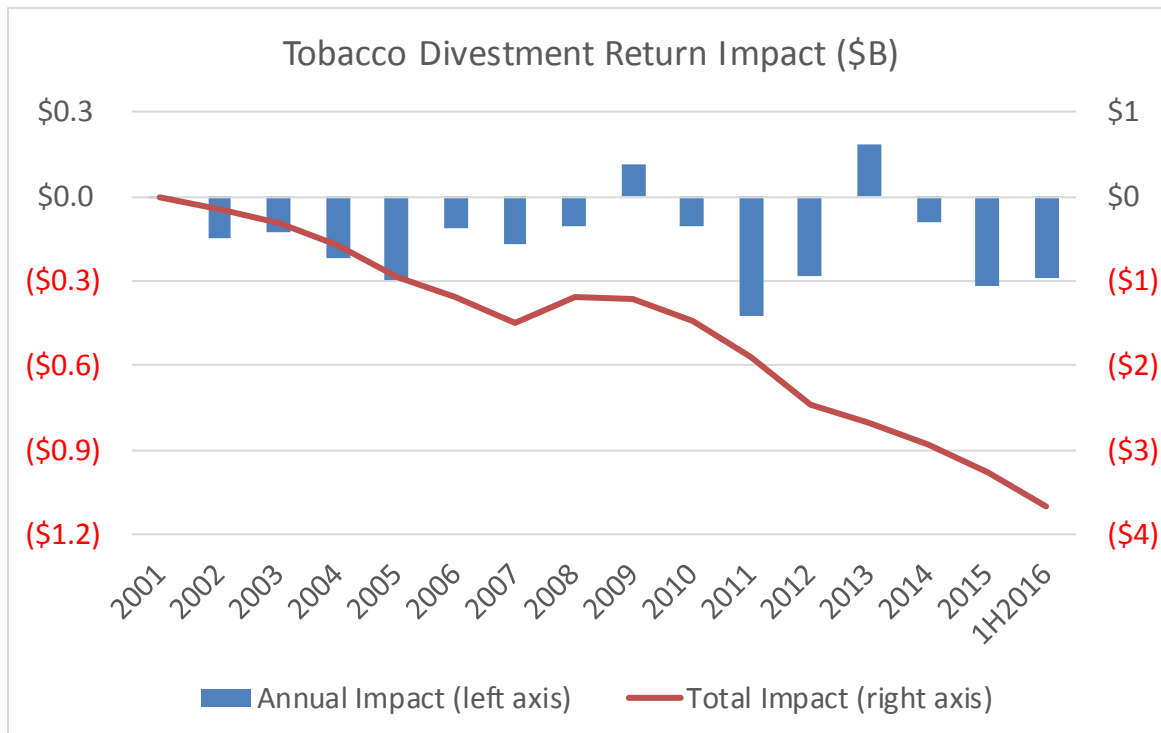
You requested Wilshire's updated comprehensive analysis of the impact of tobacco divestment activities within the CalPERS Global Equity portfolio. Our analysis, which is summarized below, provides calculations of the historical impact and potential future impact of the divestment of tobacco-related securities as of June 30, 2016. This report does not pass judgment or comment on the political, social, health, or moral merits of these divestment activities, but simply calculates or estimates their gain or loss to the CalPERS investment portfolio.

Summary of Findings

The following table summarizes Wilshire's estimates of the transaction cost and return impacts from tobacco divestments. The present value figures below have been calculated to show the estimated impact on the total fund through June 2016, whereby prior period gains and losses are carried forward at the PERF's total return. The percent (%) impacts express these present value dollar amounts against the PERF's June 2016 market value of \$295.1 billion. The appendix includes an annual display of these present value estimates along with annual inflation-adjusted (CPI) estimates of the historical return impacts.

	Impact of Tobacco Divestment			
	Raw Value		Present Value	
	\$MM	% PERF	\$MM	% PERF
Transaction Costs	(\$1)	0.0%	(\$3)	0.0%
Return Impact	(\$2,385)	-0.8%	(\$3,677)	-1.2%
Total	(\$2,386)	-0.8%	(\$3,681)	-1.2%

Below, we chart the annual return impacts (columns) along with the present value of these impacts through time. The return impact has been negative in 14 out of 16 years with a maximum estimated annual gain of \$183 million in 2013 and a maximum estimated annual loss of -\$423 million in 2011.



On a forward-looking basis, we have also estimated the probable impact of a tobacco-free portfolio relative to an all-inclusive portfolio by calculating an expected tracking error, or variance in return between the exclusionary portfolio and a market portfolio. Please note that in any given period, this tracking error is equally likely to generate outperformance as underperformance.

Using index data as of June 30, 2016, Wilshire calculated the estimated tracking error (excess risk) that would occur from excluding prohibited tobacco securities. All calculations were performed using Wilshire’s Atlas GR6 global risk model, a software system that is generally recognized as an industry-leading risk system.

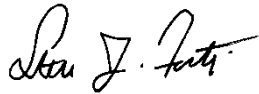
We calculated that the prohibited 22 tobacco-related companies comprise 1.45% of the benchmark (\$4.3 billion of a \$153.1 billion global equity portfolio). The projected annual tracking error of the constrained index compared to the unconstrained index is 0.168%. On a

base of \$153.1 billion, the risk to the portfolio is expected to lead to a performance discrepancy greater than:

- +/- \$329.6 million 1 out of every 5 years (1.282 standard deviations)
- +/- \$423.0 million 1 out of every 10 years (1.645 standard deviations)
- +/- \$504.0 million 1 out of every 20 years (1.960 standard deviations)

Please do not hesitate to contact us should you require anything further or have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Sean J. Felti". The signature is written in a cursive style with a horizontal line at the end.

Appendix: Annual Tobacco Divestment Return Impacts

Year	Annual Impact (\$MM)	Cumulative Impact of Tobacco Exclusion			
		Total Fund (PV)		CPI (PV)	
		Return	\$ MM	Rate	\$MM
2001	(\$9)	-6.12%	(\$14)	1.55%	(\$9)
2002	(\$144)	-9.55%	(\$151)	2.38%	(\$154)
2003	(\$125)	23.23%	(\$311)	1.88%	(\$283)
2004	(\$218)	13.21%	(\$575)	3.26%	(\$510)
2005	(\$294)	10.41%	(\$947)	3.42%	(\$823)
2006	(\$110)	15.41%	(\$1,200)	2.54%	(\$951)
2007	(\$172)	9.99%	(\$1,498)	4.08%	(\$1,164)
2008	(\$102)	-27.12%	(\$1,187)	0.09%	(\$1,266)
2009	\$117	11.89%	(\$1,206)	2.72%	(\$1,184)
2010	(\$103)	12.45%	(\$1,462)	1.50%	(\$1,305)
2011	(\$423)	1.16%	(\$1,903)	2.96%	(\$1,767)
2012	(\$284)	13.28%	(\$2,466)	1.74%	(\$2,083)
2013	\$183	16.22%	(\$2,679)	1.50%	(\$1,932)
2014	(\$88)	6.51%	(\$2,941)	0.76%	(\$2,033)
2015	(\$321)	-0.09%	(\$3,264)	0.73%	(\$2,367)
1H2016	(\$290)	3.68%	(\$3,677)	1.91%	(\$2,704)

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SANTA BARBARA • SANTA CRUZ

STANTON A. GLANTZ, PhD
 Professor of Medicine (Cardiology)
 Truth Initiative Distinguished Professor of Tobacco Control
 Director, Center for Tobacco Control Research and Education

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 glantz@medicine.ucsf.edu

September 30, 2016

Mr. Henry Jones
 Chair, Investment Committee
 CalPERS
 400 Q Street
 Sacramento, CA 95811

Dear Mr. Jones,

Thank you for the opportunity to provide information to CalPERS as part of its deliberations on whether or not to reinvest in the tobacco industry. Reinvesting in tobacco stock will be a poor long term financial choice considering the global moves towards cigarette and e-cigarette regulation. Doing so would also undermine California's longstanding tobacco control program, increasing the amount of disease and death in California. It is also at odds with CalPERS' stated investment philosophy, which is "*committed to enhanced transparency, accountability, and the highest ethical standards*", and to ensure that member benefits are "*as enduring as the state they maintain.*"¹

The tobacco industry is in long term decline

While the tobacco industry has been able to maintain cash flow and profitability despite declining cigarette consumption in recent years by raising prices and expanding markets outside the United States, this situation appears to be coming to an end.

Domestically the cigarette companies have been able to take advantage of the fact that they are selling a highly addictive product by raising prices to maintain profits in the face of declining consumption. There are, however, limits to the efficacy of this strategy. The assumption that there is a "hard core" of smokers who will not or cannot quit is incorrect: in both the United States and Europe, as smoking prevalence has declined, the remaining smokers are smoking fewer cigarettes and making more quit attempts.² Continuing to push up prices will accelerate this process.

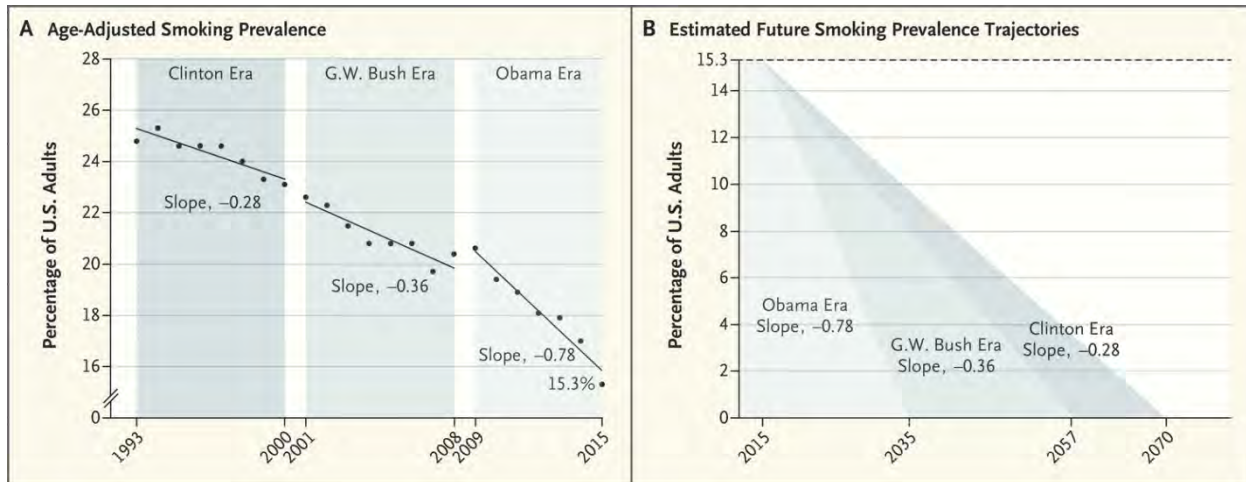
The US Surgeon General has described a series of feasible steps for eliminating tobacco use in the USA.³

¹ CalPERS. Organization. 2016. <https://www.calpers.ca.gov/page/about/organization>

² Kulik MC, Glantz SA. The smoking population in the USA and EU is softening not hardening. Tob Control. 2016 Jul;25(4):470-5. doi: 10.1136/tobaccocontrol-2015-052329. Epub 2015 Jun 24. <https://www.ncbi.nlm.nih.gov/pubmed/26108654>.

³ The health consequences of smoking – 50 years of progress: a report of the Surgeon General. Rockville, MD 2014.

During the Obama administration, smoking prevalence has been dropping more than twice as fast as before, by approx. 0.78 percentage points per year (graphs below).⁴ At this rate, it is projected that smoking rates in the USA will be down to zero by 2035. (Both major presidential candidates have expressed strong anti-tobacco positions in the past.) It is also possible that sooner than that smoking prevalence may reach a point where the behavior becomes so rare and socially unacceptable that the behavior will simply collapse.



The international market is also shrinking. One hundred eighty nations have ratified the World Health Organization Framework Convention on Tobacco Control (FCTC), which legally obligates parties to implement laws to reduce tobacco consumption.⁵ Much of the pressure for the FCTC came from the low- and middle-income countries that the tobacco companies have long targeted to compensate for declining consumption in the US and other richer countries. Despite vigorous opposition from the multinational tobacco companies, the treaty ratification has been followed by more implementation of smokefree laws,⁶ strong graphic health warnings,⁷ advertising bans,⁸ and tax increases.⁹

New Zealand, Finland, Scotland and Ireland have all set official targets for a smoking prevalence of 5% or less within the next 10-25 years. As noted above, there is a possibility that the behavior will simply collapse at or even above such a low prevalence. The WHO European Region, which covers 53 countries spanning from the former Soviet Union to Western Europe, has adopted

⁴ Fiore MC. Tobacco control in the Obama era – substantial progress, remaining challenges. *New Engl J Med*. 2016 <http://www.nejm.org/doi/full/10.1056/NEJMp1607850#t=article>

⁵ World Health Organization. Framework Convention on Tobacco Control. <http://who.int/fctc/en/>

⁶ Uang R, Hiilamo H, Glantz SA. Accelerated Adoption of Smoke-Free Laws After Ratification of the World Health Organization Framework Convention on Tobacco Control. *Am J Public Health*. 2016 Jan;106(1):166-71. doi: 10.2105/AJPH.2015.302872. Epub 2015 Nov 12. <https://www.ncbi.nlm.nih.gov/pubmed/26562125>

⁷ Sanders-Jackson AN1, Song AV, Hiilamo H, Glantz SA. Effect of the Framework Convention on Tobacco Control and voluntary industry health warning labels on passage of mandated cigarette warning labels from 1965 to 2012: transition probability and event history analyses. *Am J Public Health*. 2013 Nov;103(11):2041-7. doi: 10.2105/AJPH.2013.301324. Epub 2013 Sep 12. <https://www.ncbi.nlm.nih.gov/pubmed/24028248>

⁸ Hiilamo H, Glantz S. FCTC followed by accelerated implementation of tobacco advertising bans. *Tob Control*. 2016 Jul 28. pii: tobaccocontrol-2016-053007. doi: 10.1136/tobaccocontrol-2016-053007. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/27471111>

⁹ Hiilamo H, Glantz S. FCTC followed by tax increases, but implementation remains incomplete. (manuscript in peer review)

a Roadmap of Actions to make tobacco use a thing of the past in the entire Region,¹⁰ while the WHO Pacific Region aims to push smoking prevalence below 5% by 2025.¹¹

These targets are feasible and the policies are working. Global cigarette consumption, after steadily increasing for decades, is now declining. Globally, the volume of world cigarette sales stopped growing in 2008 and started dropping in 2012, rolling back below 2006 levels in 2015.¹²

If we exclude the Chinese market (which remains largely out of the reach of transnational tobacco companies that are available as CalPERS investments), the drop in global cigarette sales is even sharper: from 3,635 billion sticks (2007) to 3,067 billion sticks (2015). It is forecast to drop further, to 2,901 billion sticks in 2020 (graphs below).¹³



Tobacco companies may argue that their business is profitable and in line with public health goals due to their diversification into the e-cigarette market. However, strict regulations on e-cigarettes are fast becoming the norm (led by California). E-cigarettes are already strictly regulated in a number of countries, and further regulations are under review elsewhere.¹⁴

The tobacco industry undermines the health and infrastructure of California

CalPERS states that: *“To support our members, we also invest in the health and infrastructure of the Golden State itself ... funding enterprises that directly influence and stimulate our state economy.”*¹⁵

¹⁰ WHO Regional Office for Europe. Making tobacco a thing of the past: Roadmap of actions to strengthen implementation of the WHO Framework Convention on Tobacco Control in the European Region 2010-2025. 2015. <http://www.euro.who.int/en/health-topics/disease-prevention/tobacco/publications/2015/making-tobacco-a-thing-of-the-past-roadmap-of-actions-to-strengthen-implementation-of-the-who-framework-convention-on-tobacco-control-in-the-european-region-2010-2025-2015>

¹¹ WHO Western Pacific Region. Tobacco Free Pacific 2025. 2016. http://www.wpro.who.int/southpacific/programmes/healthy_communities/tobacco/page/en/

¹² Euromonitor data quoted by Matthew Myers, Campaign for Tobacco Free Kids.

¹³ Euromonitor data quoted by Matthew Myers, Campaign for Tobacco Free Kids.

¹⁴ Conference of the Parties to the WHO Framework Convention on Tobacco Control, 7th Session (2016) *Electronic Nicotine Delivery Systems and Electronic Non-Nicotine Delivery Systems (ENDS/ENNDs)*. World Health Organization, Delhi.

¹⁵ CalPERS. CalPERS story. 2016. <https://www.calpers.ca.gov/page/about/organization/calpers-story>

Investing in tobacco stocks is not a sound economic decision, not only because of the continual decline in the tobacco business but also because of the detrimental impacts that tobacco use has on the state economy. To invest in a tobacco business is to invest in a business which kills 40,000 Californians each year, with associated annual costs of over \$27 billion in California as a result of increased healthcare expenditures (including the costs of insuring CalPERS members as well as state MediCal costs) as well as loss of productivity.¹⁶ This kind of investment has obvious negative impacts on the Californian state economy, in clear conflict with CalPERS' mission to fund "enterprises that directly influence and stimulate our state economy."

Quite the contrary, because most money spent on tobacco products leaves the state, reductions in tobacco use will actually stimulate the economy because that money will be spent in the state.¹⁷ Eighty cents of every dollar spent on cigarettes leaves California to tobacco companies (and a few farmers) back East. When people quit smoking, they don't burn the money, they spend it. And because less leaves the state, more of their money gets recycled in California, where it creates local economic activity and jobs. The billion dollars a year that would have not been spent on tobacco had the 2012 tax passed would have led to \$1.9 billion in economic activity and 12,000 new jobs.

As outlined in the Master Plan for the California Tobacco Control Program,¹⁸ denormalizing the tobacco industry has been a crucial element of California's successful tobacco control program since voters created it in 1988 by passing Proposition 99.

Industry denormalization is key to reducing smoking prevalence among young people,¹⁹ and key to maintaining a healthy economy in California. Indeed, the fact that California's smoking rate is below the national average was associated with it spending \$15.3 billion less on medical costs in 2009 alone.²⁰ Before 1998, the program was associated with a long-run price elasticity of demand of 0.3-0.7.²¹ Between fiscal year 1989 and 2008, the California Tobacco Program led to cumulative savings in medical costs expenditure of \$134 billion (approx. \$7 billion/yr),²² including money saved for CalPERS. California's program resulted in financial savings far higher than Arizona's tobacco control program (just over \$2 billion between 1996 and 2004, or approx. \$ 0.3 billion/yr), largely because Arizona's program did not focus on denormalizing the tobacco industry.²³

¹⁶ Campaign for Tobacco-Free Kids. The toll of tobacco in California. 2016.

https://www.tobaccofreekids.org/facts_issues/toll_us/california

¹⁷ Glantz S. Economic Impact of the California Cancer Research Act Job Creation and Economic Activity. University of California eScholarship. 2012. <http://escholarship.org/uc/item/73g8m5j5>

¹⁸ State of California Tobacco Education and Research Oversight Committee. *Changing Landscape, Countering New Threats 2015 -2017*. 2015

http://www.cdph.ca.gov/programs/tobacco/Documents/TEROC/Master%20Plan/MasterPlan_15-17.pdf

¹⁹ Ling PM et al. The effect of support for action against the tobacco industry on smoking among young adults. *Am J Pub Health* 2007; 97(8): 1449-1456. <http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2006.098806>. Ling PM et al. Young adult smoking behavior: a national survey. *Am J Prev Med* 2009; 36(5): 389-94.

<http://www.sciencedirect.com/science/article/pii/S0749379709000956>

²⁰ Lightwood J, Glantz SA Smoking behavior and healthcare expenditure in the United States, 1992-2009: panel data estimates. *PLoS Med* 2016; <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002020>

²¹ Lightwood JM, Dinno A, Glantz SA. Effect of the California tobacco control program on personal health care expenditures. *PLoS Medicine* 2008; <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0050178>

²² Lightwood J, Glantz SA. The effect of the California tobacco control program on smoking prevalence, cigarette consumption, and healthcare costs: 1989-2008. *PLoS One* 2013;

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0047145>

²³ Lightwood J, Glantz S. Effect of the Arizona tobacco control program on cigarette consumption and healthcare expenditures. *Social Science & Medicine* 2011; 72 (2): 166-172.

<http://www.sciencedirect.com/science/article/pii/S0277953610007999>

Indeed, tobacco industry denormalization has been key to the \$134 billion saved from tobacco control activities in California. A decision by CalPERS to reverse its current tobacco divestment policy would undermine this effort by sending a message that tobacco is a legitimate business in California, which would compromise “*the health and infrastructure of the Golden State.*”

Investing in tobacco stocks is not “about people”

CalPERS states that, “*CalPERS is about people. It is about the dedicated individuals who serve, or have served, the State of California...*”²⁴

To invest in tobacco stocks is to embrace interactions with an industry that kills 40,000 Californians per year and costs Californian households \$ 777 per year in state and federal tax burdens from smoking-related government expenditures.²⁵ It undermines the efforts of the California tobacco control program and the Californians who voted to support it. This move finds no justification as being ‘*about people*’, and does a gross disservice to those who have worked hard to improve the health and quality of life of the people in California.

Tobacco companies are not committed to transparency, accountability and ethical standards

CalPERS states that, “*CalPERS is committed to enhanced transparency, accountability, and the highest ethical standards.*”²⁶

It is puzzling, then, that CalPERS is so much as considering investing in companies that are responsible for the premature deaths of 6 million people globally each year and established racketeers under the federal *Racketeer Influenced and Corrupt Organizations Act*, still under the supervision of Federal Judge Gladys Kessler. The *Sacramento Bee* summed up the situation appropriately when it wrote:

In 2008, when the California State Teachers’ Retirement System contemplated reinvesting in tobacco, then-Treasurer Bill Lockyer issued a statement that summed up why it shouldn’t:

“In this country, the tobacco industry has a history of fraud and disregard for public health. That culture of deception has been exported to Europe, Asia and other parts of the globe, where the industry’s marketing targets children.”

Lockyer won then. His successor, Treasurer John Chiang, is taking the same stand, as is controller and fellow CalPERS board member Betty Yee.

“No public pension fund should associate itself with an industry that is a magnet for costly litigation, reputational disdain, and government regulators around the globe,” Chiang said in a statement. The rest of the CalPERS board ought to follow Chiang and Yee’s lead.²⁷

²⁴ CalPERS. CalPERS story. 2016. <https://www.calpers.ca.gov/page/about/organization/calpers-story>

²⁵ Campaign for Tobacco-Free Kids. The toll of tobacco in California. 2016. https://www.tobaccofreekids.org/facts_issues/toll_us/california

²⁶ CalPERS. Organization. 2016. <https://www.calpers.ca.gov/page/about/organization>

²⁷ Editorial Board. CalPERS should not take up the tobacco habit again. *Sacramento Bee*. April 6, 2016. Available at <http://www.sacbee.com/opinion/editorials/article70340952.html>

In addition to these obvious issues, CalPERS needs to carefully address possible undisclosed conflicts of interest for its investment advisors, Wilshire Associates, who have also worked for Philip Morris in the past, including helping them muster arguments against divestment in the late 1990s.²⁸ This is particularly concerning because tobacco companies have a history of using seemingly ‘independent’ investment advisors to provide testimony that supports industry interests to policy makers. We know, for instance, that tobacco companies have used Wall Street analysts as third parties to support the tobacco industry’s legislative agenda at both national and state levels in the USA, while these analysts present themselves as being ‘independent’ from tobacco companies.²⁹ To support an industry that regularly engages in such practices is far from CalPERS’ commitment to “*enhanced transparency, accountability, and the highest ethical standards.*”³⁰ At the very least, CalPERS needs to do a thorough investigation of conflicts of interest for Wilshire. It took me less than 5 minutes to find the two cited documents in the UCSF Truth Tobacco Documents Library (<http://industrydocuments.library.ucsf.edu/tobacco>).

CalPERS should conduct a comprehensive analysis of the impacts that investing in tobacco stocks would have on all of CalPERS’ responsibilities. This should focus, at the very least, on maintaining its core values and mission as an organization and properly evaluating the impacts this investment would have on the State of California and its people.

At a time that the Legislature has ended years of domination by tobacco interests³¹ and passed a package of five strong tobacco control bills, it is, frankly, astonishing, that CalPERS is even considering this retrograde policy.

Sincerely yours,



Stanton A. Glantz, PhD
Professor of Medicine
Truth Initiative Distinguished Professor in Tobacco Control
Director, Center for Tobacco Control Research and Education



Yvette Van Der Eijk, PhD
Postdoctoral Fellow

²⁸ <https://www.industrydocumentslibrary.ucsf.edu/tobacco/docs/#id=jnjn0071> and <https://www.industrydocumentslibrary.ucsf.edu/tobacco/docs/#id=mnjn0071>

²⁹ Alamar BC, Glantz SA. The tobacco industry's use of Wall Street analysts in shaping policy. *Tob Control* 2004; 13(3):223-7. <http://www.ncbi.nlm.nih.gov/pubmed/15333876>

³⁰ CalPERS. 2016. Organization. 2016. <https://www.calpers.ca.gov/page/about/organization>

³¹ Cox E, Barry R, Glantz S, Barnes RL (2014) *Tobacco Control in California, 2007-2014: A Resurgent Tobacco Industry While Inflation Erodes the California Tobacco Control Program*. UCSF Center for Tobacco Control Research and Education. <http://escholarship.org/uc/item/4jj1v7tv>

The Future of the Tobacco Industry

Stanton A. Glantz, PhD

Professor of Medicine

Director, Center for Tobacco Control Research and Education

Past performance is not a
guarantee of future returns

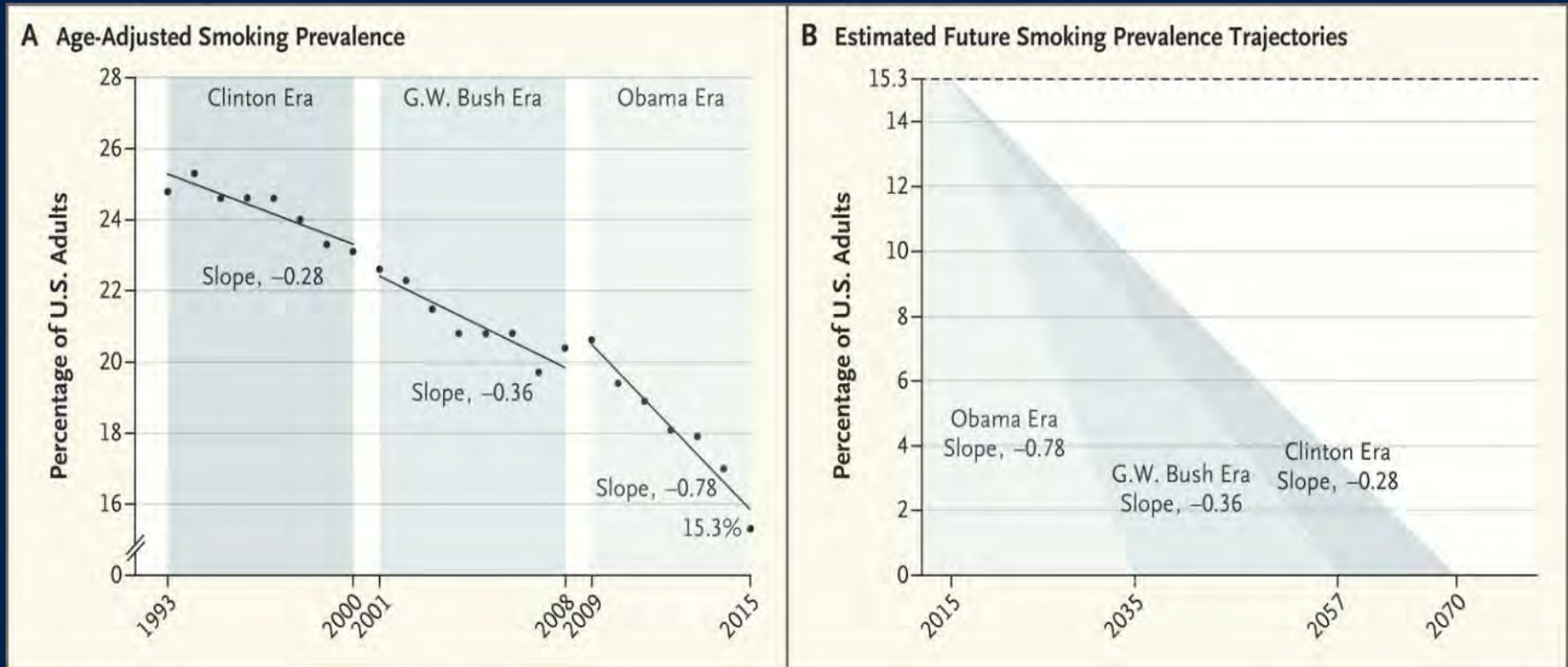
The tobacco industry has maintained profits

- Unethical behavior
 - Child labor
 - Environmental destruction
 - Political corruption
- Selling an addictive product
 - As consumption drops raise prices
 - But there are limits

Californians passed Proposition 56

- 63% yes
- Despite \$71 million campaign by Philip Morris, RJ Reynolds, and other tobacco interests
- Will cut cigarette sales by \$250 million a year
- Will quadruple California Tobacco Control Program
 - Industry denormalization is a key theme
- Will save \$1 billion a year in health costs
- California could be a smokefree society in 5 years
- Will set global example

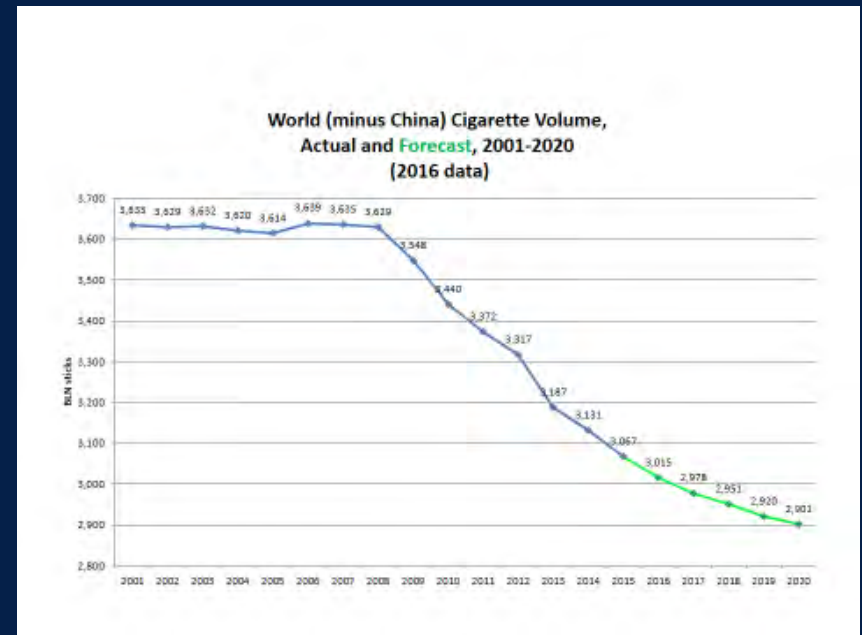
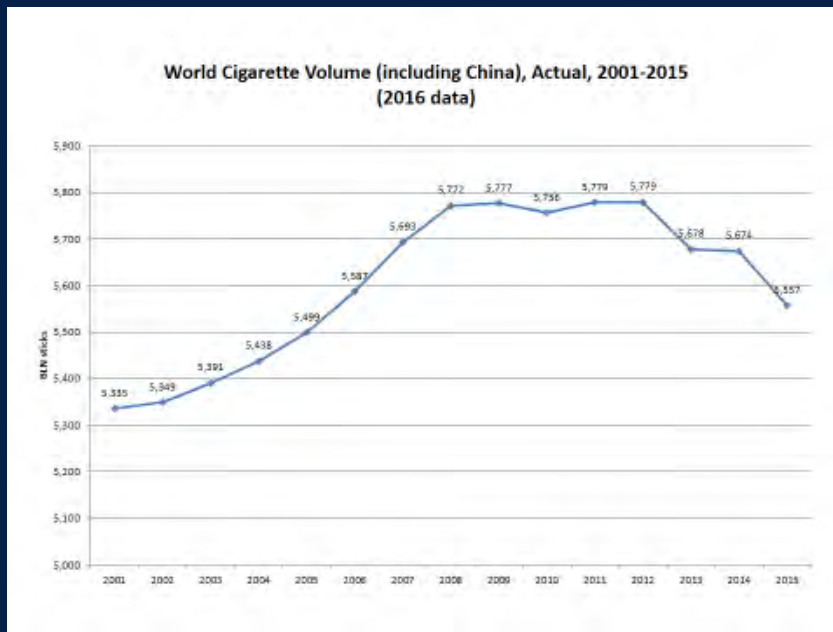
Tobacco sales falling in USA



Source: Fiore, *NEJM* 2016

And Globally

- WHO Framework Convention on Tobacco Control



Investors are noticing

■ October 2016

DJIA ▲ 18759.42 0.91% U.S. 10 Yr ▼ -15/32 Yield 2.118% Euro ▼ 1.0875 -0.33%

THE WALL STREET JOURNAL.

BUSINESS | EARNINGS

Philip Morris Earnings Flat as Cigarette Shipments Decline

International seller of Marlboro cigarettes hampered by antismoking rulings in Europe

By **JOSHUA JAMERSON**
Oct. 18, 2016 7:41 a.m. ET

Philip Morris International Inc. reported no earnings growth in the latest quarter as shipment volume declined in its geographic segments except Europe, where shipments increased slightly.

Philip Morris, which sells the leading Marlboro brand and others internationally, had seen its cigarette volumes grow and an improving

BUSINESS INSIDER MARKETS

The maker of Camel and Newport cigarettes is sinking after saying it expects to sell fewer cigarettes next year

Bob Bryan  
Oct. 19, 2016, 10:38 AM 🔥 1,007

 FACEBOOK  LINKEDIN  TWITTER  

Reynolds American, the parent company of cigarette brands such as Camel, Pall Mall, and Newport, is sinking in trading on Wednesday after the firm missed on earnings and announced its CEO is stepping down.



RESEARCH ARTICLE

Smoking Behavior and Healthcare Expenditure in the United States, 1992–2009: Panel Data Estimates

James Lightwood^{1,2}, Stanton A. Glantz^{2,3,4*}

1 School of Pharmacy, University of California, San Francisco, San Francisco, California, United States of America, **2** Center for Tobacco Control Research and Education, University of California, San Francisco, San Francisco, California, United States of America, **3** Division of Cardiology, Department of Medicine, University of California, San Francisco, San Francisco, California, United States of America, **4** Philip R. Lee Institute for Health Policy Studies, University of California, San Francisco, San Francisco, San Francisco, California, United States of America

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Citation: Lightwood J, Glantz SA (2016) Smoking Behavior and Healthcare Expenditure in the United States, 1992–2009: Panel Data Estimates. *PLoS Med* 13(5): e1002020. doi:10.1371/journal.pmed.1002020

Academic Editor: Wayne D. Hall, University of Queensland, AUSTRALIA

Received: July 31, 2015

Accepted: March 31, 2016

Published: May 10, 2016

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Data Availability Statement: The cross-sectional time series data on smoking, healthcare costs, and demographics for the 50 states and District of Columbia are publicly available and the sources are detailed in the Methods section of the paper.

Funding: This work was funded by National Cancer Institute grant CA-61021, in part through an interagency agreement with the Centers for Disease Control and Prevention Office on Smoking and Health. The CDC Office on Smoking and Health arranged a meeting with several experts on time series analysis of panel data nonstationary processes to advise the authors on methodological issues. Neither those experts nor the funding agencies

Abstract

Background

Reductions in smoking in Arizona and California have been shown to be associated with reduced per capita healthcare expenditures in these states compared to control populations in the rest of the US. This paper extends that analysis to all states and estimates changes in healthcare expenditure attributable to changes in aggregate measures of smoking behavior in all states.

Methods and Findings

State per capita healthcare expenditure is modeled as a function of current smoking prevalence, mean cigarette consumption per smoker, other demographic and economic factors, and cross-sectional time trends using a fixed effects panel data regression on annual time series data for each the 50 states and the District of Columbia for the years 1992 through 2009. We found that 1% relative reductions in current smoking prevalence and mean packs smoked per current smoker are associated with 0.118% (standard error [SE] 0.0259%, $p < 0.001$) and 0.108% (SE 0.0253%, $p < 0.001$) reductions in per capita healthcare expenditure (elasticities). The results of this study are subject to the limitations of analysis of aggregate observational data, particularly that a study of this nature that uses aggregate data and a relatively small sample size cannot, by itself, establish a causal connection between smoking behavior and healthcare costs. Historical regional variations in smoking behavior (including those due to the effects of state tobacco control programs, smoking restrictions, and differences in taxation) are associated with substantial differences in per capita healthcare expenditures across the United States. Those regions (and the states in them) that have lower smoking have substantially lower medical costs. Likewise, those that have higher smoking have higher medical costs. Sensitivity analysis confirmed that these results are robust.

played any role in the design of the final analysis, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing Interests: The authors have declared that no competing interests exist.

Abbreviations: BEA, US Bureau of Economic Analysis; BRFSS, Behavioral Risk Factor Surveillance System; CCE, common correlated effects; CMS, Centers for Medicare and Medicaid Services; SE, standard error.

Conclusions

Changes in healthcare expenditure appear quickly after changes in smoking behavior. A 10% relative drop in smoking in every state is predicted to be followed by an expected \$63 billion reduction (in 2012 US dollars) in healthcare expenditure the next year. State and national policies that reduce smoking should be part of short term healthcare cost containment.

Author Summary

Why Was This Study Done?

- There have been many estimates of the medical costs of smoking at both the national and state levels, but these estimates do not capture the changes in health care expenditure over time that are associated with changes in smoking behavior and the effects of tobacco control programs.
- Estimates from California and Arizona have shown that medical savings accrue quickly as the prevalence and intensity of smoking decreases, when adjusted for the history of smoking reduction and tobacco control program activity in the United States.

What Did the Researchers Do and Find?

- This study examined the year-to-year relationship between changes in smoking and changes in medical costs for the entire United States, taking into account differences between different states and historical national trends in smoking behavior and healthcare expenditures.
- The study found that 1% relative reductions in current smoking prevalence and mean packs smoked per current smoker are associated with 0.118% and 0.108% reductions, respectively, in per capita healthcare expenditure (elasticities).
- Historical regional variations in smoking behavior (including those due to the effects of state tobacco control programs, smoking restrictions, and differences in cigarette taxation rates) are associated with substantial differences in per capita healthcare expenditures across the United States.
- A 10% relative drop in smoking in every state is predicted to be followed by a \$63 billion reduction (in 2012 US dollars) in healthcare expenditure the next year.

What Do These Findings Mean?

- Changes in healthcare costs appear quickly after changes in smoking behavior.
- State and national policies that reduce smoking should be part of short term healthcare cost containment.

Introduction

Smoking causes a wide range of diseases, including cardiovascular and pulmonary disease, complications of pregnancy, and cancers [1,2]. While the risks for some of these diseases, such as cancer, evolve over a period of years when people start and stop smoking, the risks for other diseases begin to change within days or months following changes in smoking behavior. For example, the risk of heart attack and stroke fall by about half in the first year after smoking cessation [3], and the risk of having a low birth weight infant due to smoking almost entirely disappears if a pregnant woman quits smoking during the first trimester [4]. There is a substantial literature showing that reductions in smoking behavior have substantial short and long run health benefits that reduce real per capita healthcare expenditures, beginning with reductions in cardiovascular disease, particularly heart attack and stroke [3], and respiratory disease [5]. Smoking cessation and reduction in secondhand smoke exposure in pregnant women, mothers, and children produce both very short run and long run reductions in healthcare expenditures [4,6]. The 2014 Surgeon General's report *The Health Consequences of Smoking—50 Years of Progress* ([1], pp. 435–443) summarized 59 studies that reported immediate (often within 1 mo) 10%–20% drops in hospital admissions for acute myocardial infarction, other cardiac events, stroke, asthma, and other pulmonary events following implementation of smoke-free laws. These benefits extend to the elderly population [7], complications of pregnancy [8], and young children [8,9] and grow with time as the effects on slower-evolving diseases, such as cancer [10,11], emerge.

Previous research found that increases in per capita funding for population-based tobacco control programs in California [12,13] and Arizona [14] were associated with reductions in cigarette consumption and, in turn, with reductions in per capita healthcare expenditure in those states compared to control populations in the rest of the United States. These studies reached similar conclusions using two different aggregate measures of population smoking behavior: (1) per capita cigarette consumption in California and Arizona [12,14] and (2) smoking prevalence and cigarette consumption per smoker in California [13]. This paper extends the second approach to estimate the link between smoking behavior and healthcare expenditure for the entire United States.

Methods

This paper estimates how much on average a 1% relative reduction in smoking prevalence in a US state reduces health costs in that state a year later. The analysis estimates this association (elasticity) while controlling for the effects of a variety of other differences between states that may produce a spurious association between reduction in smoking prevalence and reduced health expenditure, e.g., changes in population composition and other health behaviors that may also reduce health expenditure. To obtain this estimate for each state, we use a regression approach, with various refinements that take account of correlated time series. In the main and supplemental sensitivity analysis, we control—as much as possible when using state aggregated data—for the effects of other variables that may influence health care expenditure at the state level in addition to smoking (e.g., demographic factors, such as population age composition and ethnic composition; other health risk behaviors in the population, such as alcohol use; and obesity). We also control for the possible effects of unmeasured variables (e.g., cross-state cigarette purchases) on the validity of the measure of cigarette consumption per smoker in each state.

The dependent variable in the regression model (Fig 1) is real (inflation-adjusted) annual per capita healthcare expenditure (including both public and private payers). The independent

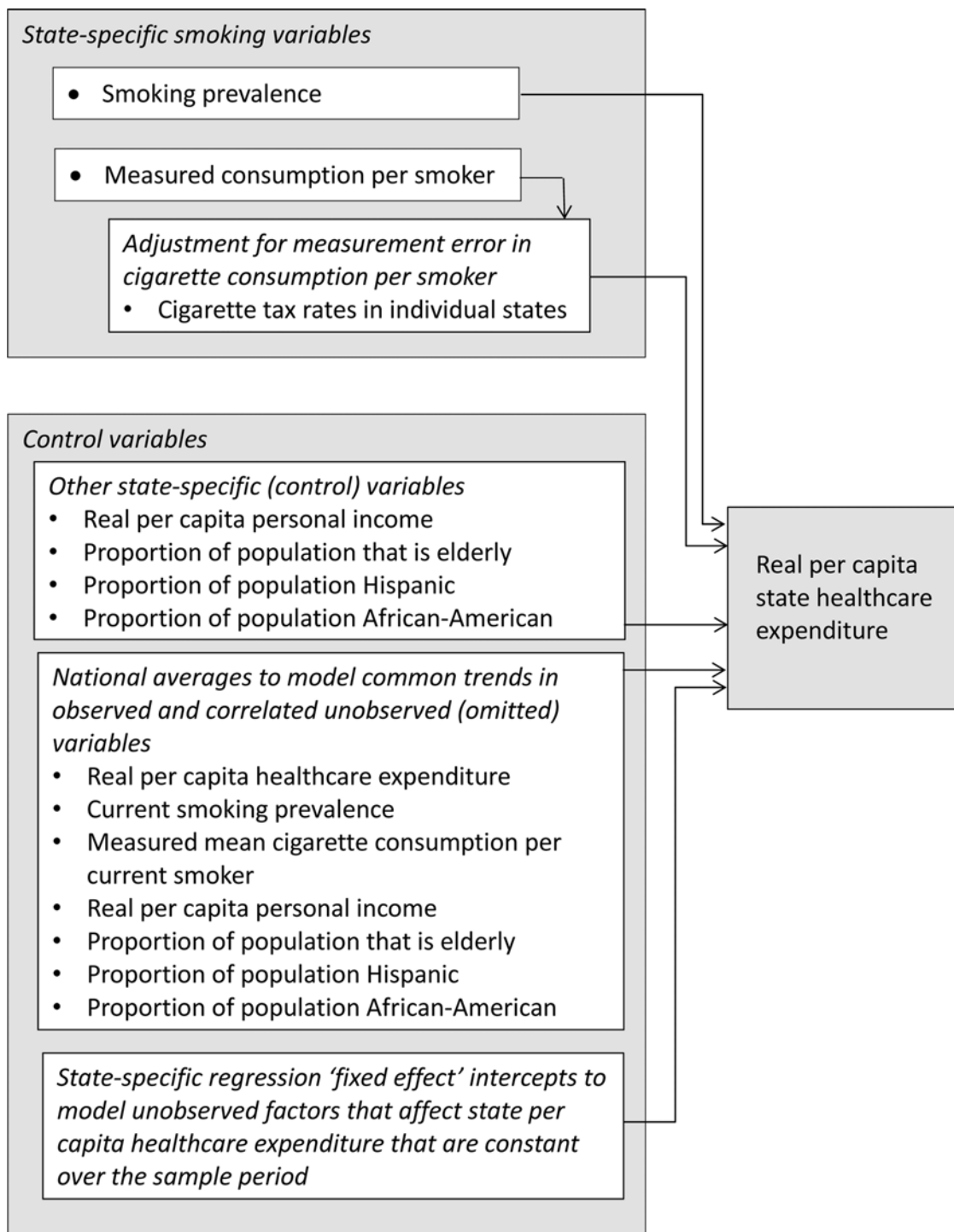


Fig 1. Real annual per capita state healthcare expenditure in each of the 50 states and the District of Columbia modeled as a function of smoking behavior (current smoking prevalence and mean annual cigarette consumption per smoker). Because available data on mean consumption per smoker may be contaminated with measurement error that increases over the sample period due to increasing interstate tax differentials, the individual state cigarette tax rates are included to adjust for the effects of this possible measurement error. Other state-specific control variables that might affect per capita healthcare expenditure are included. To account for long run trends in healthcare expenditure that are correlated with the observed state-specific explanatory variables as well other correlated but unobserved trends, the national averages of the dependent and explanatory variables are included in the regression. Finally, state-specific intercepts are included in the regression to model regional and state-specific factors that may affect

state healthcare expenditure and that remain constant over the sample period. All the independent (explanatory) variables are lagged by 1 y.

doi:10.1371/journal.pmed.1002020.g001

(explanatory) variables include two state-specific measures of smoking behavior (prevalence of current smoking and mean cigarette consumption per current smoker) as well as other state-specific factors that could affect healthcare expenditure (real per capita income, proportion of the population that is elderly, proportion of the population that is Hispanic, and proportion of the population that is African-American). Finally, state-specific intercepts were included in the regression to account for other factors that affect state healthcare expenditure that, while constant over time, could differ across states.

Measures of smoking behavior, the other population factors we are considering, and healthcare costs change over time unpredictably because of changes in technology, access to care, and the nature of the population itself. From a statistical perspective, that means that the underlying process is nonstationary, and we need to account for this in the analysis. To do so, we also include the national cross-sectional averages of the dependent and independent variables as independent variables in the regression equation to account for their long run trends and trends in other correlated but unobservable variables associated with per capita healthcare expenditure that vary over the sample period [15–17]. Examples of overall national trends in per capita healthcare expenditure that are difficult or impossible to measure include developments in medical technology and the economic, regulatory, legal, or legislative environment that affect access to care and therefore utilization. Including the overall national trends as independent variables means that the regression coefficients for the state-specific explanatory variables are interpreted as the effects of the variation of the state-specific variables around the overall trends included in the model. For example, the coefficient of the prevalence of current smoking in each state can be interpreted as the effect of the departure of prevalence of smoking in that state from the overall national trend in prevalence of smoking on that state's per capita healthcare expenditure, after accounting for all the national trends included in the model.

There is also a possibility that the reported cigarette sales in a state (which we used to estimate annual per smoker cigarette consumption) might not be equal to the numbers of cigarettes smoked in a state. To adjust for possible measurement error in mean cigarette consumption per smoker, state-specific cigarette tax rates are also included in the regression model (Fig 1).

The independent variables are taken from the year before the healthcare expenditure data (i.e., lagged by 1 y), to allow for time for the independent variables to affect healthcare expenditure.

Data

The estimated effects of smoking on healthcare costs are based on cross-sectional time series (panel) data on smoking, healthcare costs, and demographics for the 50 states and the District of Columbia (considered and referred to hereafter as 51 “states”) for the years 1992 through 2009.

Healthcare expenditures. The main results use the Centers for Medicare and Medicaid Services (CMS) estimates of total (public and private payer) healthcare expenditure by state of residence [18]. We chose the CMS state of residence measure because it measures healthcare expenditures consumed by residents of each state, rather than the expenditure of healthcare providers located in each state regardless of the state of the recipient. Previous research [12–14] used aggregate state data for California or Arizona compared to an aggregate population from many control states, and there was no practical or statistically significant difference in

regression results using the resident- and provider-based measures. State per capita healthcare expenditure was calculated by dividing total real state expenditure by the state resident population from the US Census Bureau.

Smoking behavior. Prevalence of current smoking and state and federal cigarette tax data were from the Behavioral Risk Factor Surveillance System (BRFSS) provided by the Centers for Disease Control and Prevention (CDC) State Tobacco Activities Tracking and Evaluation (STATE) System [19]. State-specific per capita cigarette consumption and cigarette tax rates were from the *The Tax Burden on Tobacco* [20] provided by the CDC STATE System [19]. Cigarette consumption per smoker was calculated by dividing per capita cigarette consumption for each state's resident population by current smoking prevalence from the US Census Bureau.

Demographic control variables. Total state resident population data and the proportion of state resident population age 65 y or older were from the US Census Bureau [21–23]. The proportion of the population that is Hispanic and African-American was calculated from the BRFSS survey data [24]. The proportion of the population by race and ethnicity, used for sensitivity analysis, was calculated from the BRFSS data [24] rather than census data because complete data using consistent definitions were not available from the US Census Bureau over the whole sample period, and the effects of the adjustments following the decadal census on the annual census population estimates by race and ethnicity are so large that the estimates cannot be used in regression analysis without introducing spurious results due to breaks in the model-based trends across census years. State per capita personal income was taken from the US Bureau of Economic Analysis (BEA) regional economic accounts [25].

Adjusting for inflation. All monetary values are expressed in year 2010 US dollars using the regional medical care (for healthcare expenditures) and regional all-item (for cigarette taxes and personal income) Consumer Price Index for All Urban Consumers (CPI-U) [26].

Missing data. There were up to 18 annual observations for the individual 51 states, making 918 data points. There are only 27 missing data points (2.9%) because of individual states not participating in the BRFSS in some years. All but three missing observations are due to delayed entry of 11 states into the BRFSS or a BRFSS component. Fisher's exact test and continuity-corrected Spearman's and Kendall's tau-a correlation coefficients were used to evaluate the association between the presence and length of lagged state entry into BRFSS and each state's smoking behavior and socio-demographics used in the analysis, state population, and geographic region. No statistically significant geographical or socio-demographic or economic relationships were found to explain the patterns of delayed entry among the states, so we consider the missing observations to be missing completely at random.

Model

The regression model explains state per capita healthcare expenditure as a function of state per capita income, population age structure (proportion of the population that is elderly), proportion of the population that is African-American, proportion of the population that is Hispanic, and additional control variables that describe national trends in health care expenditure, such as changes in medical technology and the market for health care. Other variables that may affect the results were missing for some years and states, such as prevalence of insurance coverage and prevalence of other health risks (e.g., obesity and high blood pressure). A sensitivity analysis (detailed in [S1 Text](#), Sensitivity Analyses) to determine whether inclusion of these variables would change the estimates substantially was conducted on the available observations.

Previous research compared smoking behaviors and per capita healthcare expenditures in California [12,13] and Arizona [14] to various control populations in the United States. Instead

of selecting a distinct control population, this model uses the pooled common correlated effects (CCE) fixed effects estimator [15–17] on annual time series data for each of 51 cross-sectional units (the 51 states). The CCE fixed effects estimator uses the national cross-sectional averages (the arithmetic average of the 51 state-specific values for each year) of the dependent and explanatory variables to control for national trends in per capita healthcare expenditure, the other explanatory variables, and any correlated but unobservable common trends.

The model used for these national estimates has two parts (Fig 1). The details of the model appear in [S1 Text](#) (Detailed Description of the Model). The first part of the model is a first order autoregression (i.e., a regression that uses explanatory variables that are lagged one period) that models the effect of smoking behavior, adjusted for other explanatory variables, on state residential per capita healthcare expenditure. The first part of the model assumes that individual mean state cigarette consumption per smoker is observed without measurement error.

The natural logarithm of state per capita healthcare expenditure in each state is explained using the lagged natural logarithms of state smoking prevalence, mean cigarette consumption per smoker, per capita income, and several demographic variables and the lagged natural logarithms of their associated national averages across all the states. Using logarithms in this way yields regression coefficients that are interpreted as elasticities, which are dimensionless constants that give the percent change in the dependent variable associated with a 1% (relative) change in each explanatory variable. The logarithmic transformation produced better behaved residuals for individual state data than the linear specifications used in earlier work [12–14].

The second part of the model adds an adjustment for possible measurement error in individual state observations of mean cigarette consumption per smoker due to untaxed cigarette consumption induced by differences in state cigarette taxes. A state-specific model for this type of measurement error (that would use different coefficients for each of the 51 states) led to severe multicollinearity and model specification problems, so the eight BEA economic regions were chosen as the most appropriate grouping for modeling variations in the effect of the individual state-specific cigarette tax rates over time. In particular, we retained information on individual state variation in cigarette tax rates while restricting the associated coefficients' values regionally. The BEA regions were chosen for the regional pattern of cigarette tax adjustment effects because the BEA regions reflect economically homogenous groups of states [27]. (The BEA regions are New England, Mideast, Great Lakes, Plains, Southeast, Southwest, Rocky Mountain, and Far West; the component states are listed in the first table in [S1 Text](#).) Each individual state tax rate is assumed to have the same effect on unmeasured cigarette consumption within each BEA region, but this effect was allowed to vary across BEA regions. The implicit assumption used in choosing regional coefficients for the tax variables but not for other variables is that regional characteristics that affect unmeasured consumption (such as average size of state, distance from population centers to state borders, and cross-border commuting and other travel patterns) vary more by region than the relationship between the other explanatory variables and healthcare expenditure. This assumption was relaxed in one of the sensitivity analyses reported in [S1 Text](#) (Sensitivity Analyses).

Sensitivity Analysis

Several sensitivity analyses were conducted to check the possibility that the estimates that attribute changes in population health to smoking are related to other risk factors than smoking (and secondhand smoke exposure). The results of these sensitivity analyses are summarized below. Detailed results appear in [S1 Text](#) (Sensitivity Analyses).

Other health risk factors. The prevalence of other health risk factors were measured in the BRFSS surveys (prevalence of high blood pressure and high cholesterol among

Table 1. Final regression results, Centers for Medicare and Medicaid Services state resident healthcare expenditure, 1992–2009.

Description of Variable	Variable	Coefficient (Elasticity)	Standard Error	p-Value
Prevalence of smoking	$\ln(s_{i,t-1})$	0.118	0.0259	<0.001
Cigarette consumption per smoker	$\ln(cps_{m,i,t-1})$	0.108	0.0253	<0.001
Per capita personal income	$\ln(y_{i,t-1})$	0.224	0.0674	0.001
Percent of population age ≥ 65 y	$\ln(a_{i,t-1})$	0.530	0.0936	<0.001
Percent of population Hispanic	$\ln(hs_{i,t-1})$	0.0108	0.00763	0.156
Percent of population African-American	$\ln(b_{i,t-1})$	0.0130	0.00632	0.039
Cigarette tax, New England	$\ln(tx_{i,NE,t-1})$	0.0477	0.0103	<0.001
Cigarette tax, Mideast	$\ln(tx_{i,ME,t-1})$	0.0203	0.0106	0.056
Cigarette tax, Great Lakes	$\ln(tx_{i,GL,t-1})$	-0.00662	0.0151	0.660
Cigarette tax, Plains	$\ln(tx_{i,PL,t-1})$	0.0358	0.0179	0.045
Cigarette tax, Southeast	$\ln(tx_{i,SE,t-1})$	0.0190	0.0229	0.418
Cigarette tax, Southwest	$\ln(tx_{i,SW,t-1})$	5.45×10^{-7}	0.0248	1.00
Cigarette tax, Rocky Mountain	$\ln(tx_{i,RM,t-1})$	-0.0108	0.0131	0.409
Cigarette tax, Far West	$\ln(tx_{i,FW,t-1})$	0.0178	0.0312	0.568
National average per capita healthcare expenditure	$\ln(hr_{ue,t-1})$	0.864	0.0959	<0.001
Principal component term*	$pc3_{ue,t-1}$	-0.564	0.132	<0.001

* The “principal component term” is the third principal component of the cross-sectional average terms other than per capita healthcare expenditure. It was the only principal component that entered the regression at the 5% significance level.

doi:10.1371/journal.pmed.1002020.t001

respondents who had those checked, prevalence of abusive drinking, no insurance coverage, no regular exercise, diabetes, and obesity), and these prevalence estimates were all added to the final model (Table 1), both singly and simultaneously. Inclusion of other health risk factors produced elasticity estimates that were almost identical to those shown in the final model in Table 1. In keeping with the CCE modeling strategy, these factors were added to the model as state-specific and cross-sectional trend variables. None of the variables approached statistical significance when entered into the model together or one by one (S1 Text, Sensitivity Analyses). Many states did not have observations on the other health risk factors for all years, so including these variables caused instability in the residual diagnostics. Therefore, these variables were omitted from the final analysis.

Public policies that affect smoking behavior. Changes in smoking behavior may be correlated to other public health measures and general population awareness of healthy lifestyles, environmental health, and public policies that affect access to care. A sensitivity analysis of possible confounding by these factors was conducted by adding available time series variables that would be correlated with these factors, in the same way as was done for other health risks (S1 Text, Sensitivity Analyses). Variables describing the proportion of each state population that was covered by 100% smoke-free laws (i.e., complete smoking bans at specific venues, such as workplace, restaurants, etc.) and prevalence of lack of health insurance were added to the model in this sensitivity analysis.

Other factors. Consistent time series are not available for other factors that may be correlated with unmeasured changes in health risks or public health programs and policies. Perhaps the most prominent such variable is educational attainment in the population. A robustness check of the omission of this variable was conducted by studying the stability of relative state levels of educational attainment across time. Another robustness check was conducted by estimating the correlation over time between state educational attainment and a variable that should be highly correlated: state real per capita personal income.

Sensitivity to selection of estimation technique. Additional sensitivity analyses were conducted to evaluate the results of instrumental variable estimation for cigarette consumption per smoker by including instruments for the variables mean consumption per smoker, prevalence of cigarette smoking, per capita income, and proportion of the population age 65 y or older ([S1 Text](#), Sensitivity Analysis). Sensitivity analyses were also conducted to account for possible correlation in healthcare expenditure between states due to unobserved factors and for other departures from standard assumptions on regression errors.

Estimated Change in Regional Healthcare Expenditures Attributable to Smoking

The estimated elasticities in [Table 1](#) were used to estimate the net average annual BEA regional healthcare expenditure attributable to regional cigarette smoking behavior deviations from the national average over the sample period. The unit of observation and analysis is the individual state. Therefore, the estimated changes in state expenditures were aggregated to the regional level using equal weights to calculate the aggregate results for the eight BEA economic regions. Using equal weights gives the average experience of each state in the region, which is relevant for evaluation of policy at the state level. The estimates of population-weighted changes presented in [S1 Text](#) (Effect of Weighting Scheme on Regional Healthcare Expenditures Attributable to Smoking) were used as a measure of changes in expenditure for the regional populations. The national panel regression coefficients were used for this analysis ([Table 1](#)) because eight estimates of coefficients in the model (one for each BEA region) were more reliable than 51 estimates (one for each state, with a small sample size for each regional panel regression—less than 20—for each state).

Deviations in per capita healthcare expenditures from the average national level (savings below or excess expenditures above) were calculated for each state in four steps, and then aggregated to the BEA regional level. First, for each state, the arc elasticity estimate of the deviation in state healthcare expenditure attributable to the two smoking behavior variables were calculated by multiplying the estimated elasticities of per capita healthcare for prevalence of current smoking and measured mean cigarette consumption per smoker by the average percent difference between the respective individual state and national averages of the smoking behavior variables over the sample period. The elasticities estimated in the coefficients are valid for modeling the effect of infinitesimal changes in the explanatory variables; the arc elasticity is an adjustment to account for finite differences in the data. Second, the adjustments to per capita healthcare expenditures due to state tax differentials were calculated in the same way: arc elasticities for the tax rates were calculated by multiplying the estimated elasticities of healthcare expenditure by the average percent difference between the respective individual state and national averages of the state cigarette tax variables over the sample period. Third, the net regional healthcare expenditure attributable to smoking adjusted for mismeasurement was calculated for each state by subtracting the results of the second step from the results of the first step, by state. Fourth, the excess per capita expenditures for each BEA region were calculated by taking the simple arithmetic average of each state in each respective region. Total aggregate values for each state and region were calculated by multiplying the state or regional per capita estimates by the state or regional residential populations.

As a check on the reasonableness of the results, the proportion of measured cigarette consumption per smoker due to estimated untaxed consumption was calculated. The calculation was done by dividing the healthcare expenditure due to tax differentials—and therefore attributable to mismeasurement of cigarette consumption (found in step two above)—by the average regional price of cigarettes to calculate the estimated unmeasured consumption in packs of cigarettes per capita. Estimated unmeasured consumption in packs of cigarettes per capita was

then divided by the prevalence of current smokers to calculate the estimated unmeasured consumption in terms of packs per smoker. Then the estimated unmeasured consumption in terms of packs per smoker was divided by the measured mean cigarette consumption per current smoker to estimate the estimated unmeasured consumption as a proportion of measured consumption. This estimate gives the proportion of measured cigarette consumption in each region, which can be compared to survey estimates of the proportion of untaxed cigarettes consumed in the United States [28] and specific regions [29] to check the adequacy of our adjustment for measurement error in cigarette consumption and the plausibility of the resulting estimates of untaxed cigarette consumption.

Interval estimates for the excess expenditures and proportion of measured cigarette consumption that is untaxed were calculated using the covariance matrix of the elasticities (which for the logarithmic transformation is the same as the covariance matrix of coefficient matrix of the regression coefficients). The distributions of excess expenditures and proportion of unmeasured cigarette consumption were normally distributed, so formulas for the variances of functions of normal distributions were used to calculate standard errors (SEs).

Because we used the estimated elasticities to calculate the healthcare expenditure attributable to differences in smoking behavior, the estimates are independent of the sample distributions of the other variables in the model. The results can be thought of as quantifying the effects of changes in smoking behavior while holding all the other variables, such as per capita personal income and age distribution of the population, constant.

Results

The elasticities of healthcare expenditure with respect to smoking prevalence and measured mean cigarette consumption per smoker are 0.118 (SE 0.0259, $p < 0.001$) and 0.108 (SE 0.0253, $p < 0.001$), respectively (Table 1). What these elasticities mean is that 1% relative reductions in current smoking prevalence and in packs smoked per current smoker are associated with relative reductions of 0.118% and 0.108% of per capita healthcare expenditures, respectively. For example, the average prevalence of smoking, consumption per smoker, and per capita healthcare expenditure over the sample period were 21.2%, 372 packs per year, and \$6,426, respectively. A 1% relative reduction in smoking prevalence from an absolute prevalence of 21.2% to 21.0% is associated with a \$7.58 reduction in per capita healthcare expenditure. Likewise, a 5% relative drop in smoking prevalence (from 21.2% to 20.1% absolute prevalence) is associated with a reduction in per capita healthcare expenditure of \$37.9. A 1% relative reduction in consumption per smoker from 372 packs per year to 368 packs per year is associated with a \$6.94 reduction in per capita healthcare expenditure. A 5% relative drop in consumption per smoker (from 372 packs per smoker per year to 353 packs per year) is associated with a reduction in per capita healthcare expenditure of \$34.7. The R^2 statistics indicate that the regression has good explanatory power, particularly for describing variations in per capita healthcare expenditure within each state over time (Table 2).

These estimates of decline in per capita healthcare expenditure associated with changes in smoking behavior are counterfactual predictions that assume that all other factors other than smoking behavior remain constant. The actual observed changes in healthcare expenditure in future years will also depend on additional state-specific variables such as per capita income and age structure of the population, in addition to their evolution via common trends across states.

Sensitivity Analyses

None of the sensitivity analyses for omitted variables produced a statistically significant or even barely noticeable change in the regression coefficients of the estimated model (S1 Text,

Table 2. R^2 and residual statistics for final regression results.

R^2		Error Structure	
Source	Value	Statistics for Regression Residuals	Value
Within	0.914	ρ	0.940
Between	0.258	$\text{corr}(u_i, Xb)$	-0.291
Total	0.495	RMSE	0.0295

ρ , proportion of regression error variance due to cross-sectional state-specific constants; $\text{corr}(u_i, Xb)$, correlation between linear state-specific intercept and linear score; RMSE, root-mean-square error.

doi:10.1371/journal.pmed.1002020.t002

Sensitivity Analyses). The other health risk factors and policy variables do not seem to be highly correlated, at least on a population level. In other conditions, there are significant state and regional differences—and therefore significant correlation between the variables and smoking behavior—at any one point in time, but there is little variation between states over time. For example, in the case of obesity, at any one point in time, some states with high smoking prevalence have a higher than average prevalence of obesity. However, the prevalence of obesity in all states is increasing at approximately the same rate over time, albeit from different starting levels. For this reason, state-level variations in obesity in a particular year do not confound state-level variations in smoking behavior over time. The robustness analysis on education showed that the correlation between states in educational attainment over time was high, particularly for the prevalence of bachelor degrees in the population over time. However, state prevalence of both high school completion and bachelor degrees was highly correlated over time with state real per capita personal income; therefore, we believe the possible direct effects of education on health care expenditure or indirect effects through correlation with smoking behavior are accounted for in the per capita income variable.

The results of the sensitivity analysis on instrumental variables did not produce evidence of serious bias produced by problems with the instruments used for cigarette consumption per smoker, except for proportion of the population age 65 y or over (S1 Text, Sensitivity Analyses). When the proportion of the population that was elderly was instrumented, the coefficient of that variable was reduced by about half, but the change in the coefficient was not statistically significantly different from that presented in Table 1. There were no substantial changes in the coefficients of the other variables. There was no trend in the coefficient estimates as a function of factors that could produce bias, such as the strength of autocorrelation in the regression residuals, and the SEs of the estimates presented in Table 1 were consistent with the point coefficient estimates of the sensitivity analysis.

Estimated Change in Regional Healthcare Expenditures Attributable to Smoking

Without adjustment for mismeasurement of cigarette consumption per smoker, the Far West region has the largest estimated savings in annual per capita healthcare expenditure associated with departures of its smoking behavior from the national average: \$210 (SE \$45.5); the Southeast region has the largest excess expenditure: \$154 (SE \$30.7) (Table 3).

After adjustment for state tax differentials, the Far West still has the largest total estimated annual per capita savings, \$182 (SE \$51.7), but the New England region now has the largest excess per capita expenditure, \$104 (SE \$25.4); the Southeast has the next largest, \$94.4 (SE \$90.2) (Table 3). Total annual estimated expenditure per year due to the differences between regional and national smoking behavior ranges from a savings of \$9,470 million (SE \$2,690

Table 3. Average excess expenditures associated with departures of regional smoking behavior and cigarette consumption from national average, 1992–2009.

Average Excess Expenditure	BEA Region							
	New England	Mideast	Great Lakes	Plains	Southeast	Southwest	Rocky Mountain	Far West
Attributable to prevalence of smoking								
Mean	–37.0	–34.8	62.5	–21.7	66.4	–6.54	–119	–34.5
SE	6.80	7.65	13.8	4.76	14.6	1.45	26.1	7.62
Attributable to mean cigarette consumption per smoker								
Mean	42.1	–68.6	–19.1	10.9	87.8	–134	–16.7	–175
SE	9.86	16.0	4.50	2.55	20.5	31.4	3.90	41.1
Attributable to differences in smoking behavior: prevalence and mean cigarette consumption per smoker								
Mean	5.30	–103	43.4	–10.7	154	–141	–135	–210
SE	9.00	21.0	12.1	4.09	30.7	32.1	28.3	45.5
Attributable to state tax differential effects								
Mean	98.5	30.0	–2.65	–34.0	–59.9	0.00104	14.6	28.0
SE	21.5	15.8	6.01	17.0	74.2	6.29	17.8	49.6
Implied proportional difference between measured and estimated true cigarette consumption per smoker (proportion)								
Mean	0.416	0.163	–0.0165	–0.141	–0.236	0.00000317	0.0791	0.164
SE	0.0906	0.0860	0.0374	0.0704	0.292	0.0192	0.0962	0.290
Total attributable to differences in smoking behavior including state tax differential effects								
Mean	104	–73.4	40.7	–44.8	94.4	–141	–121	–182
SE	25.4	25.4	11.5	17.5	90.2	34.0	32.7	51.7
Total regional difference, including state tax differential effects (millions of 2010 US dollars)								
Mean	1,500	–3,530	1,890	–910	7,330	–5,210	–1,310	–9,470
SE	370	1,220	367	356	7,010	1,260	355	2,690

Data are given as 2010 US dollars per capita unless otherwise indicated. Negative dollar amounts indicate savings compared to national average smoking behavior; positive dollar amounts indicate excess expenditures compared to national average smoking behavior. Negative proportions indicate that estimated true consumption is less than measured consumption; positive proportions indicate that estimated true consumption is less than measured consumption.

doi:10.1371/journal.pmed.1002020.t003

million) in the Far West to a total excess expenditure of \$7,330 million (SE \$7.010 million) in the Southeast region (Table 3).

The difference between measured and estimated true cigarette consumption per smoker was less than 20% for all BEA regions except the Southeast, where estimated true consumption was 23.6% (SE 29.2%) less than measured consumption, and New England, where estimated true consumption was 41.6% (SE 9.06%) higher than measured (Table 3). These estimates are similar to estimates from survey data collected by examining the source of cigarette packs in different states in 2009 and 2010 [28]. The model's statewide estimates of the proportion of cigarette consumption that is untaxed track survey estimates [29] for major urban centers in the Mideast and New England reasonably well (Table 4). The comparisons are complicated by two factors: the difference in areas in the regions covered and that the survey estimates provide only ranges based on modeling assumptions. For example, untaxed consumption may be

Table 4. Survey and model estimates of percent of cigarette consumption that is untaxed.

Survey Estimates [29]			Model Estimates			
Metropolitan Area	Range		Area	Point Estimate	95% Confidence Interval	
	Low	High			Low	High
New York City	47.9%	49.9%	New York State	20.1%	8.02%	32.2%
Boston	36.8%	38.4%	Massachusetts	34.2%	27.5%	40.9%
Providence	29.6%	55.4%	Rhode Island	35.3%	28.1%	41.9%
Philadelphia	1.2%	1.3%	Pennsylvania	4.9%	2.8%	7.0%
District of Columbia	29.0%	59.9%	District of Columbia	13.1%	4.7%	21.5%

Survey estimates provide ranges based on modeling assumptions, rather than 95% confidence intervals.

doi:10.1371/journal.pmed.1002020.t004

unusually high in New York City due to high local cigarette tax rates and may be higher there than on average in other areas of New York state. See [S1 Text](#) (State-Specific Healthcare Expenditures Attributable to Smoking) for population-weighted regional and individual state estimates of excess expenditure associated with smoking behavior.

Discussion

Our estimates provide strong evidence that reducing smoking prevalence and cigarette consumption per smoker are rapidly followed by lower healthcare expenditure. The model is dynamic and predicts per capita healthcare expenditures in the current year as a function of smoking behavior in the previous year. For example, 1% relative reductions in current smoking prevalence and mean cigarette consumption per smoker in one year are associated with a reduction in per capita healthcare expenditure in the next year of $0.118\% + 0.108\% = 0.226\%$ (SE 0.0363%), with all other factors including common trends held equal. In 2012, total healthcare expenditures in the US were \$2.8 trillion [30]; our results suggest that, holding other common trends and factors affecting health care expenditures constant, a 10% relative drop in smoking prevalence (about a 2.2% absolute drop) combined with a 10% relative drop in consumption per remaining smoker (about 37 fewer packs/year) would be followed in the next year by a \$63 billion reduction in healthcare expenditure (in 2012 dollars).

These are short run 1- to 2-y predictions, and while they indicate that the effects of changes in smoking on healthcare expenditure begin to appear quickly, they do not imply that all changes in the costs and savings of smoking in the population are immediate. If all states reduce their prevalence of smoking and cigarette consumption per smoker, then the corresponding common trends will gradually change over time. The elasticity of the common trend for the prevalence of smoking (from the model estimated with all cross-sectional averages entered as separate variables, rather than using principal components) is relatively small and not statistically significant (-0.0545 , SE 0.0581, $p = 0.348$), so it is unlikely to play a large role in longer run predictions. The elasticity of the common trend for cigarette consumption per smoker (-0.255 , SE 0.0488, $p < 0.001$) is not small relative to the state-specific cigarette consumption per smoker variable. Over the longer run, changes in both smoking behavior variables will change the age structure of the population and trends in changes in healthcare expenditures related to the prevalence of elderly people in the population. Therefore, longer run predictions require a formal out-of-sample forecast study. The short run illustrative predictions presented here also assume the continuation of historical aggregate trends that have been associated with tobacco control policies, such as the declines in exposure to secondhand smoke and in prevalence of smoking during pregnancy.

These estimates are consistent with previous research on healthcare expenditures attributable to cigarette smoking in California [12,13] and Arizona [14]. The previous research used the aggregate population in control states to account for common trends in healthcare expenditure, while the present study used the cross-sectional average expenditure across states. The regression specifications also differ. In the previous research, specification searches were used to determine the best regression model to use to estimate the effects of smoking in California and Arizona versus the control states. Similar specification searches for each of the 51 cross-sectional units (i.e., states) in the present study were not feasible, and variables that are probably irrelevant for California and Arizona were left in the specification because they are required to be in the model for other states. However, inclusion of irrelevant variables for a state will not bias the estimated elasticities and permits estimating an average effect across all states with a simple panel regression specification.

This analysis uses aggregate measures of population characteristics to estimate the relationships between smoking behavior variables and per capita healthcare expenditures. The elasticity estimates are not directly comparable to estimates of the economic burden of cigarette smoking using cross-sectional data on individuals in national health surveys [31]. Those estimates use data on individuals to calculate the healthcare expenditure attributable to cigarette consumption in individual current smokers or ever-smokers, contrasted to individual non-smokers or never-smokers, respectively. Therefore, the expenditure estimates in the present study should not be interpreted as healthcare costs arising in, or due to, individual smokers or any specific individuals in the population. These estimates reflect all the healthcare expenditures associated with smoking that arise in a population, which include short and long term indirect effects on smokers and short and long term effects of second- and third-hand [32] smoking exposure in non-smokers. However, previously published aggregate estimates for California [13] that are similar to those presented here are somewhat larger than, but consistent with, cross-sectional estimates for that state using individual survey data [33], and the difference between these estimates is comparable to variation among different published cross-sectional estimates based on individual data [6,34,35].

Our estimates do avoid some problems of estimates based on cross-sectional data. An example is the “quitting sick” effect, which imputes expenditure savings to smokers who quit smoking after being diagnosed with a serious chronic tobacco-related disease, such as lung cancer or cardiovascular disease. The expected expenditure savings from quitting by a smoker who remains well will not be realized in those who quit sick because expensive and irreversible health effects of smoking have already occurred. The quitting sick effect is a consequence of incorrectly imputing missing information (the unobservable health status of the smoker at the time of cessation) that is not present in cross-sectional data. This study uses longitudinal data on measures of smoking behavior and healthcare expenditures on large populations and therefore is not subject to quitting sick effects because the excess health care costs of those who quit sick will be included in a state’s total aggregate healthcare expenditure data along with the reduction in prevalence that occurs when the reduction in smoking of comparable people is recorded in surveys that represent the population of that state. It should be noted that some estimates of the health burden of cigarette smoking that account for quitting sick and other problems with estimates based on cross-sectional data find a higher burden of smoking-related disease and therefore higher smoking-attributable expenditures than most published cross-sectional estimates [36–40].

The estimates presented here cannot be used to reliably estimate the change in healthcare expenditure associated with complete elimination of cigarette consumption because the estimated elasticities apply only to modest variation around the status quo, but they do capture expenditures attributable to cigarette smoking in a large population that are difficult to

measure from national health surveys (such as the effects of second- and third-hand smoke exposure, and long term effects of developmental problems from premature birth and low birth weight or asthma contracted during childhood, attributable to parental cigarette smoking).

Our methods may suffer from spurious regressions and attribute non-smoking public health factors that are correlated with smoking behavior to the smoking behavior. Specifically, this research does not estimate a smoking attributable fraction of healthcare costs for each state that corresponds to a measure that can be derived from individual survey data. Rather, it estimates the average national effect of variations in aggregate-level state-specific smoking behavior variables around the national trend in those variables on variations in state-specific real per capita healthcare expenditure around its national trend.

Limitations

The results of this study are subject to the limitations of analysis of aggregate observational data. A study of this nature that uses aggregate data and a relatively small sample size cannot, by itself, establish a causal connection between smoking behavior and healthcare costs, and that is not the goal of this study. Rather, this study should be evaluated in the context of the existing body of research that has already established that the relationship between smoking behavior and healthcare costs is causal using a variety of study designs [41–45].

These estimates do not address the issue of whether, over the whole life cycle, a population without any cigarette smoking would have higher healthcare expenditures due to longer lived non-smokers. Forecasting the very long run effects of reductions in smoking over the life cycle in a US population would require the construction of a model to forecast the eventual changes in the age structure of the population and resulting changes in per capita healthcare expenditures as a function of smoking behavior.

Conclusions

Lower smoking prevalence and cigarette consumption per smoker are associated with lower per capita healthcare expenditures. Historical regional variations in smoking behavior (including those due to the effects of state tobacco control programs, smoking restrictions, and differences in taxation) are associated with substantial differences in per capita healthcare expenditures across the United States. Those regions (and the states in them) that have implemented public policies to reduce smoking have substantially lower medical costs. Likewise, those that have failed to implement tobacco control policies have higher medical costs. Changes in healthcare costs begin to be observed quickly after changes in smoking behavior. State and national policies that reduce smoking should be part of short term healthcare cost containment.

Supporting Information

S1 Text. Model estimation, additional detailed results, and sensitivity analysis.
(PDF)

Author Contributions

Conceived and designed the experiments: JL SAG. Analyzed the data: JL SAG. Wrote the first draft of the manuscript: JL. Contributed to the writing of the manuscript: JL SAG. Agree with the manuscript's results and conclusions: JL SAG. All authors have read, and confirm that they meet, ICMJE criteria for authorship.

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The Effect of the California Tobacco Control Program on Smoking Prevalence, Cigarette Consumption, and Healthcare Costs: 1989–2008

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Abstract

Background: Previous research has shown that tobacco control funding in California has reduced per capita cigarette consumption and per capita healthcare expenditures. This paper refines our earlier model by estimating the effect of California tobacco control funding on current smoking prevalence and cigarette consumption per smoker and the effect of prevalence and consumption on per capita healthcare expenditures. The results are used to calculate new estimates of the effect of the California Tobacco Program.

Methodology/Principal Findings: Using state-specific aggregate data, current smoking prevalence and cigarette consumption per smoker are modeled as functions of cumulative California and control states' per capita tobacco control funding, cigarette price, and per capita income. Per capita healthcare expenditures are modeled as a function of prevalence of current smoking, cigarette consumption per smoker, and per capita income. One additional dollar of cumulative per capita tobacco control funding is associated with reduction in current smoking prevalence of 0.0497 (SE.00347) percentage points and current smoker cigarette consumption of 1.39 (SE.132) packs per smoker per year. Reductions of one percentage point in current smoking prevalence and one pack smoked per smoker are associated with \$35.4 (SE \$9.85) and \$3.14 (SE.786) reductions in per capita healthcare expenditure, respectively (2010 dollars), using the National Income and Product Accounts (NIPA) measure of healthcare spending.

Conclusions/Significance: Between FY 1989 and 2008 the California Tobacco Program cost \$2.4 billion and led to cumulative NIPA healthcare expenditure savings of \$134 (SE \$30.5) billion.

Citation: Lightwood J, Glantz SA (2013) The Effect of the California Tobacco Control Program on Smoking Prevalence, Cigarette Consumption, and Healthcare Costs: 1989–2008. PLoS ONE 8(2): e47145. doi:10.1371/journal.pone.0047145

Editor: Richard Fielding, The University of Hong Kong, Hong Kong

Received: June 14, 2012; **Accepted:** September 11, 2012; **Published:** February 13, 2013

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Funding: This work was supported by California Tobacco-Related Disease Research Program. Grant 18ST-0201 and National Cancer Institute Grant CA-61021. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing Interests: The authors have declared that no competing interests exist.

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Introduction

Previous research using aggregate state level data found a relationship between per capita funding for population-based tobacco control programs and reductions in per capita cigarette consumption, which were in turn associated with reductions in per capita healthcare costs in California [1]. These estimates are consistent with those found in a subsequent independent study [2] that estimated the average effect of tobacco control expenditures across states.

The California Tobacco Control Program was established in 1989. It adopted a comprehensive approach designed to change social norms to reinforce the nonsmoking norm rather than a frontal attack on smokers that markets cessation services. The social norm change approach seeks to indirectly influence current and potential future tobacco users by creating a social milieu and legal climate in which tobacco becomes less desirable, acceptable and accessible. The Program combines an aggressive media campaign with three consistent themes (the tobacco industry lies,

nicotine is addictive, and secondhand smoke kills) with public policy change, particularly in the area of promoting smokefree environments. The Program has been premised on the fact that youth smoking will decline when more adults stop smoking [1].

Per capita cigarette consumption, which includes all the nonsmokers, is a very simple measure of smoking behavior. Tobacco control program funding may affect smoking prevalence and cigarette consumption per current smoker differently, and each, in turn, may have a different effect on healthcare expenditures. This paper refines our earlier model by replacing total per capita consumption with a two-dimensional measure of smoking behavior – prevalence of current smoking and cigarette consumption per smoker. This two dimensional measure may provide more insight into the mechanisms by which tobacco control programs work and how reductions in smoking reduces healthcare expenditures and may provide a better predictive model for use in forecasting the effect of policy changes on smoking and healthcare expenditure.

The estimates for the new model, which are based on a different sample period than the old model (due to limits on state specific data on prevalence), show that increased per capita cumulative tobacco control funding is associated with reductions in both prevalence and cigarette consumption per smoker, and reductions in both measures of smoking behavior reduce per capita healthcare expenditures in California compared to control states. Newly available data for a commonly used measure of healthcare expenditure from the Centers for Medicare and Medicaid Services allowed a true out of sample forecasting experiment; the new model using prevalence and average cigarette consumption per smoker produces better forecasts than the previously published per capita cigarette consumption model [1].

Methods

As in our earlier work [1], this analysis compares smoking behavior and healthcare time series variables for California with those for an aggregate population from thirty-eight control states that did not have substantial state tobacco control programs or cigarette tax increases of more than \$0.50 before the year 2000 [3]. See our earlier paper [1] for details on the selection of control states and justification for using cumulative per capita control spending as the independent variable.

Model

The new model consists of three equations: one equation for the relationship between cumulative per capita tobacco control funding and current smoking prevalence; one for the relationship between tobacco control funding and cigarette consumption per smoker; and one for the relationship between smoking behavior (prevalence of smoking and cigarette consumption per smoker) and per capita healthcare expenditures.

Current Smoking Prevalence.

$$\begin{aligned} (prev_{c,t} - prev_{CA,t}) = & \alpha_0 + \alpha_1(EC_{CA,t-1} - EC_{c,t-1}) \\ & + \alpha_2(p_{c,t-1} - p_{CA,t-1}) + \alpha_3(y_{c,t-1} - y_{CA,t-1}) + \varepsilon_{1,t} \end{aligned} \quad (1)$$

Cigarette Consumption per Smoker:

$$\begin{aligned} (cps_{c,t} - cps_{CA,t}) = & \beta_0 + \beta_1(EC_{CA,t-1} - EC_{c,t-1}) \\ & + \beta_2(p_{c,t-1} - p_{CA,t-1}) + \beta_3(y_{c,t-1} - y_{CA,t-1}) + \varepsilon_{2,t} \end{aligned} \quad (2)$$

Current Smoking Prevalence, Cigarette Consumption per Smoker and Healthcare Expenditures:

$$\begin{aligned} n_{CA,t} = & \gamma_0 + \gamma_1 n_{c,t} + \gamma_2(prev_{c,t-1} - prev_{CA,t-1}) \\ & + \gamma_3(cps_{c,t-1} - cps_{CA,t-1}) + \gamma_4(y_{c,t-1} - y_{CA,t-1}) + \varepsilon_{3,t} \end{aligned} \quad (3)$$

Where $prev_{j,t}$: Prevalence of current smoking in population j , for California and control states in year t , in percentage points, $cps_{j,t}$: Cigarette consumption per current smoker in population j , for California and control states in year t , in packs/year per smoker, $EC_{j,t}$: Cumulative per capita tobacco control funding in population j , for California and control states in year t , in dollars, $p_{j,t}$: Price per pack of cigarettes in population j , for California and control states in year t , in dollars, $y_{j,t}$: Per capita personal income in population j , for California and control states in year t , in thousands of dollars, $n_{j,t}$: Per capita healthcare expenditures in population j , for California and control states in year t , in

thousands of dollars, $\varepsilon_{k,t}$: Stationary error terms for equation $k=1$ to 3, in year t , j : Index for population $j=CA$ for California (intervention), $j=c$ for control state populations, t : Time index, $t=1985$ to 2008 (24 annual observations).

All monetary values are expressed in year 2010 dollars using the Medical Care (healthcare expenditures) and All-Item (tobacco control funding, cigarette price and personal income) Consumer Price Index for Urban Consumers (CPI-U) [4]. Nominal dollars were converted to 2010 dollars using the Bureau of Labor Statistics CPI-U indices for each Census Region using the relevant Census Region price index [4]. State cigarette sales were used to aggregate individual control state average cigarette sales prices; population weights were used to aggregate the remaining control state variables.

Equation 1 explains the difference between current smoking prevalence in the control states and California ($prev_{c,t} - prev_{CA,t}$) as a function of the corresponding differences between cumulative per capita tobacco control funding ($EC_{CA,t-1} - EC_{c,t-1}$), cigarette price ($p_{c,t-1} - p_{CA,t-1}$) and per capita personal income ($y_{c,t-1} - y_{CA,t-1}$). Equation 2 explains the difference between control states and California cigarettes consumed per current smoker ($cps_{c,t} - cps_{CA,t}$) as a function of the same explanatory variables as Equation 1. Equation 3 explains per capita health expenditures in California ($n_{CA,t}$) as a function of per capita healthcare expenditures in the control states ($n_{c,t}$), and the differences between California and control states' current smoking prevalence ($prev_{c,t-1} - prev_{CA,t-1}$), cigarette consumption per smoker ($cps_{c,t-1} - cps_{CA,t-1}$) and real personal per capita income ($y_{c,t-1} - y_{CA,t-1}$).

Equations 1 to 3 are generalizations of the model estimated in previous research for California [1]. The major change from the previous model is that prevalence of current smoking and cigarette consumption per smoker constitute a two-dimensional measure of smoking behavior rather than the single dimension of per capita cigarette consumption. There are two additional modifications, based on related research on Arizona [5]: we use the difference in price between the control states and California (i.e., require that the sum of the price coefficients for the control states and California sum to zero) and we added the variables for income. (See description of statistical analysis below for details).

From published research on per capita cigarette consumption, we expect that cigarette consumption per current smoker (Equation 2) will be negatively related to per capita tobacco control funding [6,7] and the price of cigarettes [8,9]. Previous time series estimates have shown cigarette consumption to be positively related to measures of per capita income [8]. We found one publication with aggregate time series regression estimates for prevalence of smoking (Equation 2), which found a negative price elasticity and a positive elasticity for per capita income, and mixed results for tobacco control funding [10]. Cross-sectional estimates based on individual survey responses show a positive relationship between prevalence and income for lower income individuals, which is consistent with aggregate time series estimates if the effect of income changes among lower income individuals dominates that of higher incomes over time [11]. Per capita healthcare expenditure for California should be positively related to per capita healthcare expenditure for the control states (reflecting common trends in advances in medical technology) and income [12]. Over time, per capita healthcare expenditure may or may not be positively related to smoking behavior; the sign will be determined by whether the effect of lower expenditures associated with less smoking in a population of fixed size is greater than higher expenditures due to longer lived non-smokers and smokers who consume fewer cigarettes [13].

Data

Consumption per smoker was calculated by dividing per capita cigarette consumption for the respective populations by current smoking prevalence. The definition of tobacco control funding used for the main analysis included state and federal funding; private funding was omitted, though including it makes almost no difference in the results. Cumulative real per capita tobacco control funding was constructed by summing annual real per capita funding.

The main results use the National Income and Product Account (NIPA) measure of per capita healthcare expenditure. Sensitivity analyses used an alternative measure of healthcare expenditure from the Centers for Medicare and Medicaid Services (CMS) [14,15] that was used in our earlier work [1]. The NIPA and CMS measures differ mainly in that the former omits items such as medical equipment, prescription drugs, administrative expenditures and insurance premiums [16]. The two measures are highly correlated over time, and both include expenditures for hospital services, medical procedures and healthcare personnel [16].

Per capita healthcare expenditures were calculated by dividing totals by the state resident populations. For sensitivity analysis the population was adjusted for race (African-American, white and other) and ethnicity (Hispanic and non-Hispanic).

The sample for the model connecting per capita tobacco control funding to smoking behavior consists of 24 annual observations from 1985 to 2008 (The 1984 observation was lost due to lagging the explanatory variables one period).

The 38 control states are Alabama, Arkansas, Colorado, Connecticut, Delaware, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming.

Estimates of smoking prevalence are not available for all of the 38 control states starting in 1985; data from 13 states were available as of 1984 and all were available by 1994. As a result, each of the 38 control states contributed to the control population as annual estimates of state smoking prevalence became available.

See the online Supporting Information S1 for all data sources and additional details of variable construction.

Statistical Analysis

The variables were tested to determine whether they were stationary or nonstationary. The main statistical analysis used a regression specification called a reduced form vector autoregression (VAR) in which the explanatory variables are expressed as a function of the lagged explanatory variables. The reduced form VAR can be used for unbiased estimates regardless of whether the data are stationary or nonstationary [17,18]. As reported in the Results section, it was difficult to determine whether smoking prevalence was stationary or nonstationary, therefore the reduced form VAR was the most robust approach to estimation.

Equations 1 to 3 were estimated using an instrumental variables technique that assured that bias would not result from correlation between the explanatory variables and the regression error terms in Equations 1 to 3; the instrumental variables did not use observed data, but were calculated using a formula that produces the required properties for unbiased estimation when the data are nonstationary [19,20]. The regression coefficient standard errors were estimated using a robust technique to guard against bias due to violations of the usual assumptions on regression errors [19,20,21]. The regression residuals were tested to determine

whether they were stationary or nonstationary; if the regression errors are nonstationary then the regression coefficients may not be consistent, and may indicate associations when the variables are actually independent [18]. The behavior of the regression residuals was checked for normality, serial correlation, heteroskedasticity, influential outliers and structural breaks [22].

See the online Supporting Information S1 for additional details on the statistical analysis.

Oracle Crystal Ball [23], OxMetrics 6.10 [24] and Stata version 12.0 [25] were used for estimation.

Estimated Program Effect

The effect of the California Tobacco Control Program was estimated using model predictions of the historical time series and predictions of a counterfactual history with all California tobacco control funding set to zero from FY1989 through FY2008. Monte Carlo simulations, using the regression results, estimated the effect of the California Tobacco Control Program. Predictions for prevalence (Equation 1) and consumption per smoker (Equation 2) were used as explanatory variables in the per capita healthcare expenditure model (Equation 3) instead of observed values. The dependent variables in Equations 1 and 2 are expressed as differences between California and control states; predictions of California prevalence and cigarette consumption per smoker were calculated by subtracting the corresponding observed control state values from the predicted difference between California and the control states. The total reduction in prevalence of smoking, person years of smoking, cigarette consumption per smoker, value of lost sales of cigarettes to the tobacco companies, and reduction in healthcare expenditure and other statistics were calculated by subtracting the difference between the model predictions using historical California tobacco control funding and predictions with the history of funding set to zero.

Sensitivity Analysis

Several sensitivity analyses were conducted to check the robustness of the methods and estimation results. See the Online Supporting Information S1 for additional details.

Validation of model specification using a specification search algorithm. It may be difficult to determine the best specification of a regression with a relatively small sample (up to 24 annual observations in this study). Therefore an automatic model selection algorithm, the Autometrics module in Oxmetrics [22], was used to explore the robustness of the regression specification and validate the adequacy of Equations 1 to 3. Autometrics [22] chooses the best model specification from a list of explanatory variables in a way that preserves the validity of the final estimates of standard errors of the regression coefficients, and therefore validity of the significance level for hypothesis tests on the coefficients. Autometrics also screens regression specifications for acceptable performance of regression residuals.

Use of alternative estimators. If the data are nonstationary, then the estimates using the VAR specification should be consistent with those from a static regression (called a “cointegrating regression”) [17,26], using either an ordinary least squares or instrumental variables estimates. The coefficients in the static specification represent the long run relationship between the explanatory and dependent variables, while the coefficients from the VAR specification contain information about the long run relationship and the short run adjustment process [18]. In this sensitivity analysis Equations 1 to 3 were re-estimated using a static regression using the same instrumental variables estimator used for the main analysis, ordinary least squares, and robust regression in

order to compare for consistency with the reduced form VAR results.

The prevalence (Equation 1) and cigarette consumption per smoker (Equation 2) regressions were also re-estimated assuming that the variables were stationary and that there was exponential decay in the effect of annual tobacco control funding on smoking behavior in order to explore alternatives to the assumption that there was no detectable decay in effectiveness of annual tobacco control expenditures over the sample period.

Alternative Selection of control states. The model was estimated using different groups of control states to explore the sensitivity of the results to control states that would reflect different regional trends in the explanatory variables, particularly healthcare expenditure and smoking behavior.

Alternative specification for consumption per smoker. The automatic selection procedure, Autometrics, used to check the specifications of Equations 1 to 3, found an alternative specification for Equation 2 (cigarette consumption per smoker) that was also acceptable and nearly equivalent by the selection criterion. The analysis was redone using this alternative regression model for cigarette consumption per smoker (Equation 2).

Race and Ethnicity. The model was re-estimated with variables for racial and ethnic composition of California and control populations, using estimates of the proportion of Hispanic, Black and All Other races from BRFSS survey data, added to the Equations 1 to 3 in order to determine the sensitivity of the regression estimates to these population characteristics.

Including private tobacco control funding. The model was estimated with alternate measures of tobacco control funding that included private nonprofit funding.

Estimates using Centers for Medicare and Medicaid Services (CMS) Healthcare Expenditure Data

The CMS provides a commonly used measure of healthcare expenditure for the U.S. and individual states, though state specific estimates are not released at regular intervals. CMS healthcare expenditure data were used to estimate Equation 3 for the sample periods 1984 to 2004 that was used in our previous research [1] in order to check robustness of the results to different measures of healthcare expenditure and to estimate results for total healthcare expenditures. The CMS measure of healthcare expenditure is denoted by $h_{CA,t}$ (for California) and $h_{c,t}$ (for control states) to distinguish it from the NIPA measure (which is denoted by $n_{CA,t}$ for California and $n_{c,t}$ for control states). Program effects were calculated using the estimates to determine whether the results of the new model were consistent with those of the old model. Estimates for 1984 to 2008 and program effects were calculated.

Out of sample forecasts of the CMS measure for healthcare

CMS healthcare expenditure data ($h_{CA,t}$ and $h_{c,t}$) for the years 2005 to 2008 became available during December, 2011, after the other analysis presented in this paper was completed. We used these additional data to compare the out-of-sample forecast performance of the old model (that used per capita cigarette consumption) and the new model (that used smoking prevalence and cigarette consumption per smoker). We re-estimated the model from our previous research that used per capita cigarette consumption as the measure of smoking behavior (Equations 1 and 2 in [1]), and Equations 1 to 3 in the new model presented in this study using prevalence and cigarette consumption per smoker, using a similar sample period (years 1984 to 2004) to that in the earlier paper, and using the reduced form VAR specification. We calculated forecasts for per capita cigarette consumption, per

capita healthcare expenditure, and four measures of forecast accuracy (root mean square error, mean absolute error, mean absolute percentage error, and the regression slope coefficient of the forecast on observed values) for the years 2005 to 2008 to compare the forecast performance of the two models (Table S1, Supporting Information S1).

Results

Time Series Properties of the Variables

The unit root tests indicated that all the variables except for prevalence of current smoking were nonstationary with autoregressive unit roots; the results for prevalence were unstable and difficult to interpret. Smoking prevalence may be stationary, so estimation using cointegrating regressions (which were used in previous research) may be inappropriate. These results imply that that the reduced form VAR specification is more robust than the cointegrating regression estimates (used in earlier research [1,5]) since the VAR can be used with both stationary or nonstationary data.

Model Estimates

The reduced form VAR estimates of Equations 1 and 2 show statistically significant associations between cumulative per capita tobacco control funding and both measures of smoking behavior (prevalence and cigarette consumption per smoker). Holding other variables constant, an additional dollar in cumulative per capita California tobacco control funding reduces California prevalence by 0.0497 (SE 0.00347; $P < 0.01$) percentage points and reduces cigarette consumption per smoker by 1.39 (SE 0.132; $P < 0.01$) packs/year. Equation 3 shows statistically significant associations between and between both measures of smoking behavior and per capita healthcare expenditures (Table 1). A one percentage point reduction in smoking prevalence and one pack/year reduction in cigarette consumption per smoker in California reduces per capita healthcare expenditures by \$35.4 (SE \$9.85) ($P < 0.01$) and \$3.14 (SE \$0.786; $P < 0.01$), respectively (Table 1).

All of the other explanatory variables are statistically significant at the one percent level except the price of cigarettes (α_2) in Equation 1 ($P = 0.049$) and per capita income (β_3) ($P = 0.023$) in Equation 2 (Table 1). The signs of the other explanatory variables are as expected according to economic theory and previous research: prevalence and cigarette consumption per smoker were negatively related to cigarette price. Cigarette consumption per smoker is positively related to per capita income which is consistent with existing time series and addictive models for consumption [2,8,9,27]. Per capita healthcare expenditure is positively associated with per capita income. The residuals show no violations of assumptions that would affect the interpretation of the regression estimates.

The in-sample predictions for prevalence (Equation 1) and healthcare expenditure (Equation 3) show good agreement with the observed data (Figure 1). Cigarette consumption per smoker (Equation 2) does not seem to model turning points in the data well, though it is a better model for longer run trends (Figure 1).

Tobacco Control Program Effect

The dynamic simulation of the time paths of prevalence of smoking, consumption per smoker and per capita healthcare expenditures (Figure 2) is similar to those for the in-sample fits for Equations 1 to 3. The reductions in prevalence, cigarette consumption per smoker and per capita healthcare expenditure attributable to the Program increase steadily beginning in FY 1992 (Figure 2).

Table 1. Estimated California smoking prevalence, cigarettes per capita, and per capita healthcare expenditures.

Eq.	Sample Period	Dependent Variable	Statistic	Estimate	dimension
1	1985–2008, 24 obs	$(prev_{c,t} - prev_{CA,t})$	α_0	6.30 (0.610)	
			α_1	0.0497 (0.00347)	/\$ per capita
			α_2	–1.00 (0.477)	/\$ per pack
			α_3	0.416 (0.0730)	/\$1000 per capita
			R^2 (%)	77	
			r_1	0.154	
2	1985–2008, 24 obs	$(cps_{c,t} - cps_{CA,t})$	β_0	67.9 (10.2)	
			β_1	1.39 (0.132)	/\$ per capita
			β_2	–26.6 (6.80)	/\$ per pack
			β_3	2.97 (1.21)	/\$1000 per capita
			R^2 (%)	81	
			r_1	0.148	
3	1985–2008, 24 obs	$n_{CA,t}$	γ_0	–550 (433)	\$
			γ_1	1.15 (0.180)	
			γ_2	–35.4 (9.85)	\$/%point
			γ_3	–3.14 (0.786)	\$ pack per smoker
			γ_4	–108 (6.79)	/\$1000 per capita
			R^2 (%)	80	
3*	1985–2008, 24 obs	$h_{CA,t}$	γ_0	1056 (112)	\$
			γ_1	0.847 (0.0542)	
			γ_2	–67.8 (7.31)	\$/%point
			γ_3	–5.48 (0.928)	\$ pack per smoker
			γ_4	–107 (22.3)	/\$1000 per capita
			R^2 (%)	89	
3*	1985–2004, 20 obs	$h_{CA,t}$	γ_0	1001 (967)	\$
			γ_1	0.856 (0.227)	
			γ_2	–69.8 (12.6)	\$/%point
			γ_3	–5.59 (1.77)	\$ pack per smoker
			γ_4	–112 (17.5)	/\$1000 per capita
			R^2 (%)	78	
			r_1	0.483 [†]	

*Equation 3 with $h_{CA,t}$ as dependent variable instead of $n_{CA,t}$ and $h_{c,t}$ as explanatory variable instead of $n_{c,t}$.

[†]significant at the 5% level.

r_1 : first order autocorrelation coefficient.

$prev_{j,t}$: Prevalence of current smoking in population j , for California and control states in year t , (percentage points).

$cps_{j,t}$: Cigarettes consumption per current smoker in population j , for California and control states in year t , (packs/year per smoker).

$EC_{j,t}$: Cumulative per capita funding in population j , for California and control states in year t , (dollars).

$p_{j,t}$: Price per pack of cigarettes in population j , for California and control states in year t , (dollars).

$y_{j,t}$: Per capita personal income in population j , for California and control states in year t , (thousands of dollars).

$n_{j,t}$: Per capita healthcare expenditures in population j , for California and control states in year t , (thousands of dollars).

$h_{j,t}$: Per capita healthcare expenditures in population j , for California and control states in year t , (thousands of dollars).

doi:10.1371/journal.pone.0047145.t001

In fiscal year 2008, 19 years after the Program started, smoking prevalence was 3.46 (SE 0.242) percentage points and cigarette consumption per smoker was 96.3 (SE 13.7) packs/year, and per capita healthcare expenditures were \$411 (SE \$92.0) below what is predicted in the absence of the California Tobacco Control Program.

From FY1989 to FY2008, the Program is associated with a cumulative reduction in 8.79 (SE 0.616) million person-years of smoking, 6.79 (SE 0.605) billion packs of cigarettes worth \$28.5

(SE \$2.55) billion in pre-tax sales to the cigarette companies. The cumulative savings in the NIPA measure of healthcare expenditures is \$134 (SE \$30.5) billion for the years 1989 to 2008.

The reduction in prevalence is responsible for 36.4% (SE 4.06%) of the reduction in cumulative total cigarette consumption per smoker and 31.2% (SE 3.48%) of the reduction in NIPA healthcare expenditures, respectively. The rest of the reductions are due to reductions in consumption per smoker.

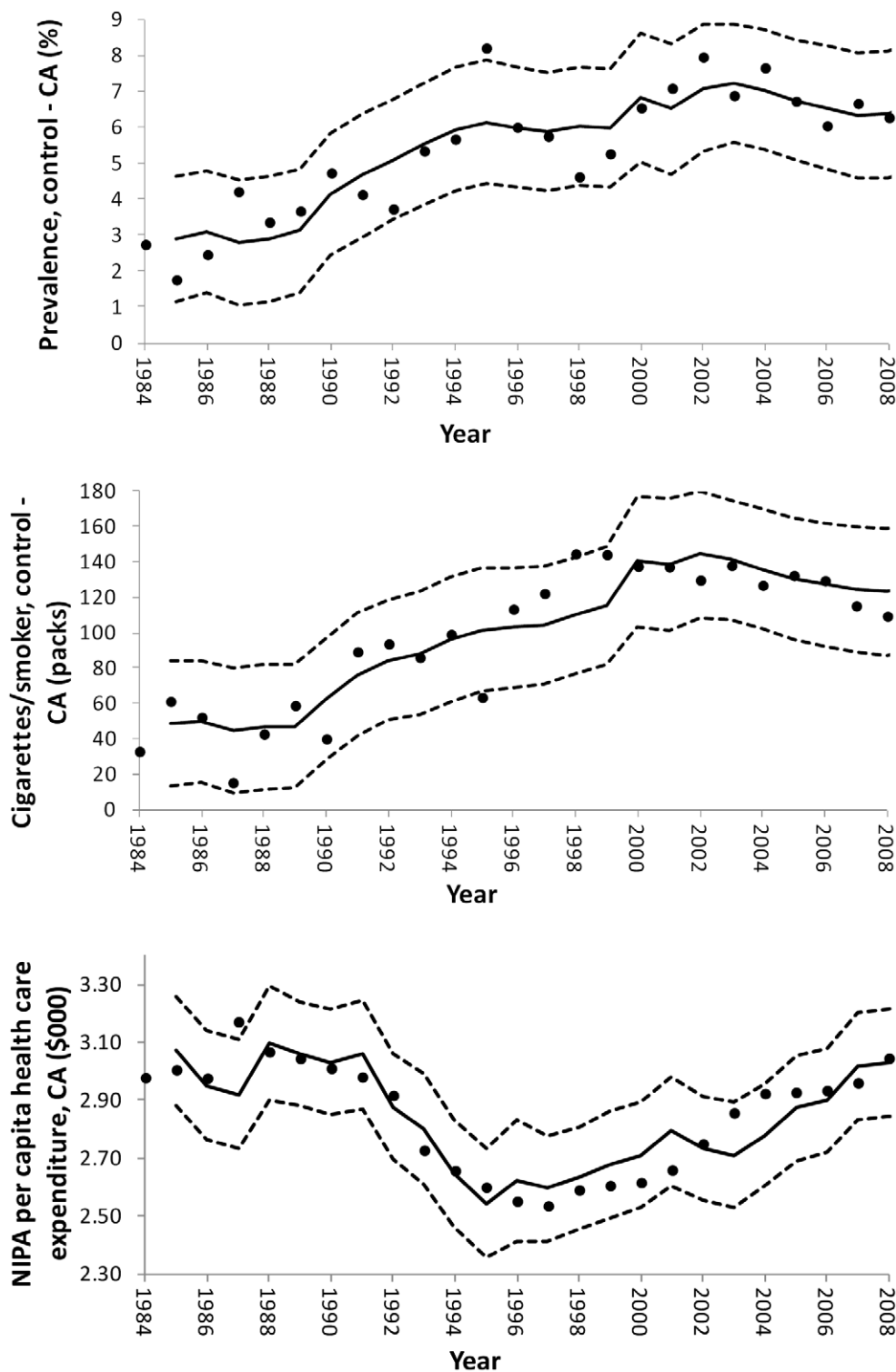


Figure 1. Observed and predicted smoking prevalence, cigarette consumption per smoker and per capita healthcare expenditures. Top panel: Difference between California and control state current smoking prevalence (Equation 1), middle panel: difference between California and control state cigarette consumption per smoker (Equation 2), bottom panel: California per capita healthcare expenditures using the NIPA measure (Equation 3). Black circles: observed, solid line: in-sample predictions from regression estimates, dashed lines: 95 percent forecast confidence intervals for prediction of individual observations.
doi:10.1371/journal.pone.0047145.g001

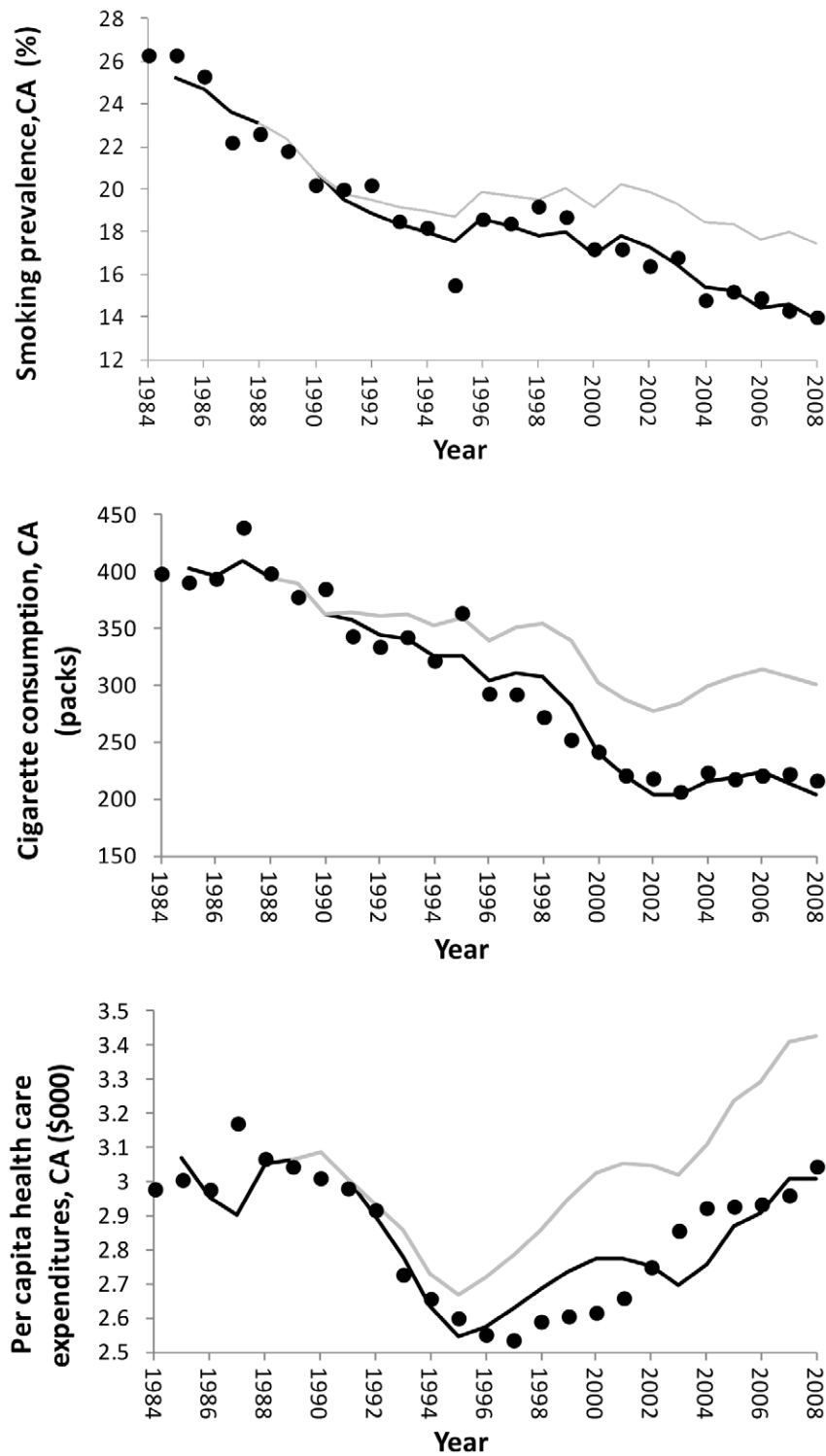


Figure 2. Prevalence of current smoking, cigarette consumption per smoker and per capita healthcare expenditures with and without California tobacco control funding. Top panel: California current smoking prevalence, middle panel: California cigarette consumption per smoker, bottom panel: California per capita healthcare expenditures using the NIPA measure. Black circles: observed, black line: predictions with California tobacco control program (using historical data on tobacco control funding), gray line: predictions without California tobacco control program (California tobacco control funding set to zero). doi:10.1371/journal.pone.0047145.g002

See online Supporting Information S1 for the additional details of calculation of the tobacco control program effect.

Sensitivity Analysis

Validation of model specification using a specification search algorithm. Autometrics selected regression specifications are similar to those for prevalence (Equation 1) and per capita healthcare expenditure (Equation 3) and the algorithm found no competing specifications that substantially changed the coefficient values for per capita tobacco control funding (Equation 1) or prevalence and cigarette consumption per smoker (Equation 3).

Autometrics did select a regression specification for Equation 2 that contained only California and control tobacco control funding variables and California cigarette price when the variables were entered individually. This alternative specification produces a statistically significant relationship between California tobacco control funding and cigarette consumption per smoker. However, this alternative specification results in very large estimates of program effects because it does not include the effect of common trends represented by variables for control states (such as cigarette consumption per smoker), therefore the initial specification was chosen to produce lower estimates of program effect.

Alternative estimators and control states. The results of the OLS and robust regression estimates of the VAR and cointegrating regressions are consistent with those of the reduced form VAR estimates and the residuals are stationary. This result provides more evidence that data are nonstationary and that the results are robust to different regression specifications.

Models that estimated an exponential decay in the effect of tobacco control did not produce statistically significant regression relationships and the residuals showed significant autocorrelation.

Alternative Selection of Control States. The estimates for Equations 1 to 3 using alternative control populations are similar to the main results. Estimates for all the alternative groups of control states show statistically significant relationships between California tobacco control funding and both prevalence and cigarette consumption per smoker and between those measures of smoking behavior and per capita healthcare expenditure. The principal difference is for the healthcare expenditure (Equation 3): when the Western states were used as controls, the coefficient for consumption per smoker is \$0.92 (SE \$0.283) which is significantly different and lower than in the main analysis ($P = 0.011$).

Alternative specification of consumption per smoker. The estimated coefficients of the alternative model chosen by Autometrics are -2.96 (SE 0.232) for the difference California and control state tobacco control funding and -15.46 (SE 5.00) for the price of cigarettes in California. Tobacco control funding has a statistically significant effect on cigarette consumption per smoker in California in the alternative model.

Race and Ethnicity. The variables for proportion of the population that African-American or Hispanic do not enter the regressions (all P values > 0.10) and their inclusion do not change the values of the other coefficients substantially. The variable for Other Race (neither White nor African-American) enter the regressions for prevalence (Equation 1) and cigarettes consumption per smoker (Equation 2) at the 5 percent significance level with a positive sign for prevalence and a negative sign for consumption per smoker. California Tobacco control funding is more effective holding the prevalence of Other Races constant, implying that tobacco control funding is less effective in Other Races than the rest of the population.

Centers for Medicare and Medicaid Services (CMS) Healthcare Expenditure

Estimates of healthcare expenditure using the CMS measure of healthcare expenditure (rather than the NIPA measure) from 1989 to 2004 show a reduction of one percentage point in prevalence of current smoking and consumption of one pack per year per smoker in California reducing per capita healthcare expenditures by \$69.8 (SE \$12.6) and \$5.59 (SE \$1.77), respectively (Table 1). The California Tobacco Program is associated with a cumulative reduction of \$142 (SE \$22.4) billion in CMS healthcare expenditures between 1989 and 2004. Estimates of healthcare expenditure using the CMS measure of healthcare expenditure (rather than the NIPA measure) from 1989 to 2008 show that reductions of one percentage point in prevalence of current smoking and in consumption of one pack per year per smoker in California reduce per capita healthcare expenditures by \$67.8 (SE \$7.31) and \$5.48 (SE \$0.928), respectively (Table 1). The California Tobacco Control Program is associated with a steady increase in annual savings (Figure 3) and a cumulative reduction of \$243 (SE \$38.5) billion in CMS healthcare expenditures between 1989 and 2008.

Out-of-sample forecasts. The out-of-sample forecasts using the model estimated in this paper that uses current smoking prevalence and cigarette consumption per smoker as the measure of smoking behavior performs better than the previously estimated model that used per capita cigarette consumption. The new model performs better on all forecast performance measures, particularly for per capita cigarette consumption. (See Table S1 in the Supporting Information S1 for the results of out of sample forecasts).

Discussion

The results show that the California Tobacco Control Program had a substantial effect on both smoking prevalence and cigarette consumption per smoker, and both in turn had a substantial effect on per capita healthcare expenditure. The out-of-sample forecasts of the model (using the CMS measure of healthcare expenditure) presented in this study using prevalence and cigarette consumption per smoker are superior to the previously published model that uses per capita cigarette consumption.

From 1989 to 2008, the California Tobacco Control Program cost \$2.4 billion and resulted in \$243 billion (SE \$38.5 billion) in CMS health expenditure savings by reducing total cigarette consumption by a total of 6.79 billion (SE 0.605 billion) packs of cigarettes worth \$28.5 billion (SE \$2.55 billion) in pre-tax sales to the tobacco industry. 36.4% (SE 4.06%) of this effect was due to reductions in prevalence and 63.6% (SE 4.06%) was due to reductions in consumption among continuing smokers. The fact that such a large fraction of the total effect was due to reductions in consumption points to the importance of considering per smoker consumption in addition to changes in prevalence when evaluating the effects of tobacco control programs. The California Tobacco Control Program has been shown in other research to reduce the prevalence of heavy (> 20 cigarettes per day) and moderate smoking (10 to 19 cigarettes per day), and increase the prevalence of light (< 10 cigarettes per day) smoking [28,29].

Comparison with Existing Estimates

The estimated NIPA healthcare expenditures attributable to smoking using the new model are \$548 (SE \$27.8) per capita and between \$2,262 (SE \$121) and \$2,904 (SE \$184) per smoker. About one third of the smoking-related cost is due to smoking prevalence and the rest due to consumption per smoker.

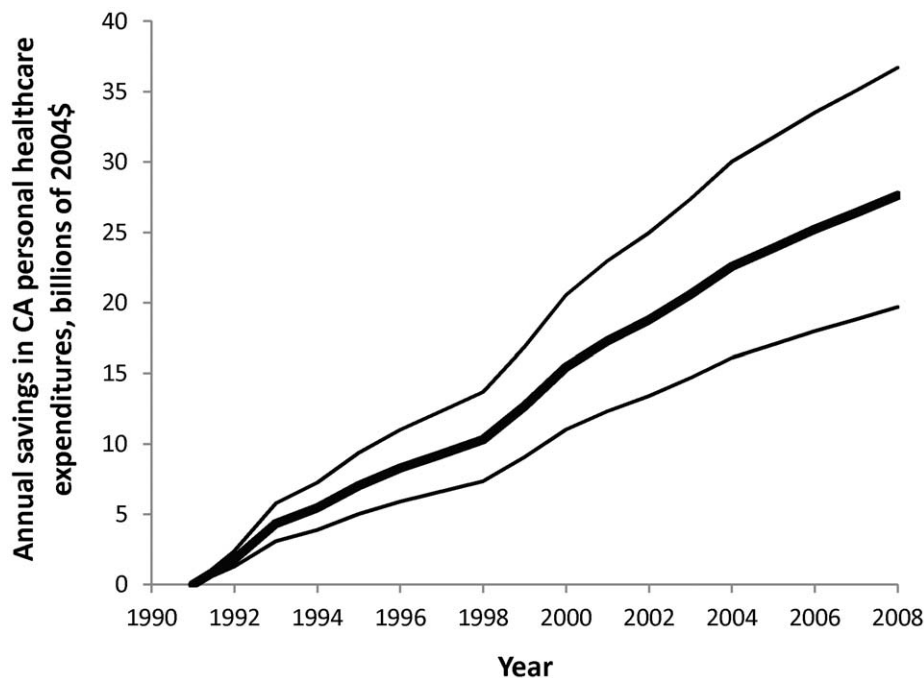


Figure 3. Annual savings in total personal healthcare expenditures in California attributable to the California Tobacco Control Program, billions of 2010 dollars.

doi:10.1371/journal.pone.0047145.g003

The estimated annual per capita excess per capita healthcare expenditure (using the CMS measure) attributable to differences in per capita cigarette consumption in our earlier paper [1] was \$1,154, which is consistent with \$4,910 (SE \$373) and \$5,982 (SE \$411) per smoker, estimated over the sample period 1980 to 2004. Using the new model in this paper, the per capita healthcare expenditure (CMS measure) attributable to an additional smoker who smokes the average number of cigarettes per year as other smokers is \$949 (SE \$173) per capita, and consistent with between \$3,968 (SE \$727) and \$5,108 (SE \$957) per current smoker, which are similar to our earlier paper. NIPA is a better source of healthcare expenditure data for statistical time series analysis because it omits some expenditures categories that are low quality, for example, drug expenditure data for which actual nationally representative survey data are not available for all years. The CMS measure is more comprehensive and more commonly used to measure the burden of healthcare expenditure in the US. The two measures are highly correlated, but the measured per capita expenditures differ in levels [30,31].

The cumulative reduction in packs sold attributable to the California Tobacco Control Program (between 1989 and 2004) is 4.2 (95% CI 3.4, 4.9) million packs, which is not significantly higher than the 3.6 (95% CI 1.5, 5.9) million packs estimated in using our previous model [1] ($P=0.63$ assuming normality). This nonsignificant difference may be due to the use of per capita cigarette consumption in the old model, which included a deterministic time trend [1], and underestimated the reduction in packs consumed attributable to the Program (the new model avoided the need to introduce a time trend). Recursive estimates, starting in 1985, of the old per capita model showed that the coefficient for tobacco control funding increased, while the time trend coefficient approached zero and became statistically insignificant; corresponding recursive estimates of the new model were stable over different subsamples. The new model with prevalence and consumption per smoker is more stable over

different sample periods, and therefore we believe more reliable, than the old model using per capita consumption. Our earlier per capita model may have underestimated the effect of California Tobacco Control Program funding on both smoking behavior and healthcare expenditure because the California Tobacco Control Program affects prevalence and cigarette consumption per smoker differently; estimates of program effect that use per capita cigarette consumption is a poorer approximation than using prevalence and consumption per smoker.

The average price elasticity over the sample period of prevalence is -0.198 (SE 0.0951) and of cigarette consumption per smoker is -0.352 (SE 0.164). The total elasticity of cigarette demand is -0.474 (SE 0.164). The results are more consistent with existing price elasticity estimates for cigarette demand [8] than the old model using per capita cigarette consumption, so the new model is more consistent with existing estimates of demand.

The VAR regression approach used in this study is consistent with the cointegrating regression estimates in previous research, and produces a similar long run relationship as the cointegrating regression approach. The prevalence of smoking may be stationary with high autocorrelation, or nonstationary with a unit root. If the data are nonstationary, then the dynamic VAR equations can be solved estimate the combined cointegrating equation and error correction model that should equal the static cointegrating regressions. If the data are stationary, but with high autocorrelation, the VAR estimates are still consistent; the consistency of the static cointegrating regressions can be questioned. Thus, the VAR are more robust if the data are really stationary, and will give the same result for the long relationships as the cointegrating regressions if the data are nonstationary.

Limitations

This analysis uses aggregate measures of population characteristics to estimate the relationships between per capita tobacco control funding, smoking and per capita healthcare expenditures.

The estimated relationship between smoking and healthcare expenditures reflects differences in smoking behavior and healthcare expenditures in different state populations with different histories of aggregate population measures of smoking and resulting cost estimates should not be interpreted as healthcare costs arising in, or due to, an individual smoker. These estimates reflect all the healthcare expenditures associated with smoking that will arise in a population: short and long term direct effects on the smoker, and short and long term effects of second- and third-hand [32] smoking exposure in nonsmokers, not just the effects of smoking on the individual smoker.

The results of this study are subject to the limitations of analysis of aggregate observations using observational data. A study of this nature that used aggregate data and a relatively small sample size cannot, by itself, establish a causal connection between tobacco control programs, smoking behavior and healthcare costs, and is not the goal of this study. Rather, it should be evaluated in the context of the existing body of research that has already established that this relationship is causal using a variety of study designs [33,34,35,36]. There is also a well-established causal relationship between smoking behavior and healthcare costs [13]. It is not currently known if or when the net effect of reduced healthcare expenditures due to fewer smokers might be outweighed by increased expenditures due to longer lived nonsmokers, though our estimates indicate that after more than 25 years of reduced smoking in California compared to the rest of the U.S., reduced smoking was associated with lower per capita healthcare expenditures, and 25 years is a long time horizon for many policy decisions.

The best regression specification for cigarette consumption per smoker (Equation 2) is uncertain given the relatively small number of available annual observations; however, the specification search using Autometrics was unable to identify a specification that was clearly superior to that used for the main analysis. The alternative specification chosen by Autometrics for cigarette consumption per smoker contained California tobacco control funding is a statistically significant explanatory variable, consistent with the hypothesis that tobacco control funding reduced consumption in continuing smokers. Therefore, we are confident that tobacco control funding belongs in the regression, despite uncertainty about other aspects of the specification.

Data were not available to conduct a detailed analysis of the possible independent effect of regional variations in local smoke-free policies or sales regulations for tobacco on smoking behavior. However, existing research has shown that these factors should be considered mediating variables for the effects of large scale state tobacco control programs, which operate, in part, through such changes in state tobacco control policy [7]. Therefore simply including them in a single regression specification would produce a downwardly biased estimate of the effect of the state Program.

Omission of exogenous trends that play no mediating role in determining smoking behavior or healthcare expenditures could produce bias in the estimated regression coefficients. Examples are prevalence of obesity, abusive alcohol consumption, diabetes, prevalence of racial and ethnic populations, regional capacity of healthcare providers, and penetration of managed care organiza-

tions. An extensive sensitivity analysis of the possible effect of these factors, reported in previous research for California [7] showed that they did not have a noticeable effect on the results [1].

Conclusions

The results extend previous results for California [1] that used per capita cigarette consumption to measure smoking behavior to a similar model that uses a two dimensional measures of smoking behavior: prevalence of smoking and cigarette consumption per smoker. The results indicate that the California Tobacco Control Program was effective in reducing both prevalence of smoking and average cigarette consumption per smoker, and that both measures of smoking behavior have a significant relationship to per capita healthcare expenditures.

Because of the study design, the coefficients for prevalence and consumption per smoker for the health expenditure (Equation 3) cannot identify healthcare costs to smokers themselves due to direct smoking versus costs to others from second and third hand passive smoking, and cannot be used to evaluate the comparative importance of smoking status versus consumption in an individual smoker. The effects of reduced passive smoking due to lower prevalence and consumption may be more important than previously thought: a meta-analysis estimated substantial reductions in hospital admissions for coronary events, other heart disease, stroke, and respiratory disease attributable to increased protection against passive smoking exposure [37], which may partly explain the quick effect of variations in smoking behavior on per capita healthcare expenditure.

The results suggest that tobacco control is very effective at reducing consumption in smokers in addition to reducing prevalence, and that reduction in consumption in continuing current smokers also makes an important contribution to reducing healthcare expenditure for the overall population. Tobacco control programs should evaluate their effectiveness using both changes in prevalence and consumption in current smokers. At the same time, since even low levels of cigarette consumption substantially increase the risk of some diseases, particularly cardiovascular disease [38,39,40,41,42,43,44], eliminating tobacco use should be the ultimate goal.

Supporting Information

Supporting Information S1 Details of data sources, modeling methods and sensitivity analysis.

(DOCX)

Table S1 Out of sample forecast performance measures for models with alternative measures of forecast performance.

(DOCX)

Author Contributions

Conceived and designed the experiments: JL SG. Analyzed the data: JL. Contributed reagents/materials/analysis tools: JL SG. Wrote the paper: JL SG.

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Investment Committee

December 19, 2016

Attachment 3 Component

The New England Journal of Medicine
December 14, 2000

“Association of the California Tobacco Control Program with Declines in Cigarette Consumption and Mortality from Heart Disease”

Authors: Caroline M. Fichtenberg, M.S., and Stanton A. Glantz, Ph.D.

This article is available at the New England Journal of Medicine website here:

<http://www.nejm.org/doi/full/10.1056/NEJM200012143432406#t=article>

A number of copies will be provided at the meeting.



Investment Committee

December 19, 2016

Attachment 3 Component

Business Insider
October 19, 2016

“The maker of Camel and Newport cigarettes is sinking after saying it expects to sell fewer cigarettes next year”

Author: Bob Bryan

This article is available at the Business Insider website here:

<http://www.businessinsider.com/reynolds-american-camel-newport-cigarettes-earnings-q3-2016-2016-10>

A number of copies will be provided at the meeting.



Wilshire/CalPERS Divestment Survey Summary

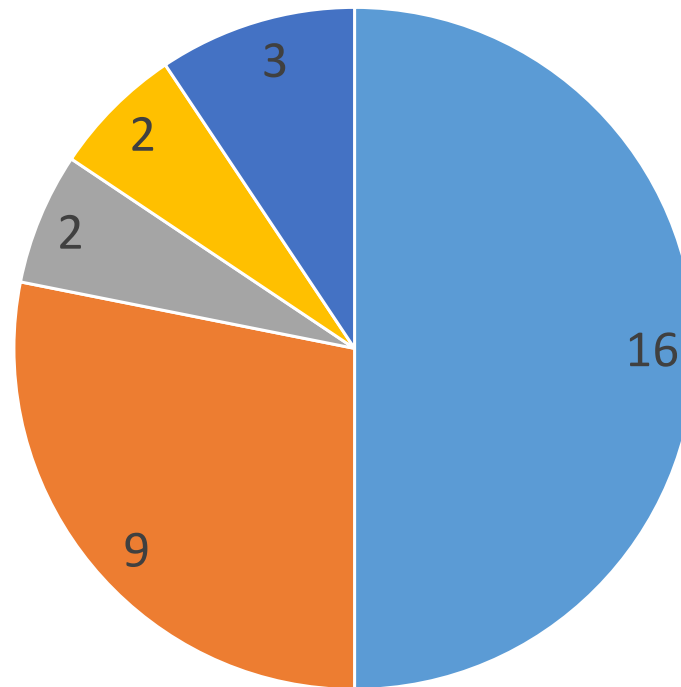
*Andrew Junkin, CFA, CAIA, President, Wilshire Consulting
Steve Foresti, Chief Investment Officer, Wilshire Consulting*

December 19, 2016

Survey Respondents: Organization Type

- Received responses from 32 organizations (including CalPERS)
 - 16 public defined benefit (DB) respondents (50%)

Organization Type

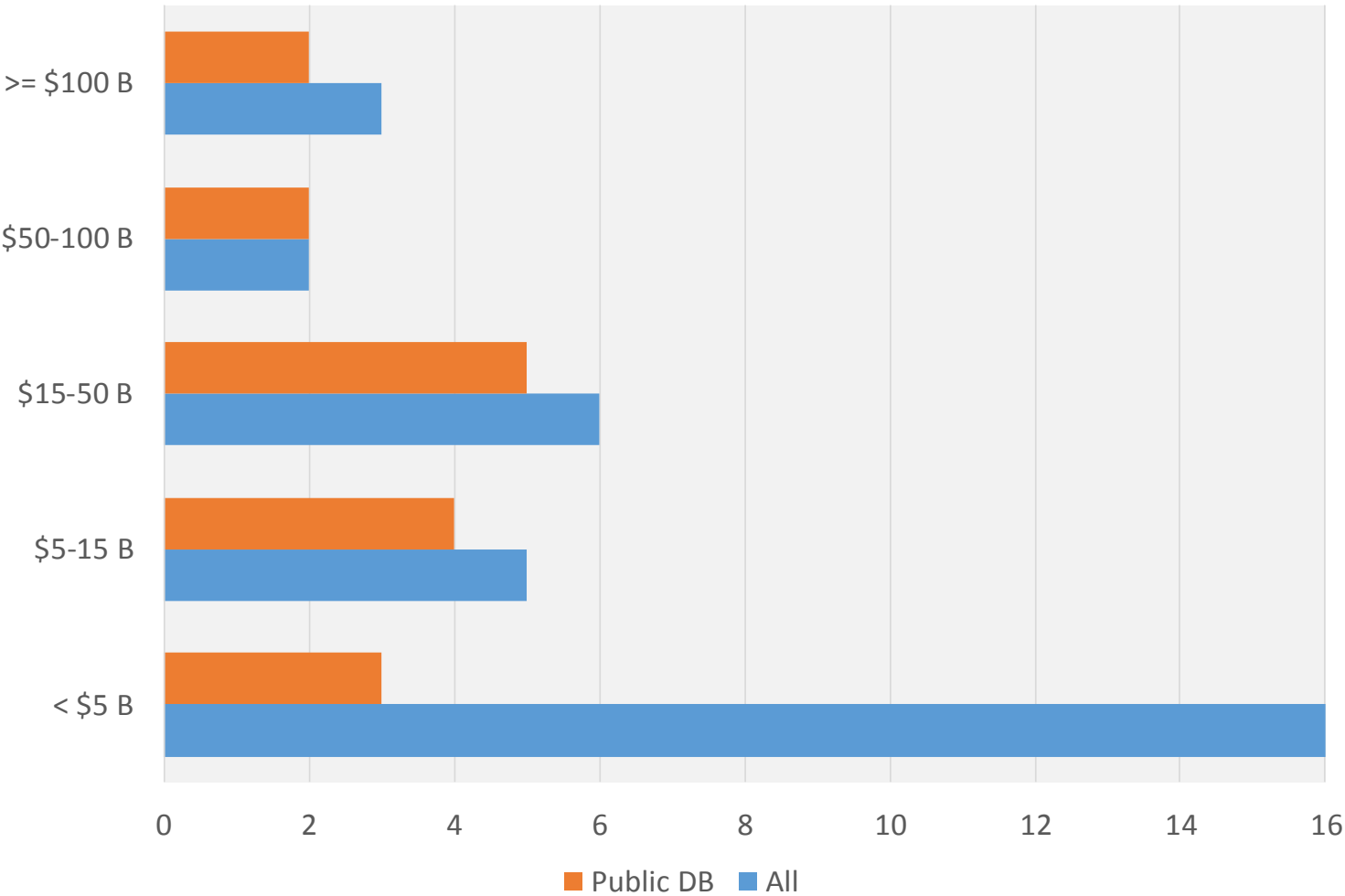




Survey Respondents: Assets

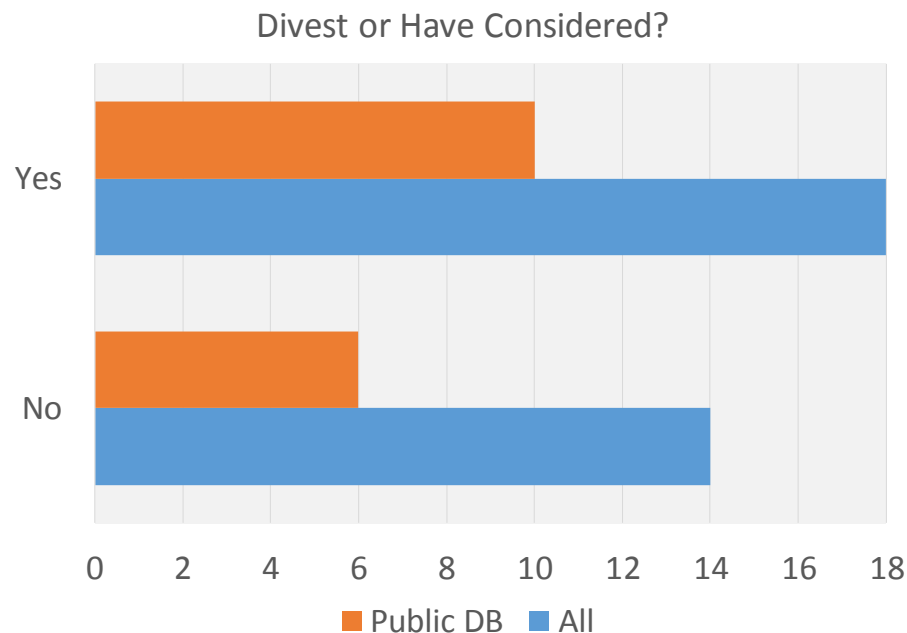
- 50% of respondents (16) had < \$5B in assets (most of the largest funds were public DB respondents)

Distribution by Assets



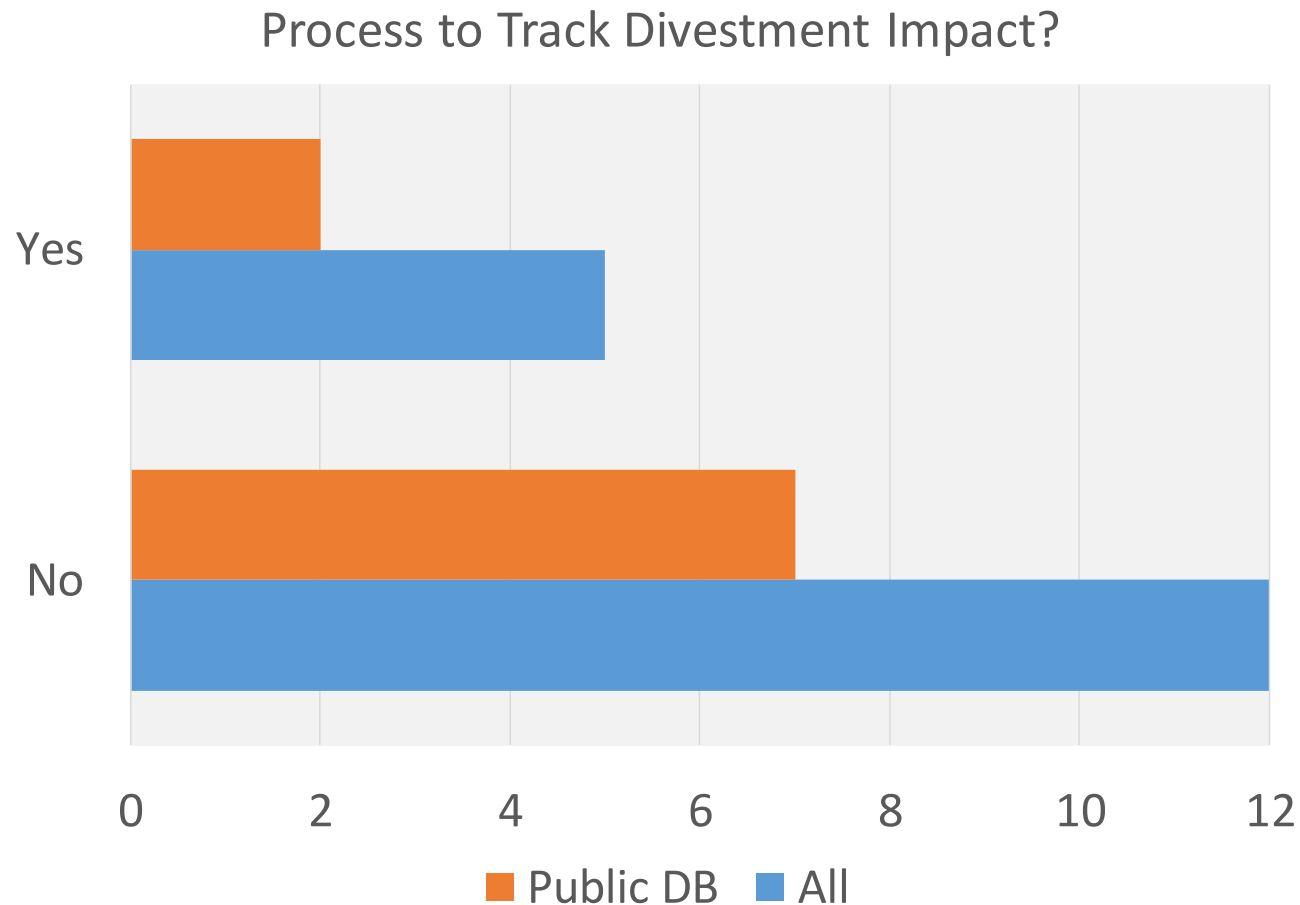
Divestment Activity

- All respondents were asked: “Has your organization ever divested from, or considered divesting from, one or more securities for any reason?”
 - This question was not specific to Tobacco divestment
 - 4 respondents have divested from Tobacco
 - Requested by Board/Governing Body: 2
 - Required by Law, Rule or Regulation: 2



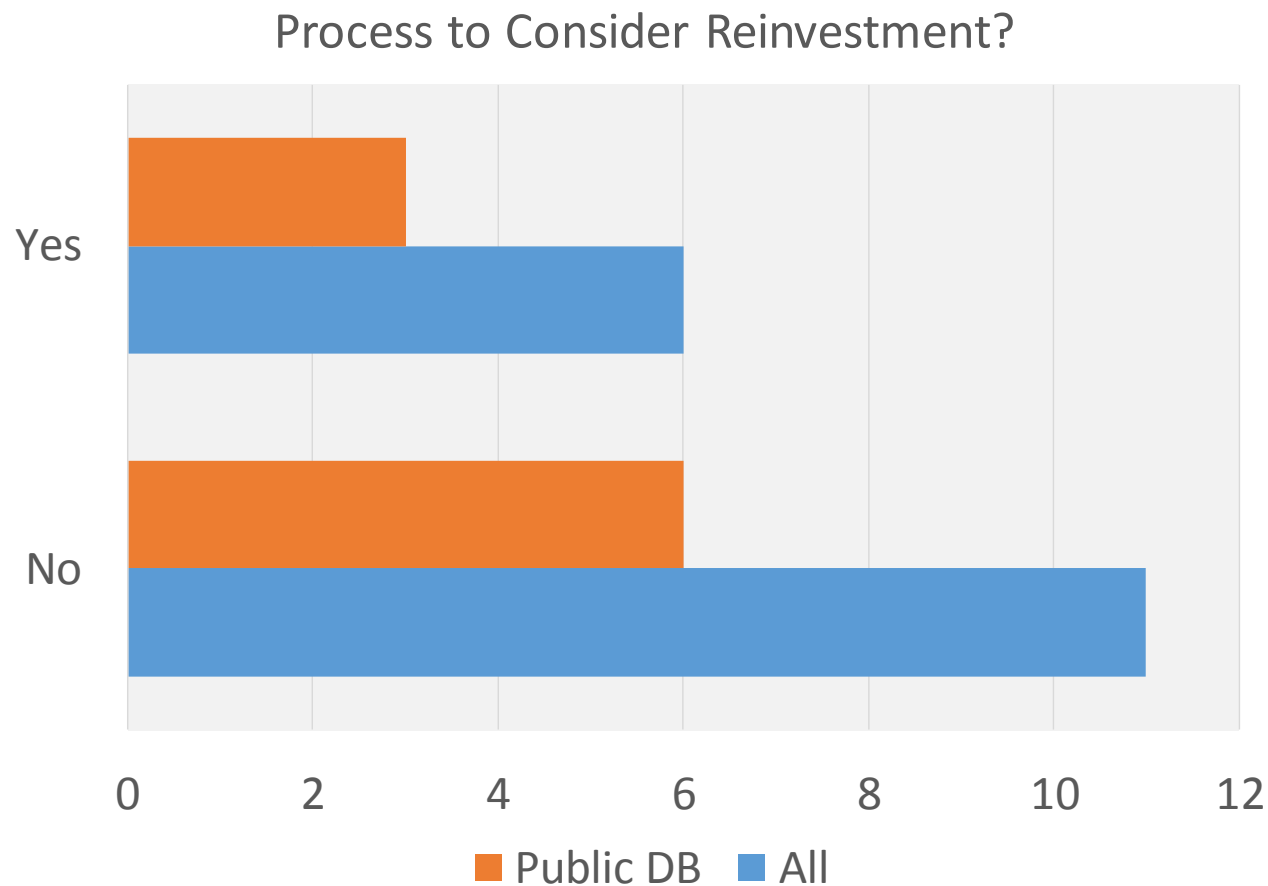
Divestment Activity

- All respondents who indicated some form of divestment reinvested those assets pro-rata across the portfolio
- Few have a process to track divestment gains/losses



Reconsidering Divestment

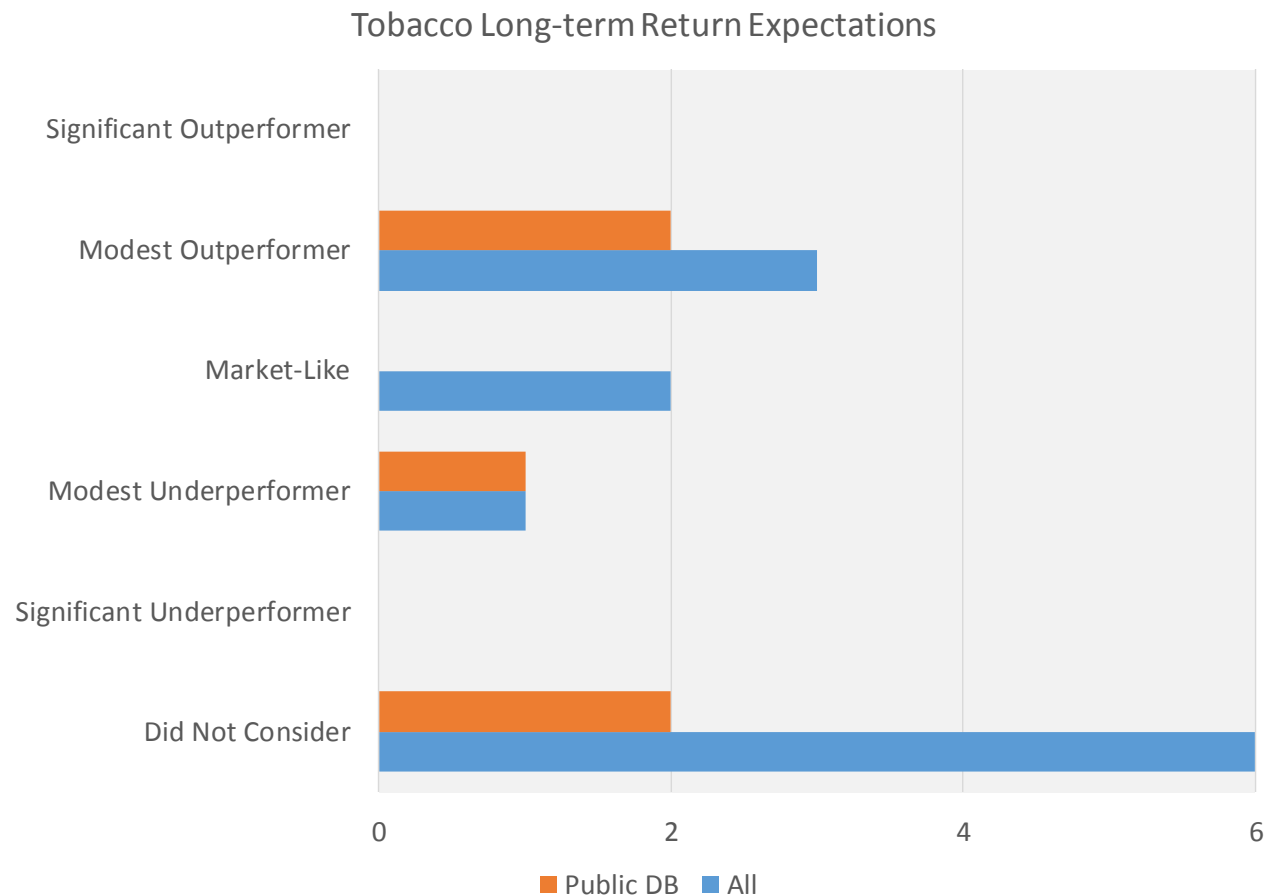
- Question: “Does your organization have a process to consider reinvestment in previously divested or excluded securities?”





Divestment Return Expectations

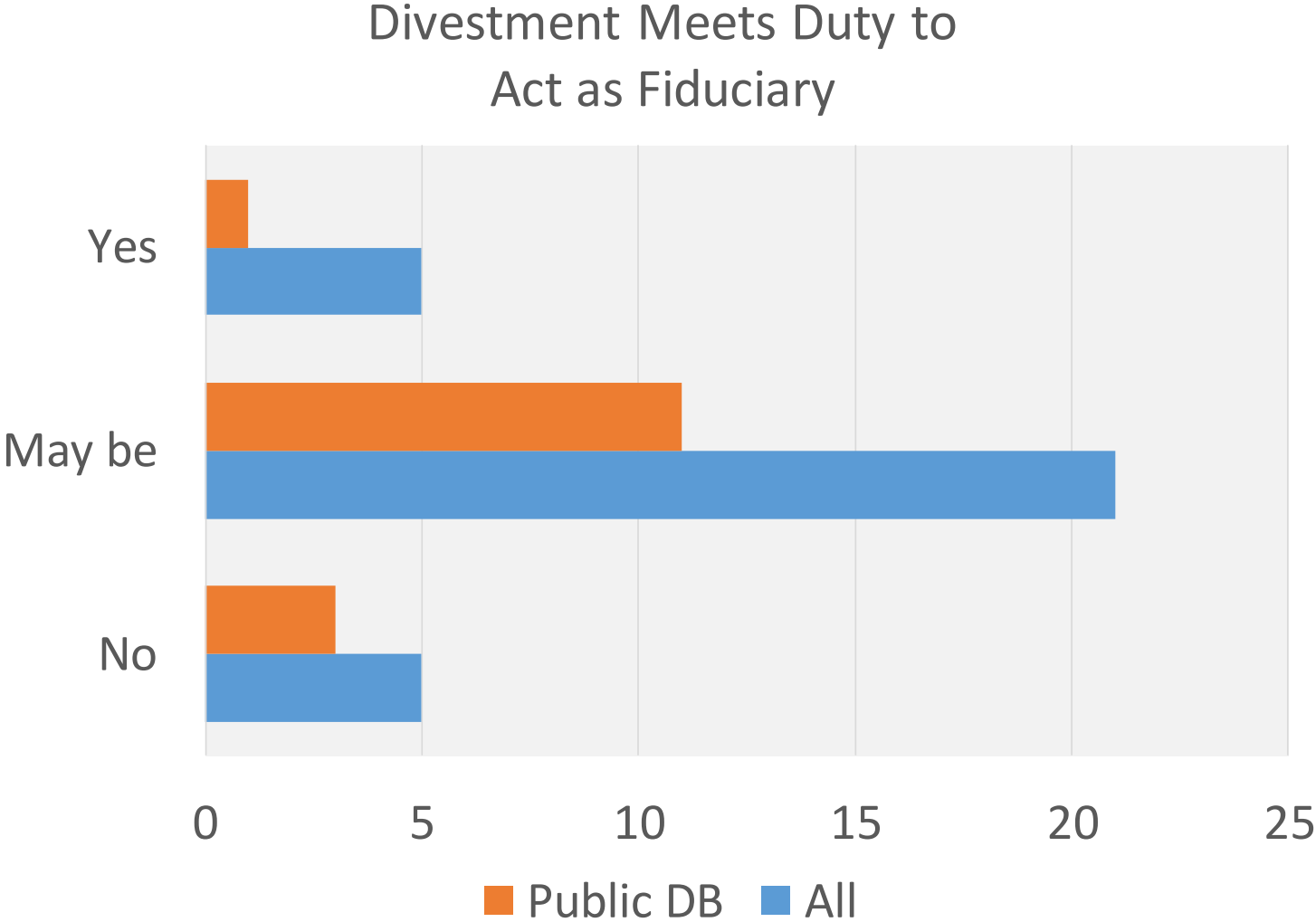
- Tobacco return expectations at the time of divestment?
 - More responded (12) than have divested (4)
 - Of 4 with Tobacco divestments: 2 market-like, 1 modest underperformance, 1 modest outperformance





Respondent Views on Fiduciary Duty

- Indicate which best reflects your organization's policy or view on whether divestment meets the duty to act as a fiduciary:

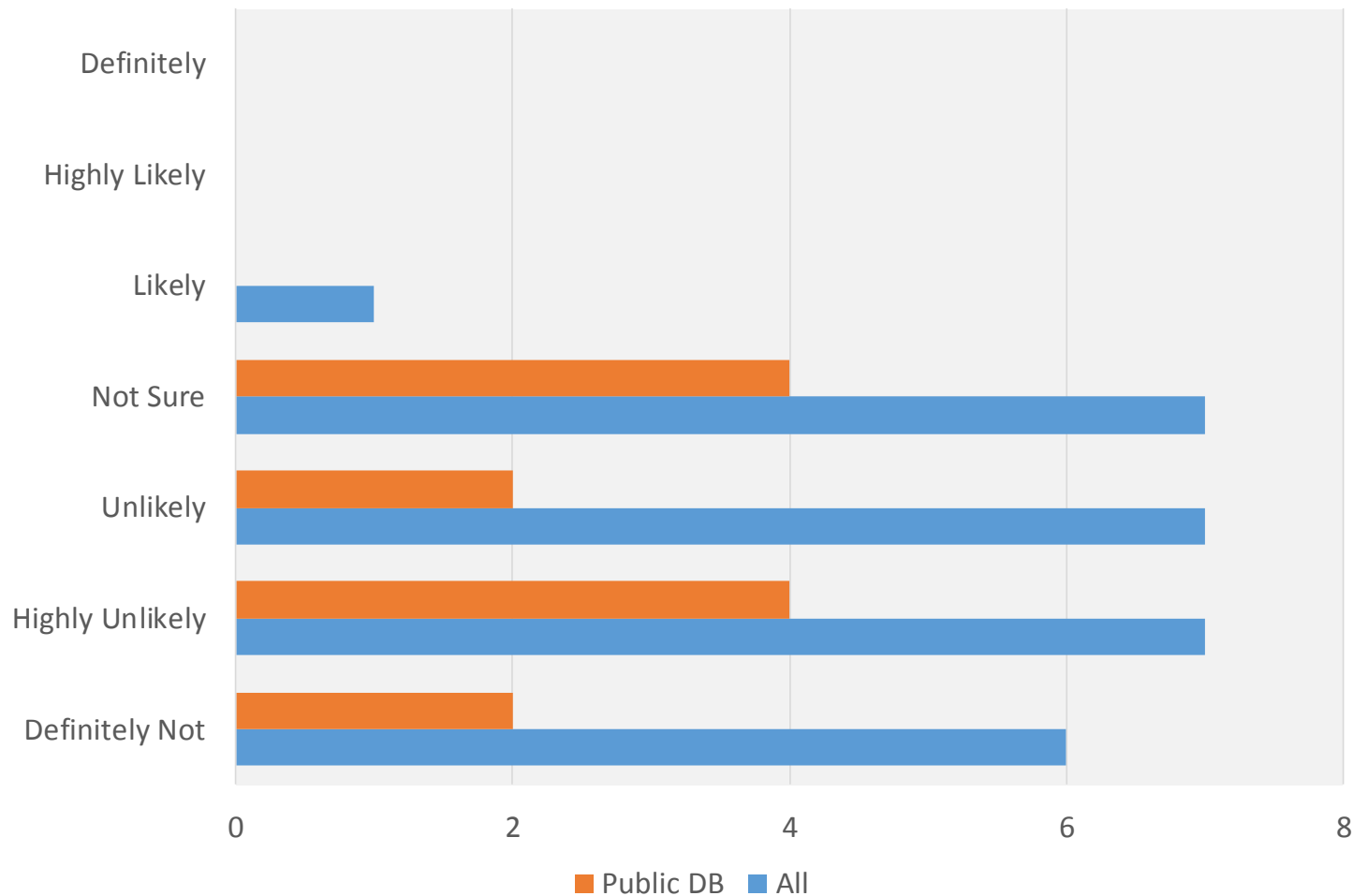




Effectiveness of Divestment

- Do you believe divestment from Tobacco companies can be successful in changing corporate behavior?

Divestment Likelihood to Change Corporate Behavior





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Andrew Junkin, CFA, CAIA
President of Wilshire Consulting

November 30, 2016

Mr. Henry Jones
Chair of the Investment Committee
California Public Employees' Retirement System
400 Q Street
Sacramento, CA 95814

Re: Review of Tobacco Restrictions

Dear Mr. Jones:

You requested Wilshire's opinion with respect to CalPERS' tobacco investment restrictions. We believe that an understanding of the expected return, risk, and costs associated with the current or alternative restrictions when viewed through the lens of CalPERS Investment Beliefs can provide a framework for understanding the potential impacts and making a decision.

It is critical to note that the "success" of any option chosen by the Investment Committee will only be known after a long period of time and many confounding events or variables may occur along the way that change the actual outcome in an unexpectedly positive or negative way. **Thus, Wilshire feels that the Investment Committee should focus on using a reasonable process to weigh the merits of the various options, rather than trying to predict the future outcome of the options presented.**

On a regular basis, Wilshire provides CalPERS an estimate of the impact of the various divestments/restrictions that have affected the investment portfolio. Reiterating a point that we make each year, these analyses are forensic in nature and do not pass judgement or comment on the political, social, health, or moral merits of any of the divestment activities.

Current State

Currently, CalPERS does not permit investment in tobacco-related securities within internally managed portfolios. External managers may invest in tobacco-related securities, even though their benchmarks do not include tobacco-related securities. Since the CalPERS Investment Committee decided to implement the tobacco restrictions in 2000, the estimated opportunity cost of the tobacco restriction has been



\$3.68 billion, as noted in Wilshire's Tobacco Divestment Analysis, presented as an attachment to this agenda item.

Wilshire believes that CalPERS' current state is an important factor for the Investment Committee to consider. Any change from the current state implies that the future state is "better" in some way – presumably with higher expected returns or lower expected volatility.

Expected Return

While CalPERS has experienced material opportunity costs over the period in which the tobacco restrictions have been in place, there is no guarantee that future returns will emulate the past. Though Wilshire forecasts returns for 10 and 30 year periods for a variety of asset classes, we do not forecast returns for individual industries, as we do not believe that we have unique insight into the expected relative returns of any one industry versus other industries (i.e. the broader market).

Even though the MSCI AC World Tobacco index exhibits certain fundamental characteristics that might be attractive relative to the MSCI AC World index (higher dividend yield, higher profitability), there are other characteristics that are relatively less attractive (P/E, P/BV). It is fairly certain that the performance of tobacco-related securities will differ from the broad benchmark in the future. **However, it is impossible to know with any degree of certainty, a priori, if tobacco-related securities will outperform or underperform the broad market.**

Expected Risk

Quantitatively, the exclusion of tobacco-related securities has an impact on the expected volatility. CalPERS has decided to take on equity volatility as a part of its asset allocation. The exclusion of tobacco-related securities has a small impact on the expected total volatility as the restricted portfolio is marginally less diversified than the broad market. However, the difference in forecasted total volatility is small – Wilshire's risk systems project total risk of 12.67% for the tobacco-free index versus 12.59% for the unrestricted index - given the size of the restricted securities relative to the broad market portfolio (1.45% of the broad equity benchmark). Wilshire projects the annual tracking error (a measure of the magnitude of the difference between the restricted equity portfolio and the broad equity benchmark) to be 0.168%. However, the tracking error estimate is symmetrical. **It is equally likely that the restricted portfolio outperforms the broad market as it is that it underperforms the broad market.**

Qualitatively, there are other risks associated with tobacco-related securities that are not captured by traditional risk management systems. While the risk of litigation – a significant decision factor in the original decision to impose restrictions – seems to have waned, other risks are still present. For example, the tobacco industry is facing a



significant secular decline in the number of tobacco product users that seems unlikely to reverse given anti-smoking education, in some cases supported by meaningful taxes on tobacco products. **Even though all industries face risks that are not fully captured in a quantitative framework, the risks facing the tobacco industry appear meaningful.**

Costs

Unlike expected return or risk, costs can be estimated with greater certainty. Staff estimates that the costs to reinvest in tobacco-related equity securities would be \$11 million and the costs related to force the external managers to divest of tobacco-related securities would be \$2.8 million. Depending on the timing of the trades, these costs could be higher or lower than these estimates. **However, whatever their size, it is known with certainty that there will be explicit costs associated with trading activity.**

Investment Beliefs

Having discussed the tobacco restriction using a return/risk/cost framework – all of which would be true for any investor – it is important to put this topic into a CalPERS-specific context. Wilshire believes that CalPERS Investment Beliefs are an appropriate tool for this and the Investment Beliefs were, in fact, designed to help the Investment Committee navigate challenging decisions such as this one.

Wilshire deems the following Investment Beliefs as relevant:

- *Investment Belief 7: “CalPERS will only take risk where we have a strong belief we will be rewarded for it.”* As discussed above, the quantitative view of risk would hold that the additional diversification would likely benefit CalPERS. However, the magnitude of the additional diversification is slight. Additionally, tobacco-related securities could outperform or underperform the broad market in the future. Last, the qualitative risks, including a secular decline in tobacco use, can’t be captured in such a quantitative measure.
- *Investment Belief 9: “Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error.”* As noted above, tracking error simply implies that a difference exists between the restricted portfolio and the broad market portfolio. It does not pass judgement on which will perform better on a relative basis.
- *Investment Belief 2: “A long time horizon is a responsibility and an advantage.”* More specifically, one of the sub-beliefs states that CalPERS may: *“Take advantage of factors that materialize slowly such as demographic trends.”* If the tobacco industry is seeing a long-term decline in its product use, as consumers become more aware of the dangers posed by smoking or as a result of



meaningful regulations and taxes, avoiding tobacco-related securities might be a way to take advantage of a slowly materializing risk factor.

- *Investment Belief 8: “Costs matter and need to be effectively managed.”* While estimated trading costs of \$2.8 million or \$11 million are not significant costs relative to the total size of the PERF and could be dwarfed by any performance differences between the restricted portfolio and the broad market portfolio, both are meaningful numbers when contemplated relative to the size of the average annual benefit of a CalPERS beneficiary (\$31,524). While there is a compelling argument that both risk and return may benefit from reversing the investment restriction, neither is certain. Estimates of transaction costs, on the other hand, come with much greater predictive certainty.
- *Investment Belief 4: “Long-term value creation requires effective management of three forms of capital: financial, physical, and human.”* Engaging investee companies is in CalPERS’ DNA. Fully divesting of an entire industry is a tactic that has only rarely been used. CalPERS’ current hybrid approach permits ownership in portfolios managed by external managers, which would permit CalPERS to engage with tobacco companies. Indeed, since tobacco-related securities are excluded (rightly so in light of the divestment objective) from CalPERS equity benchmarks, any investment in tobacco-related securities made by an external manager would show that position as an overweight. Currently, CalPERS focuses its engagement processes on the overweight securities in its portfolio. Thus, tobacco companies would be “engage-able” under the current restriction.

Conclusion

Staff has recommended reinvesting in tobacco-related securities to create a portfolio that has additional diversification. There is clearly an academic argument that portfolios with significantly restricted opportunity sets are likely to be less risk-return efficient relative to the broad market over a long period of time – this argument is supported by much of CalPERS experience with these activities. **From a pure, theoretical view, Wilshire would recommend this option and, had CalPERS not previously divested from these securities, would not recommend initiating such investment restrictions.**

However, this decision is more nuanced than an academic argument and there is no clear “right” answer from an investment perspective. The decision will certainly affect the return and the risk of the portfolio – but those effects cannot be known in advance with any real precision. The realization of a cost in moving from the current structure is certain, although the amount may vary modestly from the estimate.

Additionally, CalPERS’ Investment Beliefs can be used to help guide the Investment Committee as it makes this decision. This is precisely the intent of the Investment



Beliefs, which were drafted without regard to tobacco or any other particular issues in mind

Using CalPERS Investment Beliefs and a return/risk/cost framework, Wilshire believes that any of the three options presented by Staff is prudent, provided that CalPERS fiduciary council does not contradict this view due to a particular legal interpretation. Certainly, there are arguments that could be made in support of any of the three.

Wilshire looks forward to discussing this topic during the Investment Committee meeting. Should you require anything further or have any questions, please do not hesitate to contact us.

Best regards,

A handwritten signature in black ink, appearing to read 'Ann J. ...'.



November 29, 2016

Mr. Henry Jones, Chairman
Investment Committee
California Public Employees' Retirement System
Sacramento, California 95814

Re: Restrictions on Investments in Tobacco-producing Companies

Dear Mr. Jones,

Please find below PCA's comments on CalPERS' restriction on investments in companies producing tobacco products.

PCA finds that, generally, theoretical analyses hypothesize that divestment reduces the opportunity set available for investment, which, in turn increases potential risk. Actual return results can and do vary, given the specific divestment considered, the time period, the number and market capitalization of the restricted stocks, and, if any, the replacement portfolio.

Typically, the greater the total market capitalization (value) of the restricted stocks, the greater the potential risk to returns to the portfolio as compared to an underlying market capitalization weighted benchmark. For example, targeting four stocks in a Sudan divestment campaign had a de minimis impact on the total portfolio, as compared to restricting 37% of the NYSE market capitalization for a South Africa-free portfolio.

The time period studied can make the difference between outperformance and lagging returns as compared to an underlying benchmark. For example, fossil fuel free portfolios clearly outperform (underperform) benchmark portfolios during periods when pricing dynamics in oil and gas hurt (enhance) fossil fuel company's profitability. When oil prices were high in the early 2000's fossil free portfolios lagged the market. In contrast, in recent years when oil prices collapsed, fossil free portfolios outperformed their underlying benchmarks. In 2016 fossil free portfolios significantly underperformed as oil prices rose from the lows of 2015.

Most empirical analyses of divestment compare an underlying market capitalization weighted benchmark to a restricted portfolio in which a given set of securities are not allowed in the portfolio, and the remaining securities are reweighted proportionally to their market cap weight.

Wilshire's 2015 analysis of the CalPERS portfolio found that CalPERS' removal of 22 tobacco stocks historically generated reduced returns compared to the underlying benchmark that were not de minimis (measured from 12/31/2001 through 12/31/2014). Wilshire calculated that the 22 stocks comprise 0.66% of the benchmark (\$1.0 billion of a \$156.8 billion global equity portfolio). They calculated the present value impact of the Tobacco Exclusion as a loss of between \$2.08 billion and \$3.04 billion by the end of 2014, depending on the methodology used to calculate the present value. These past (negative) results are no guarantee of future negative results.



Other studies have shown that tobacco stock divestments have generated negative results since the late 1990s when the issue became widespread in the United States. A November 2014 CalSTRS report, which divested from tobacco stocks in 2000, estimated that since the \$178.7 billion retirement system fully divested from tobacco, and firearms in 2013, the pension fund has underperformed its custom benchmark by about \$772 million compared with an index that included those stocks. Florida SBA divested from tobacco in June 1997, at which time the state of Florida had lawsuits filed against the tobacco companies. The Florida Retirement Plan lifted its tobacco investment ban three years later when a new Administration and a new set of Trustees determined that the litigation risk hanging over tobacco was largely over. The plan estimated its direct investment loss from deleting 16 stocks, including the transaction costs at \$482 million.

More broadly, Hong et al, 2008, looked at the fluctuation over time of tobacco stocks and the variation in the social norms governing tobacco over time. Their key prediction was that tobacco stocks should under-perform over the period of the late 1940's (when anecdotal evidence suggested the change in norms with previous reports about health in the late 1940s) until the mid-1960's, when essentially even the government acknowledged that tobacco posed a health risk and imposed many restrictions. The study finds that tobacco under-performed the market by a significant 3% a year, or something on the order of 40% over the period 1947-1965. Post-1965, sin stocks, including tobacco outperformed. Hong et al conclude that "some investors, particularly institutions subject to public scrutiny and social norms, pay a financial price for not holding these stocks."

Expectations for the future of the tobacco industry range from long-term global decline, (driven by declining sales volumes, in developed markets and beginning in some emerging markets, rising global regulation, and the health impact externality of the proven health problems and costs associated with tobacco smoking), to an attractive investment prospect that is heavily consolidated, with manufacturers that exercise strong buying power for a product that has limited substitutes and is highly addictive, and strong brand loyalty and limits new entrants, with tobacco manufacturers posting 50-60% gross margins. Tobacco manufacturers have begun to invest in e-cigarettes, and monitor national legalization of marijuana legislation closely to determine if that may be a new potential business sector for them.

To date, there is no evidence that large institutional investor's divestments from the tobacco industry have impacted decision-making in these companies.

Generally, PCA believes that divestment is a relatively blunt instrument for seeking to impact societal goals that typically increases the potential investment risk without a commensurate increase in potential returns to a portfolio. Divestment also takes away institutional investors ability to vote proxies and actively engage on key corporate issues. From this perspective, PCA does not recommend the continued restriction on tobacco stocks in the CalPERS portfolio.

We look forward to participating in a lively and thoughtful discussion on this issue.

Respectfully,



A handwritten signature in black ink, appearing to read "Allan Emkin".

Allan Emkin

California Public Employees' Retirement System Total Fund Investment Policy

Effective Date **April 18, 2016**
This policy supersedes the previous Total Fund Investment Policy and the consolidated policies listed in the table of contents below.

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California Public Employees' Retirement System

Total Fund Investment Policy Overarching Statements

A. Introduction The California Public Employees' Retirement System (CalPERS) Total Fund Investment Policy (Policy), adopted by the CalPERS Investment Committee (Committee), sets forth CalPERS' investment beliefs and overarching investment purposes and objectives with respect to all its investment programs.

The purpose of this Policy, and each of CalPERS' other investment policies (collectively the Policies), is to provide a framework for the management of CalPERS assets. The Policies outline objectives, benchmarks, restrictions and responsibilities so that the Committee, staff, consultants, managers, members, and beneficiaries, and all other CalPERS stakeholders, clearly understand the objectives and policies of the CalPERS investment program. The Policies also encourage effective communication, facilitate transparency and compliance, and provide a framework for reporting back to the Committee, as appropriate.

The Policies set forth the guidelines that the Committee deems to be appropriate and prudent in consideration of the needs of and legal requirements applicable to the CalPERS investment program. The Policies provide criteria against which investment results will be measured and serve as a review document to guide ongoing operations and oversight. The Policies are also intended to ensure that the Committee is fulfilling its fiduciary responsibilities in the management of CalPERS' investments.

The Committee intends for the Policies to be a dynamic document and will review them from time to time. Policies will be modified periodically to reflect the changing nature of CalPERS assets and investment programs, benefit and structural changes, and economic conditions. This Policy applies to all CalPERS investments and supersedes any contrary or inconsistent provisions within asset-class and individual program policies.

California Public Employees' Retirement System

Total Fund Investment Policy Overarching Statements

**B.
Strategic
Objective**

The overall objective of the CalPERS investment program is to generate returns at an appropriate level of risk to provide members and beneficiaries with benefits as required by law. This will be accomplished through a carefully planned and executed long-term investment program that efficiently and effectively allocates and manages the assets of CalPERS.

The Policies have been designed to allow CalPERS to achieve a long-term total return. Accordingly, prudent risk-taking is appropriate within the context of overall diversification to meet CalPERS' long-term investment objectives. The assets of CalPERS will be broadly diversified to minimize the effect of short-term losses within any investment program. Consistent with California Constitution, Article XVI, section 17, all CalPERS investment activities, and all investment transactions, shall be designed and executed solely in the interest of, and for the exclusive purposes of, providing benefits to participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the system.

**C.
Program
Specific
Investment
Policies**

In addition to this overarching Policy, there are other policies that focus on program-specific aspects of the CalPERS investment program. It is intended that those policies be read in conjunction with this Policy.

**D.
Responsibil-
ities**

Details regarding various levels of responsibility for all programs are provided in the following appendices:

1. Reporting to the Committee
2. Investment Responsibilities

California Public Employees' Retirement System

Total Fund Investment Policy Overarching Statements

- E. Performance Objectives**
- Specifically:
- A. The assets of CalPERS will be invested with the objective of achieving a long term rate of return that meets or exceeds the CalPERS actuarial expected rate of return.
 - B. CalPERS will seek to maximize returns for the level of risk taken;
 - C. CalPERS will seek to achieve a return that exceeds the Policy Index; and
 - D. CalPERS will seek to invest its assets efficiently, bearing in mind the impact of management and transaction costs on investment returns.

Policy benchmarks are listed in Appendix 5.

- F. Computations & Calculations**
- All calculations and computations required under this Policy shall be based on the market value and holdings detail recorded by the CalPERS Custodian.

- G. Investment Constraints & Limitations**
- Details regarding various investment constraints and limitations are provided in Appendix 7 for all Policy sections.

- H. Glossary of CalPERS Specific Terms**
- Italicized* terms appearing in the Policy are CalPERS specific in nature and are defined in the [CalPERS Specific Glossary of Terms](#).

- I. Policy Document History**
- Historical details of the Committee's adoption of and revisions to the Policy are provided in Appendix 8.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

I. Investment Beliefs

Purpose

This Policy requires that CalPERS develop and maintain a set of Investment Beliefs. Managing the CalPERS investment program requires exercising judgment in the face of considerable uncertainty. The Investment Beliefs provide a framework for exercising judgment and making investment decisions. Investment Beliefs:

- Provide a basis for strategic management of the investment portfolio
- Inform organizational priorities
- Ensure alignment between the Committee and staff
- Guide development of CalPERS culture

Investment Beliefs also provide context for CalPERS actions. They reflect CalPERS values and acknowledge CalPERS responsibility to sustain its ability to pay benefits for generations. The Investment Beliefs also acknowledge the critical importance of a strong and durable economy in achieving CalPERS' objectives.

The Investment Beliefs are not a checklist to be applied by rote to every decision. They are a guide for making judgmental decisions that often require balancing multiple, inter-related decision factors.

The Investment Beliefs are included as Appendix 3.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

II. Asset Allocation Strategy

Purpose Asset allocation involves establishing asset class allocation policy targets and ranges and managing those asset class allocations within their policy ranges. CalPERS recognizes that over 90% of the variation in investment returns of a large, well diversified pool of assets can typically be attributed to asset allocation decisions.

The performance objective is to achieve positive active asset allocation returns over rolling five-year periods.

The Asset Allocation Program shall be managed with the following objectives:

- A. A rate of total return sufficient to meet or exceed the actuarial expected rate of return within prudent levels of risk and liquidity;
- B. Sufficient diversification to minimize the risk of significant loss in any single investment and preserve capital to the extent possible;
- C. Adherence to the asset class policy ranges approved by the Committee, with any rebalancing being performed efficiently and prudently;
- D. Adequate liquidity to meet cash needs; and
- E. Positive returns through any active asset allocation decisions subject to policy ranges and risk limits.

Investment Approaches & Parameters

Strategic

- A. Asset Class Targets and Ranges
See Appendix 4, Table 1, for asset class allocation targets and ranges. Asset allocation targets and ranges for the Affiliate Funds are provided within the individual Statements of Investment Policy for each fund.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

II. Asset Allocation Strategy (continued)

Investment Approaches & Parameters (continued)

Strategic (continued)

- B. Strategic Asset Allocation Process
Staff may recommend to the Committee changes in the policy asset allocation targets and ranges.
- C. Asset Class Criteria
A financial or real asset type shall be considered as an asset class if it has a risk, return, and correlation profile sufficiently different from existing CalPERS asset classes, and if its inclusion or exclusion materially affects the expected risk and return of the CalPERS total return.
1. Criteria for consideration when evaluating an asset class shall include the following:
 - a. Strategic role of the asset class in the asset liability management (ALM) framework based on fundamental characteristics and risk and return drivers.
 - b. Sufficient size, liquidity, and cost efficiency to permit CalPERS to invest meaningful amounts in that asset class, and have a material effect on CalPERS return.
 - c. Availability of sufficient internal or external investment and technical expertise to ensure prudent implementation of an investment in that asset class.
 - d. Presence of diversification, return enhancement, liquidity provision, or some other readily identifiable attribute that is sufficiently different from other asset classes and enhances CalPERS' ability to achieve the strategic objectives outlined above.
 - e. Acceptance by other large pension plan sponsors as a feasible and meaningful asset class, or in the absence of such acceptance, academic support for its inclusion.
 - f. Availability of sufficient data, history, or expertise to assess the feasibility and benefit of the asset class to CalPERS, by means of a measurable investment outcome. Further, the asset class must have a basis for developing expected investment returns, risks, and correlations for the purposes of the financial study.
 2. An asset class may be approved for investment provided it meets the above criteria, and the Committee has had the opportunity for sufficient education to enable it to fulfill its fiduciary responsibility in giving such approval.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

II. Asset Allocation Strategy (continued)

Investment Approaches & Parameters (continued)

Strategic (continued)

3. Once CalPERS approves a new asset class, the new program may only be implemented in accordance with investment policies reviewed and approved by the Committee for that asset class.

Implementation

- A. Staff shall determine an asset allocation mix for each investment trust with targets and ranges based on a periodic ALM review.
- B. Following any action by the CalPERS Board of Administration (Board) having the potential to result in substantial changes to the forecasted benefits, contributions, premiums, or liabilities of a program, staff shall assess the potential impact and recommend to the Committee as soon as practicable following the board action whether the strategic asset allocation process for each program should be postponed pending completion of such board action.
- C. As contemplated in the CalPERS Funding Risk Mitigation Policy, the occurrence of a Funding Risk Mitigation Event, shall trigger an adjustment to the expected investment return, which shall in turn trigger an automatic adjustment to the CalPERS asset allocation targets as detailed in Appendix 4, Table 2.
- D. Asset class allocations shall be managed to seek compliance with existing policy ranges. Allocations may temporarily deviate from policy ranges due to extreme market volatility or to accommodate contributions, distributions, or other short-term cash needs. If an asset class allocation exceeds the policy range, staff shall return the asset allocation to within its policy range in a timely manner, with the exact time period primarily dependent on transaction costs and liquidity.

Further limitations are specified in Appendix 7.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

II. Asset Allocation Strategy (continued)

Investment Approaches & Parameters (continued)	Implementation (continued)
	<p>E. Accounts may be established and used to adjust asset class allocations within policy ranges, or to return asset allocations that have exceeded a policy range to within the policy range.</p> <p>F. Overlay portfolios may be established to manage currency risk within the parameters contained in Appendix 7.</p> <p>G. Managers may be retained for Program implementation subject to policy asset allocation ranges and/or overlay portfolio constraints.</p> <p>H. The active asset allocation return will be measured and included in the Total Fund return and reported to the Committee no less than annually.</p> <p>I. Target Tracking Error Limitations on the Asset Allocation Program target tracking error relative to the Total Fund Policy Benchmark are detailed in Appendix 7.</p> <p>J. External Manager Investment Guidelines for the Asset Allocation Program:</p> <ol style="list-style-type: none"> 1. Manager Selection <ol style="list-style-type: none"> a. Managers retained in the Asset Allocation Program shall have recognized expertise in active asset allocation. b. The selected managers shall be registered or appropriately exempt from registration, with the Securities and Exchange Commission (SEC) or an equivalent regulatory body, in the case of a manager based outside of the United States. c. Managers shall be selected in accordance with the applicable California laws and regulations, and CalPERS policy. 2. Investment Manager Guidelines Managers shall operate under guidelines that describe their specific investment strategies, representative portfolio characteristics, permissible and non-permissible activities, restrictions on the purchase of certain securities, benchmark, and performance objectives.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

II. Asset Allocation Strategy (continued)

Derivatives & Leverage

A. Strategies

Financial futures contracts, forward contracts, swaps, options, combinations of these derivatives, exchange traded funds, and structured notes may be used in the Asset Allocation Program for only the following purposes:

1. To adjust asset class allocations, within approved policy ranges;
2. To minimize the investment effect of average cash balances held in cash equivalents accounts by overlaying with asset-class-specific derivatives.

B. Risks

Any use of derivatives to adjust asset class allocations shall comply with this Policy.

C. Leverage

In connection with any such use of derivatives, staff shall comply with the Investment Leverage section of this Policy.

D. Exposure Limit

Derivative exposure used in the Asset Allocation Program is limited to amounts that maintain all asset class allocations within their approved ranges.

E. Collateral

Collateral for all derivatives used in the Asset Allocation Program shall consist of cash or investment grade fixed income securities.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

III. Benchmarks

Purpose The purpose of a benchmark is to establish target investment exposures, and to provide a relative measure to gauge whether a particular investment strategy is meeting stated goals and objectives. CalPERS' benchmarks shall be established to manage portfolio risk and return characteristics. Each asset class and related components shall have a benchmark as specified herein. Asset class benchmarks shall be set by the Committee. Staff shall establish controls for the selection and modification of benchmarks.

See Appendix 5 for benchmark details.

Performance Objective & Benchmark A. The performance objective is for the various asset classes and programs to meet or exceed their respective benchmarks in a manner that is consistent with the risk parameters established for such asset class or program.

B. The policy benchmarks for individual programs or strategies are listed in Appendix 5.

In the event that benchmark modification needs to be considered, staff or a member of the Committee may bring the matter before the Committee for due diligence and consideration. This due diligence shall include:

A. Analysis by staff, in consultation with third-party experts, that the indicators are evidenced and have the potential to adversely impact the benchmark performance.

Analysis of the expected effect of the benchmark modification on the total portfolio risk/return characteristics.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

IV. Investment Risk Management

Purpose

Risk management is central to managing the assets of CalPERS and to achieving the strategic objectives. A framework for investment risk management is established through (a) the adoption of investment policies for total fund strategic asset allocation, (b) individual asset classes and portfolios with appropriate benchmarks and (c) reasonable risk limits for the implementation of the program. The level of risk assumed will be monitored and reported using selected risk metrics as required herein.

The program does not require the elimination of risk but instead strives to achieve a balance between risk and return. CalPERS must take on risk to achieve desired levels of return. The objective is to ensure that economic and investment risk taken is prudent and properly managed with collaborative input from each asset class.

The program is not intended to manage other risks that CalPERS faces, such as operational risks and legal risks. These risks are managed by other units within CalPERS and are addressed within their separate policies.

The program shall be managed with the objective of accomplishing the following:

- A. Provide an integrated process for overall investment risk management at both the Total Fund and asset class level;
- B. Identify, measure, and communicate investment risks across the Total Fund and within each asset class;
- C. Monitor investment returns as well as risk to determine if risks taken are adequately compensated; and
- D. Ensure appropriate organizational independence of investment risk measurement systems and functions from investment decision-making functions.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

IV. Investment Risk Management (continued)

Investment Approaches & Parameters

- A. Investment Risk Management Framework
The CalPERS investment risk framework established herein is expected to evolve over time in alignment with industry best practices. The framework shall address the identification, measurement, assessment, and ongoing monitoring of investment risk.
- B. Risk Management and Assessment
Investment risk is assessed using appropriate and consistent industry standard methodologies established at the Total Fund level and within each asset class.
- C. Risk Limits and Guidelines
- I. Total Fund tracking error limits (both total and active allocation) are specified in Appendix 7 and will be monitored and managed as identified risks within the overall investment risk framework.
 - II. The leverage report shall document the amount of leverage in each asset class relative to the leverage limit stated in Appendix 6.
 - III. The counterparty report establishes guidelines for each investment counterparty based on credit default swap spreads that will be used to monitor trends in the credit quality of each counterparty.
 - IV. A "what if" risk analysis will be performed for any investment that exceeds the delegated authority of the applicable Managing Investment Director. Staff will also perform a "what if" risk analysis upon the request of other Investment Office staff or the Committee.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

V. Global Derivatives and Counterparty Risk

Purpose This section of the Policy is intended to provide a strategic framework for governance of the use of derivatives and derivatives strategies by the CalPERS Investment Office across both internally and externally managed portfolios. The policy is intended to ensure that CalPERS has effective operational, risk management, and compliance controls in place governing the use of derivatives within the investment process.

This section outlines the issues that must be addressed for each derivatives strategy, whether internally or externally managed, in regard to guidelines, development of procedures, and operational requirements.

Policy Scope

A. Benefit Plans/Trusts Covered under the Policy

This section applies to the use of derivatives by CalPERS within all CalPERS trusts and benefit plans.

B. This section shall apply to the use of derivatives by investment staff and external managers operating under Investment Management Agreements (IMAs).

C. Limited liability entity or registered/commingled fund managers may be required to provide information to staff on derivatives trading activities within each entity in order for CalPERS to comply with applicable aggregation or position limit regulations and reporting requirements.

Investment Approaches & Parameters

- A. Derivatives subject to this section include, without limitation:
1. Futures contracts
 2. Options
 3. Options on futures contracts
 4. Forward contracts
 5. Swap agreements
 6. Security based swap agreements
 7. Swap contracts with embedded options
 8. Instruments or contracts intended to manage transaction or currency exchange risk in purchasing, selling, or holding investments

California Public Employees' Retirement System

Total Fund Investment Policy Sections

V. Global Derivatives and Counterparty Risk (continued)

Investment Approaches & Parameters (continued)

Spot Foreign Exchange transactions with settlement date up to T+5 shall be exempt from this section.

Cash transactions, in any asset class, are not derivatives. Collateralized Mortgage Obligations (CMOs) and convertible bonds and other investment instruments where the cash investment is similar to the market and notional exposure, are likewise excluded from the definition of derivative for purposes of this section.

- B. Derivatives Application Permitted
Derivatives may be used to efficiently manage risk and return characteristics of the Public Employees' Retirement Fund (PERF) and/or individual sub-portfolios.
- C. Derivatives Application Not Permitted
Derivatives may only be used to invest in asset classes that are consistent with this Policy and the Asset Allocation Program asset categories, implementation strategies, and risk-return characteristics.
- Derivatives shall not be used to avoid or subvert existing delegated authorities or investment policy limits.
- D. Derivatives Control Procedures
Staff shall adopt documented control procedures that cover the following areas:
1. Accounting and performance measurement for derivatives
 2. Risk Management – procedures for evaluating the use of derivatives and monitoring market risk exposure, liquidity needs, and counterparty risk limits
 3. Operational Risk – procedures that establish a process for evaluating operational activities associated with derivatives to ensure the use of proper systems, controls, staffing, and staff qualifications
 4. Regulatory Compliance – procedures for ensuring compliance with any regulations in conjunction with derivatives activities undertaken by CalPERS

California Public Employees' Retirement System

Total Fund Investment Policy Sections

VI. Investment Leverage

<p>Purpose</p>	<p>The purpose of this section is to set forth a framework for comprehensively identifying, measuring, managing, and reporting various forms of leverage.</p> <p>This section is intended to place limits on and set standards for the use of leverage that reasonably balances investment flexibility with risk management.</p> <p>This section is also intended to result in greater consistency across investment units, and in greater ability of the Committee to direct policies concerning leverage.</p>
<p>Investment Approaches & Parameters</p>	<p>See Appendix 6 for investment leverage parameter details.</p> <ul style="list-style-type: none"> A. Use of leverage is prohibited unless expressly permitted in this section. B. Direct debt, except for unsettled loss positions on non-exchange traded contracts, is prohibited unless authorized by the Committee for a defined purpose. C. A capital commitment or credit enhancement program does not represent leverage or direct debt as these are considered contingent liabilities. D. Any program that permits the use of recourse debt shall include the following risk management guidelines: <ul style="list-style-type: none"> 1. A limit on the amount of recourse debt 2. Diversification requirements and due diligence standards shall be considered in the investment decision on the assets with recourse debt E. Recourse debt is prohibited for programs that may not have complete transparency on all investment positions. The maximum potential loss on these positions shall be the amount of investment. F. The use of currency swaps does not result in notional leverage because the swaps merely convert exposure from one currency to another.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

VII. Divestment

Purpose

This section sets forth CalPERS policy (Policy) for responding to external or internal initiatives to cause CalPERS to sell investments or refrain from making additional investments (Divesting) for the purpose of achieving certain goals that do not appear to be primarily investment-related, such as promoting social justice (Divestment Initiatives). Typically, Divestment Initiatives focus on companies that do business in a specified country, are engaged in a specified industry, or in specific practices deemed undesirable by federal and state law (e.g., human rights violations) (Targeted Companies).

CalPERS investment in a company does not necessarily signify that it approves of the company's policies, products, or actions. CalPERS, nevertheless, wants companies in which it invests to meet high corporate governance, ethical, and social standards of conduct. The Committee believes that this generally will promote superior long-term investment performance.

CalPERS Board of Administration (Board) and its Staff have fiduciary duties of loyalty and prudence, pursuant to the California Constitution, Article XVI, Section 17, and Government Code (GC) Section 20151, to invest "with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with those matters would use in the conduct of an enterprise of a like character and with like aims." (GC Section 20151(c).)

These fiduciary obligations generally forbid CalPERS from sacrificing investment performance for the purpose of achieving goals that do not directly relate to CalPERS operations or benefits. Divesting appears to almost invariably harm investment performance, such as by causing transaction costs (e.g., the cost of selling assets and reinvesting the proceeds) and compromising investment strategies.

In addition, there appears to be considerable evidence that Divesting is an ineffective strategy for achieving social or political goals, since the usual consequence is often a mere transfer of ownership of divested assets from one investor to another. Investors that divest lose their ability as shareowners to influence the company to act responsibly.

This Policy, therefore, generally prohibits Divesting in response to Divestment Initiatives, but permits CalPERS to use constructive engagement, where consistent with fiduciary duties, to help Divestment Initiatives achieve their goals.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

VII. Divestment (continued)

Statement of Policy	<p>CalPERS will undertake constructive engagement in support of Divestment Initiatives to the extent the Committee determines to be appropriate or as required by law, but CalPERS will not sell investments in Targeted Companies or refrain from investing in them in response to Divestment Initiatives except as follows:</p> <ul style="list-style-type: none"> A. CalPERS will sell Targeted Company investments or refrain from making them to the extent investment in the Targeted Company is imprudent and inconsistent with fiduciary duties. CalPERS recognizes that the prudence of an investment may depend on its purpose. For example, it might be imprudent to retain an investment in an actively managed portfolio, but prudent to retain it in an indexed portfolio or as part of a long-short absolute return strategy. B. To the extent required by law and consistent with fiduciary duties, CalPERS will comply with federal and constitutional California state laws that require Divesting. C. This Policy does not require CalPERS to re-examine investment policies and practices in effect when this Policy was adopted to determine whether they were influenced by Divestment Initiatives or have or will result in Divesting.
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California Public Employees' Retirement System

Total Fund Investment Policy Sections

VIII. Liquidity Program

Purpose The Liquidity Program seeks to provide liquid assets that could be converted to cash with little market impact.

Investment Approaches & Parameters All investment programs shall have specific written guidelines. The guidelines shall outline the investment approaches, permissible and restricted activities, and a performance objective that is commensurate with the program's purpose.

Staff shall rely on short- or long-term ratings from authorized nationally recognized statistical rating organizations (NRSROs). Staff shall maintain and annually update internal ratings for securities that are not rated by any authorized NRSROs.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

IX. Low Duration Fixed Income Program

Purpose The Low Duration Fixed Income (LDFI) Program seeks to diversify CalPERS investment programs and enhance CalPERS returns, while dampening overall risk of CalPERS investment programs.

Investment Approaches & Parameters All investment programs shall have specific written guidelines. The guidelines shall outline the investment approaches, permissible and restricted activities, and a performance objective that is commensurate with the program's purpose.

Staff shall rely on short- or long-term ratings from authorized nationally recognized statistical rating organizations (NRSROs). Staff shall maintain and annually update internal ratings for securities that are not rated by any authorized NRSROs.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

X. Opportunistic Program

Purpose	The Opportunistic Program enables greater investment in assets perceived to be substantially undervalued, and this section specifies guidelines to manage the concurrent risks. The program also permits the establishment of innovative portfolios.
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Performance Objective & Benchmark	The performance objective is to outperform the program benchmark over rolling three-year periods, net of all program costs and fees.
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Investment Approaches & Parameters	<p>A. Investment Guidelines</p> <p>Program investments may be managed internally, or by external managers, or by a combination of internal and external managers.</p> <ol style="list-style-type: none"> 1. Manager Selection <p>The selected managers shall be registered, or appropriately exempt from registration, with the Securities and Exchange Commission.</p> 2. Investment Manager Guidelines <p>Manager guidelines shall not conflict with any CalPERS investment policy.</p> <p>Implementation of this Program shall comply at all times with the manager guidelines and all CalPERS investment policies.</p>
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California Public Employees' Retirement System

Total Fund Investment Policy Sections

XI. Securities Lending

Purpose	The Securities Lending Program is comprised of three functions: (1) lending both equity and fixed income securities to borrowers, (2) reinvesting the collateral posted by borrowers and (3) facilitating short-term liquidity needs of the Total Fund, through the use of leverage, subject to limits and constraints of the Liquidity Program. The program will be operated in a manner that maintains sufficient liquidity for the program and to adhere to the Investment Policy for Global Governance.
Investment Approaches & Parameters	All investment programs shall have specific written guidelines. The guidelines shall outline the investment approaches, permissible and restricted activities, and a performance objective that is commensurate with the program's purpose.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

XII. Terminated Agency Pool

Purpose This section governs the management of the assets supporting the Terminated Agency Pool Program (TAP Program).

Investment Approaches & Parameters

A. The TAP Program shall be managed to closely match assets to the projected future benefit payments and to minimize the likelihood of the program becoming underfunded. Following the periodic recalculation of TAP Program liabilities by the CalPERS Actuarial Office, a segmented asset allocation process shall be utilized as follows:

1. An immunization segment intended to:
 - a. Closely match, to the extent practicable, the cash flows of the assets to the forecasted benefit payment cash flows across a range of inflation scenarios;
 - b. Invest a portion of the program assets in such a way as to ensure that cash flows beyond 30 years can be met across a range of inflation scenarios;
 - c. Provide sufficient liquidity for two years of forecasted benefit payment cash flows;
2. A surplus segment consisting of TAP Program assets in excess of those needed for the "immunization" segment described above, to be invested consistent with the asset allocation utilized for the PERF;

B. Program Structure/Parameters
The CalPERS Custodian may employ a unitized fund structure to maintain separate and distinct historical records and to produce individual net asset values of all investments.

C. Rebalancing
The Investment Office and Actuarial Office shall collaborate to monitor the funded status of the TAP Program and to rebalance the recommended portfolio as the forecasted benefit payment cash flows are updated.

D. Restrictions, Prohibitions, and Authorized Securities
Authorized securities for the "immunization" and surplus segments are included in Appendix 7 of this Policy.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

XIII. Plan Level and Asset Class Transition Portfolios

Purpose The purpose of this section of the Policy is to ensure that CalPERS staff takes prudent and careful action while performing transitions, and to establish appropriate controls and approvals governing transitions. Plan level and asset class transitions shall separate the cost and performance impacts on investment programs or asset classes related to cash or security movements and transactions not associated with the on-going investment management of affected portfolios. Transitions activity can be implemented using transition portfolios or an allocation costs capture system (ACCS).

A. A plan level transition may be established for any asset class for the purpose of achieving asset allocation or Total Fund related investment objectives. Plan level transition portfolio usage may be initiated by the Committee or by the Chief Investment Officer (CIO) or designated staff operating within their respective delegated authorities. All transaction costs and investment performance for these portfolios flows directly to the Total Fund, outside an individual asset class. Plan level transition portfolios may only be used for one or more of the following purposes:

1. Rebalance of asset classes to achieve asset allocation objectives
2. Raise or invest cash at the Total Fund level
3. Trade to effectuate Total Fund investment objectives

Plan level transitions may be accomplished through the use of designated plan level transitions portfolios or through the use of ACCS.

B. An asset class transition may be established within any asset class for the purpose of achieving asset class specific objectives. The MID from the specific asset class may initiate the use of an asset class transition portfolio after receiving approval from the CIO or COIO in advance. An asset class transition portfolio may be used by designated staff of the specific asset class operating within his or her delegated authority. All transaction costs and investment performance associated with the use of the asset class transition portfolio will flow to the asset class level. Asset class transition portfolios may only be used for one or more of the following purposes:

California Public Employees' Retirement System

Total Fund Investment Policy Sections

XIII. Plan Level and Asset Class Transition Portfolios (continued)

- Purpose (continued)**
1. To terminate and fund external asset managers within the asset class;
 2. To rebalance strategies and investment managers within an asset class; or,
 3. To raise or invest cash within the asset class.

Asset class transitions may be accomplished through the use of designated asset class transitions portfolios or through the use of ACCS.

- C. Transition portfolios shall be subject to additional oversight in order to:
1. Establish a control structure to ensure and validate that transition portfolio transactions are executed as intended; and,
 2. Confirm that the transition portfolios are used for a permitted purpose and in the manner set forth by this and other related policies.

Investment Approaches & Parameters All assets within the transition portfolios shall be held by the CalPERS Custodian and all transactions shall follow CalPERS' established execution and settlement procedures.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

XIV. Role of Private Asset Class Board Investment Consultants

Purpose The roles of the *Private Asset Class Board Investment Consultants* are detailed in Appendix 2, Investment Responsibilities.

California Public Employees' Retirement System

Total Fund Investment Policy Sections

XV. Custody Management

Purpose The purpose of this section is to ensure the safe, efficient, and accurate custody of CalPERS assets. To carry out this objective, CalPERS shall contract with custodial firms with sufficient financial strength to protect the interests of CalPERS. Contracted custodians (Custodian) will be required, at a minimum, to demonstrate a long-term credit rating of Moody's A1 and S&P A+ (U.S. firms) or a similar measure of financial strength (non-U.S. firms).

Custodian Duties The Custodian shall provide daily custodial, accounting, performance and reporting services for eligible assets held in CalPERS' name, in a manner consistent with industry standards. The Custodian shall provide services for any assets held by additional agents or sub-custodians appointed by CalPERS or the Custodian.

The Custodian shall register all of CalPERS' assets in the name of CalPERS or as required by the depository-provided books and records maintained by the Custodian. The Custodian shall maintain documentation to substantiate CalPERS ownership and chain of control for all assets.

The Custodian shall have a comprehensive system, acceptable to CalPERS, of selecting and evaluating sub-custodians and monitoring their internal control structures, performance and financial conditions.

Eligible foreign sub-custodians are entities that are incorporated or organized under the laws of a country other than the United States and meet the following criteria:

- A. Qualified foreign banks or majority-owned direct or indirect subsidiaries of U.S. banks or bank holding companies.
- B. Securities depositories or clearing agencies that act as systems for the central handling of securities or equivalent book entries in the countries that are regulated by foreign financial regulatory authorities.
- C. Securities depositories or clearing agencies that act as transnational systems for the central handling of securities or equivalent book entries.

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XV. Custody Management (continued)

**Custodian
Duties
(continued)**

The Custodian shall:

1. provide assurances, through a third-party review acceptable to CalPERS, that internal controls are sufficient to protect CalPERS assets;
2. adhere to US/Global accounting standards necessary for CalPERS to conform to its required financial reporting standards;
3. offer a robust technology platform with a strong control and security environment. Technology and data must be able to interface with multiple other systems supporting CalPERS business; and
4. have a global presence, supporting and providing services for international investments across the globe.

A. Fiduciary Relationship

Custodians, sub-custodians, and agents shall acknowledge their fiduciary relationship with CalPERS. They shall discharge each of their duties therein and exercise each of their powers (as those duties and powers are defined herein), with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with such matters uses in the conduct of an enterprise of a like character and with like aims. The Custodian is required to contractually inform all sub-custodians and agents of this fiduciary relationship.

B. Ethics and Conflicts of Interest

Custodians shall comply with CalPERS policies and procedures, as amended from time to time, relating to ethics and conflicts of interest.

C. Custodian Liability

The Custodian shall be fully liable for any loss to, or diminution in, the value of the fund resulting from the Custodian's own acts or omissions. This liability shall extend to the acts or omissions of the Custodian's agents and sub-custodians.

CalPERS may, at its discretion, limit the liability of the Custodian when doing so does not compromise the rights of CalPERS or the safety or security of CalPERS assets.

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Appendix 1
Reporting to the Investment Committee

The following tables provide details regarding reporting to the Investment Committee by:

- Investment Office staff
- **General Pension Consultant**
- Private Asset Class Board Investment Consultants

Investment Office Staff			
Program	Responsible Party	Report Content	Frequency
Total Fund	All Programs	1. Staff shall report problems with, material changes to, and all violations of this Policy. These reports shall include explanations of any violations and appropriate recommendations for corrective action.	At the next Committee meeting or sooner if deemed necessary
Investment Beliefs	All Programs	2. Staff shall report investment program strategy and its consistency with the Investment Beliefs.	No less than annually
Asset Allocation	Asset Allocation & Risk Management	3. Staff shall report asset class allocations relative to their targets and ranges, as well as investment performance results for each asset class relative to benchmark returns. Allocations may temporarily deviate from policy ranges due to extreme market volatility and any such deviations shall be reported.	At the next Committee meeting or sooner if deemed necessary
		4. Staff shall report program allocations, returns, risks, and activity.	No less than annually
		5. Staff shall provide a comprehensive Asset Allocation Strategy analysis coincident with the review of actuarial methods and assumptions to be presented for review and approval of policy target asset class allocations and ranges.	Every 4 years
		6. Staff shall present a market-valuation-based analysis at the midpoint of the 4-year review cycle, or as needed in response to market conditions or changes affecting the capital market assumptions.	At midpoint of 4-year cycle or as needed
Benchmarks	Asset Allocation & Risk Management	7. Staff shall report any benchmark changes.	No less than annually

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Investment Office Staff (continued)			
Program	Responsible Party	Report Content	Frequency
Risk Management	Asset Allocation & Risk Management	8. Staff shall report CalPERS investment risks and associated returns.	No less than annually
		9. Staff shall provide input and consulting on the design of risk reports used to measure and monitor risk. Reports should reflect the key risks identified as part of the overall risk framework.	No less than annually
		10. Volatility – Staff will report on both forecasted total risk and tracking error, measured as one standard deviation for the next year. These measures will be reported for each asset class and the Total Fund. In addition, staff will document the accuracy of risk forecasts for the Total Fund. Staff will accomplish this by presenting the history of monthly forecast and realized risk for both total risk and tracking error.	No less than annually
		11. Leverage – Staff will provide a report of recourse debt, non-recourse debt and notional leverage by asset class and the Total Fund. The report will also include capital commitments for the illiquid asset classes.	No less than annually
		12. Currency Risk – Staff will provide a report summarizing both actual portfolio and benchmark currency exposures of the Total Fund.	No less than annually
		13. Counterparty Risk – Staff will report on counterparty exposure, summarizing net amounts owed to or due from CalPERS investment counterparties. The report will include credit default swap spreads and credit ratings for use in determining when exposure to individual counterparties is to be limited.	No less than annually
		14. Concentration Risk – Staff will aggregate exposures across asset classes to create measures of concentration including industries, countries, and security issuer. This information will be presented for both the Total Fund portfolio and policy benchmark.	No less than annually
		15. Stress Testing – Staff will be responsible for the specification of stress testing and provide a periodic report that estimates the potential loss of market value to the Total Fund portfolio if certain economic events or historical scenarios were to occur.	No less than annually
		16. Liquidity Risk – During times of market stress, staff will report on the risk that assets cannot trade at or near the previous market price because of inadequate trading volume for particular instruments. Liquidity risk may also be evaluated based on capital commitments and debt restructuring requirements.	No less than annually
		17. Scenario Analysis – Staff will review the impact on total risk and tracking error of proposed new strategies or shifts in existing investments. The risk analysis will be performed at the asset class and total fund levels.	No less than annually

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Investment Office Staff (continued)			
Program	Responsible Party	Report Content	Frequency
Leverage	Asset Allocation & Risk Management	18. Staff shall report recent estimates by asset class on recourse debt, non-recourse debt, and notional leverage. Leverage for the Currency, Credit Enhancement, and Securities Lending Programs shall be reported separately from asset class leverage.	No less than annually
		19. Staff shall report the amount of debt previously classified as recourse that CalPERS paid in the prior year.	No less than annually
Divestment	Investment Compliance & Operational Risk	20. Staff shall report to the Committee on (a) compliance activities undertaken pursuant to statutory divestment mandates from the state legislature, as applicable, and (b) any divestment decisions that may be required.	No less than annually
		21. Staff shall prepare and submit for Committee approval any divestment activity reports required by statute to be submitted to the California Legislature (e.g., Iran, Sudan etc.).	No less than annually
Opportunistic	All Programs	22. Staff shall report on program investments, returns, risks, and activity.	No less than annually
Terminated Agency Pool	Asset Allocation & Risk Management	23. Staff shall report the current market value of assets and an analysis of the adequacy of the current program allocation to meet the forecasted benefit payment cash flows based on available data from CalPERS actuarial staff.	No less than annually
Plan Level & Asset Class Transition Portfolios	Investment Servicing Division	24. Staff shall report on the usage of transition portfolios.	No less than annually
Targeted Investments Program	Targeted Investments Program	25. Staff shall document CalPERS Total Fund investment presence in California via a comprehensive examination of CalPERS California-based investments across asset classes and the resulting ancillary benefits from these investments. The report will assess local jobs created or supported, investments in communities of interest such as low- to moderate-income communities, areas with high unemployment, and rural communities, and the broader economic impacts resulting from CalPERS investments statewide.	No less than annually

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General Pension Consultant		
Program	Report Content	Frequency
Total Fund	1. Consultant shall report on the effectiveness of the Risk Management and Asset Allocation Programs, as well as use of Benchmarks relative to the policy.	No less than annually
Global Derivatives & Counterparty Risk	2. Consultant shall report the performance of portfolios to ensure that any derivative use does not have a long-term harmful effect on the portfolio.	No less than annually
Divestment	3. Consultant shall present to the Committee a comprehensive review and analysis of divestment activities to date.	No less than annually
Liquidity ~~~~~ Low Duration Fixed Income ~~~~~ Securities Lending	4. Consultant shall monitor, evaluate, and report on the performance of the Programs within this Policy relative to the benchmarks and other applicable CalPERS Policies.	No less than annually

Private Asset Class Board Investment Consultants		
Program	Report Content	Frequency
Private Asset Classes	1. Review and provide an opinion letter to the Committee on investment policies and delegations of authority.	As needed
	2. Review and provide an opinion letter to the Committee on strategic and annual plans.	As needed
	3. Provide a report to the Committee on forecasts of asset class returns for total fund asset allocation purposes.	No less than annually
	4. Provide a report to the Committee that includes an analysis of market developments, market conditions, and macro-level view of market opportunities.	No less than annually
	5. Provide a report to the Committee regarding investment performance and portfolio risk and attribution analysis; monitor and report on deviations from policy benchmark performance and long-term expected performance.	No less than annually
	6. Review and provide an opinion letter to the Committee on appropriateness of asset class benchmarks	No less than annually
	7. Provide an opinion letter to the Committee on investments above staff's delegation of authority.	As needed
	8. Perform annual review of major asset class sub-component programs and provide an opinion letter to the Committee on performance, risk, manager selection and monitoring processes, and on internal control processes and staffing.	No less than annually
	9. Perform annual review of the program and provide an opinion letter to the Committee on performance, risk, manager selection and monitoring processes, and on internal control processes and staffing.	No less than annually

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Appendix 2
Investment Responsibilities

The following tables provide details regarding investment related responsibilities for the:

- Investment Committee
- Investment Office staff
- Actuarial Office staff
- General Pension Consultant
- Private Asset Class Board Investment Consultants
- External Manager

Investment Committee		
Program	Responsible Party	Responsibility
Total Fund	Investment Committee	1. Approve adoption of and oversee compliance with Investment Policies designed to achieve CalPERS strategic objectives.
		2. Review policy recommendations made by staff.
		3. Approve asset classes for investment and set a policy target allocation, permissible range, and benchmark for each asset class, expressed as a percentage of total assets.
		4. Set the Total Fund policy benchmarks.
Divestment	Investment Committee	5. If necessary, engage an independent consultant to provide an analysis of the economic impact on the portfolio of any contemplated divestment activity, to include one-time transaction costs, predicted tracking error, and risk-return trade-offs, in order to aid the Committee in determining whether divestment is both appropriate and consistent with the Board's fiduciary duties. Staff can help facilitate this process as requested.

Investment Office Staff		
Program	Responsible Party	Responsibility
Total Fund	All Programs	1. Periodically review the policies and make recommendations to the Committee regarding new policy development, policy revisions, repeals, and any other aspect that the staff considers pertinent.
		2. Engage with other asset class staff, consultants, and other pertinent parties to seek advice and counsel regarding investment strategy and investment results.
		3. Develop and maintain investment procedures, program guidelines, and sub-program guidelines.
		4. Implement and adhere to all policies.
		5. All aspects of program portfolio management, including investment transactions, use of leverage, and monitoring, analyzing, and evaluating performance relative to the appropriate benchmark.
		6. Manage CalPERS asset class allocations within policy ranges approved by the Committee, in accordance with policy guidelines.
		7. Modify benchmarks as applicable.

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Investment Office Staff (continued)		
Program	Responsible Party	Responsibility
Investment Beliefs	Asset Allocation & Risk Management	8. Facilitate a periodic review of the Investment Beliefs in conjunction with the Strategic Asset Allocation process.
Asset Allocation	Asset Allocation & Risk Management	9. Provide recommendations to the Committee concerning the identification of asset classes and selection of asset class benchmarks and policy targets and ranges based on periodic asset liability management (ALM) review.
		10. Determine adjustments in asset class allocations, and direct rebalancing account activity and fund transfers across asset classes.
		11. For program tracking errors and CalPERS Total Fund tracking errors, staff will evaluate forecast values against subsequent realized values over rolling 3 year periods.
Risk Management	Asset Allocation & Risk Management	12. Select, maintain, and enhance the risk management tools used by the program to provide analyses that inform and support the investment actions of the entire CalPERS investment staff.
		13. Provide consulting to Investment Office staff regarding investments being contemplated, current investment risks and the attribution of risk and return.
		14. Provide consulting on the development of Investment Office Policies, Procedures and Guidelines with respect to the measurement, assessment, and management of investment risk.
		15. Provide consulting on the design of processes and reports used to measure and monitor risk.
Global Derivatives & Counterparty Risk	Asset Allocation & Risk Management	16. Monitor the implementation of and compliance with the policy including due diligence and oversight of derivatives activities by External Managers, limited liability entities, or registered/commingled fund vehicles.
		17. Monitor and evaluate the use of derivatives and counterparty risk exposures across CalPERS to ensure the appropriate investment risk controls are in place.
	Asset Allocation & Risk Management /Asset Class Staff	18. Exercise thorough due diligence in assessing the scope of each LLE limited liability entity or registered/commingled fund manager's use of derivatives, their purpose, experience of the fund manager's staff in managing these positions, inherent leverage, and the manager's systems, controls, and operations for determining appropriateness of these entities for CalPERS investment.
		19. Evaluate periodically (no less than annually) for any changes in the use of derivatives at each LLE limited liability entity or registered/commingled fund to reaffirm the appropriateness of these investments at inception.

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Investment Office Staff (continued)		
Program	Responsible Party	Responsibility
Divestment	Asset Allocation and/or Asset Class/Program Areas	20. Provide the Committee with an analysis of the economic impact on the portfolio of any contemplated divestment activity, to include one-time transaction costs, predicted tracking error, and risk-return trade-offs, in order to aid the Committee in determining whether divestment is both appropriate and consistent with the Board's fiduciary duties.
		21. Implement any required divestments or prohibitions on future investments.
	Investment Compliance & Operational Risk	22. Maintain the lists of companies subject to potential divestment.
		23. Monitor the implementation of any required divestments or prohibitions on future investments as required by the Policy.
	Global Governance	24. As applicable in connection with a given divestment mandate, and with any proposed reinvestment in previously divested securities, implement an appropriate plan of engagement with the targeted portfolio companies.
Liquidity ~~~~~ Low Duration Fixed Income	Global Fixed Income	25. Monitor internal and external managers in the implementation of, and compliance with, the Policy.
		26. All aspects of portfolio management including monitoring, trading, analyzing, evaluating, performance relative to the appropriate benchmark, and selecting and contracting with managers.
Opportunistic	CIO	27. Responsible for management of the Opportunistic Program
		28. Pre-approve all terms of any transfer of assets between a program account and another CalPERS account.
	CIO & MIDs	29. Determine clear assignment of investment management responsibility for each program asset.
Securities Lending	Global Equity	30. Monitor the implementation of, and compliance with, the Policy by lending agents, cash collateral managers, and principal borrowers.
		31. All aspects of portfolio management including monitoring, trading, analyzing, evaluating, performance relative to the appropriate benchmark, and selecting and contracting with managers
Terminated Agency Pool	Asset Allocation & Risk Management	32. Ensure that program rebalancing and restructuring is performed as soon as practicable following the receipt of updated forecasted benefit payment cash flows from the CalPERS Actuarial Office.
Plan Level & Asset Class Transition Portfolios	Investment Servicing Division	33. Maintain control of the movement of cash and securities at the CalPERS Custodian.
Role of Private Asset Class Board Investment Consultants	Private Equity and Real Assets	34. For investment transactions within staff's delegated authority, staff will analyze the transaction and make the investment decision.
		35. For investment transactions exceeding staff's delegated authority, staff will analyze the transaction and provide a recommendation to the Committee.
Custody Management	Investment Servicing Division	36. Notify the Custodian in writing of the appointment, suspension, or termination of any investment manager.
		37. Develop and recommend to the Committee the criteria and methodology for selection of the Custodian, consistent with CalPERS' enterprise-wide competitive solicitation and contracting procedures.
		38. Ensure that all original investment documents including deeds, titles, partnerships, and insurance contracts are safeguarded in accordance with the CalPERS enterprise-wide Business Continuity Plan.

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Actuarial Office Staff		
Program	Responsible Party	Responsibility
Terminated Agency Pool	Actuarial Staff	1. Provide a forecast of benefit payment cash flow.
		2. Recalculate pool benefit payment cash flow when new agencies are added to the program.

General Pension Consultant		
Program	Responsible Party	Responsibility
Total Fund	General Pension Consultant	1. Provide independent review, analysis, and recommendations regarding the development and revision of policies to ensure overall consistency, use of best practices, a system-wide approach, and implementation of CalPERS policies.
		2. Provide independent perspective and counsel to the Committee, to include routine communication with the Investment Office staff and periodic review of processes and procedures.
Benchmarks	General Pension Consultant	3. Monitor and evaluate the appropriate use of benchmarks related to performance of the Total Fund and Programs relative to the policy.
		4. Review and recommend approval of all requests for benchmark replacements and modifications.

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Private Asset Class Board Investment Consultants (PACBIC)					
Program	Transaction Type/Size	Independent Due Diligence Report (not PACBIC)	Prudent Person Opinion (not PACBIC)	PACBIC Transaction Role	Opinion to the Board
Private Equity	1. Fund Investments	MID discretion	N/A	MID discretion	N/A
	2. Co-Investment	MID discretion	N/A	MID discretion	N/A
	3. Customized Investment Accounts that invest alongside other similarly structured funds in the same investments	MID discretion	N/A	MID discretion	N/A
	4. Customized Investment Accounts with an individual mandate that does not invest alongside other similarly structured funds in the same investments or a Direct Investment	N/A	Required	MID discretion	N/A
	5. >Staff Delegated Authority	N/A	Required	Required	Required
Real Assets	6. ≤ \$50 million	N/A	MID discretion	MID discretion	N/A
	7. >\$50 Million	N/A	Required	MID discretion	N/A
	8. >Staff Delegated Authority	N/A	Required	Required	Required

1. Except as noted below, the PACBIC shall not:
 - a. Manage assets for CalPERS
 - b. Perform work for staff on special projects
 - c. Provide opinions to staff regarding specific investment transactions
2. In limited circumstances, the PACBIC may be engaged for roles enumerated above if the PACBIC possesses unique knowledge or expertise that is not available through other providers. Such an arrangement must be approved by the Committee prior to engagement. In situations where adequate time is not available to request Committee approval, staff may request approval from the Chair of the Committee. Upon approval of the request, staff will notify the other Committee members.

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External Manager		
Program	Responsible Party	Responsibility
Global Derivatives & Counterparty Risk	External Manager	1. Operate under Investment Management Agreements (IMAs).
		2. Communicate with staff as needed regarding investment strategy and investment results.
		3. Cooperate fully with CalPERS staff, Custodian, and General Pension Consultant concerning requests for information.
Liquidity, Low Duration Fixed Income	Global Fixed Income	4. Manage investments in accordance with each manager's contract with CalPERS and the Policy.
		5. Communicate and cooperate with Investment Office staff and authorized third parties regarding the management of investments..
Securities Lending	Global Equity	6. Manage investments in accordance with each manager's contract with CalPERS and the Policy.
		7. Communicate and cooperate with Investment Office staff and authorized third parties regarding the management of investments.

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**Appendix 3
Investment Beliefs**

October 14, 2013

<p>Investment Belief I Liabilities must influence the asset structure.</p>
A. Ensuring the ability to pay promised benefits by maintaining an adequate funding status is the primary measure of success for CalPERS.
B. CalPERS has a large and growing cash requirement and inflation-sensitive liabilities; assets that generate cash and hedge inflation should be an important part of the CalPERS investment strategy.
C. CalPERS cares about both income and appreciation components of total return.
D. Concentrations of illiquid assets must be managed to ensure sufficient availability of cash to meet obligations to beneficiaries.
<p>Investment Belief II A long time investment horizon is a responsibility and an advantage.</p>
Long time horizon requires that CalPERS:
A. Consider the impact of its actions on future generations of members and taxpayers.
B. Encourage investee companies and external managers to consider the long-term impact of their actions.
C. Favor investment strategies that create long-term, sustainable value and recognize the critical importance of a strong and durable economy in the attainment of funding objectives.
D. Advocate for public policies that promote fair, orderly and effectively regulated capital markets.
Long time horizon enables CalPERS to:
A. Invest in illiquid assets, provided an appropriate premium is earned for illiquidity risk.
B. Invest in opportunistic strategies, providing liquidity when the market is short of it.
C. Take advantage of factors that materialize slowly such as demographic trends.
D. Tolerate some volatility in asset values and returns, as long as sufficient liquidity is available.

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<p>Investment Belief III</p> <p>CalPERS investment decisions may reflect wider stakeholder views, provided they are consistent with its fiduciary duty to members and beneficiaries.</p>
<p>A. As a public agency, CalPERS has many stakeholders who express opinions on investment strategy or ask CalPERS to engage on an issue. CalPERS preferred means of responding to issues raised by stakeholders is engagement.</p>
<p>B. CalPERS primary stakeholders are members / beneficiaries, employers and California taxpayers as these stakeholders bear the economic consequences of CalPERS investment decisions.</p>
<p>C. In considering whether to engage on issues raised by stakeholders, CalPERS will use the following prioritization framework:</p> <ol style="list-style-type: none"> 1. Principles and Policy – to what extent is the issue supported by CalPERS Investment Beliefs, Principles of Accountable Corporate Governance or other Investment Policy? 2. Materiality – does the issue have the potential for an impact on portfolio risk or return? 3. Definition and Likelihood of Success – is success likely, in that CalPERS action will influence an outcome which can be measured? Can we partner with others to achieve success or would someone else be more suited to carry the issue? 4. Capacity – does CalPERS have the expertise, resources and standing to influence an outcome?
<p>Investment Belief IV</p> <p>Long-term value creation requires effective management of three forms of capital: financial, physical and human.</p>
<p>A. Governance is the primary tool to align interests between CalPERS and managers of its capital, including investee companies and external managers.</p>
<p>B. Strong governance, along with effective management of environmental and human capital factors, increases the likelihood that companies will perform over the long-term and manage risk effectively.</p>
<p>C. CalPERS may engage investee companies and external managers on their governance and sustainability issues, including:</p> <ol style="list-style-type: none"> 1. Governance practices, including but not limited to alignment of interests. 2. Risk management practices. 3. Human capital practices, including but not limited to fair labor practices, health and safety, responsible contracting and diversity. 4. Environmental practices, including but not limited to climate change and natural resource availability.

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<p>Investment Belief V CalPERS must articulate its investment goals and performance measures and ensure clear accountability for their execution.</p>
A. A key success measure for the CalPERS investment program is delivery of the long-term target return for the fund.
B. The long time horizon of the fund poses challenges in aligning interests of the fund with staff and external managers.
C. Staff can be measured on returns relative to an appropriate benchmark, but staff performance plans should include additional objectives or key performance indicators to align staff with the fund's long-term goals.
D. Each asset class should have explicit alignment of interest principles for its external managers.
<p>Investment Belief VI Strategic asset allocation is the dominant determinant of portfolio risk and return.</p>
A. CalPERS strategic asset allocation process transforms the fund's targeted rate of return to the market exposures that staff will manage.
B. CalPERS will aim to diversify its overall portfolio across distinct risk factors / return drivers.
C. CalPERS will seek to add value with disciplined, dynamic asset allocation processes, such as mean reversion. The processes must reflect CalPERS characteristics, such as time horizon and size of assets.
D. CalPERS will consider investment strategies if they have the potential to have a material impact on portfolio risk and return.
<p>Investment Belief VII CalPERS will take risk only where we have a strong belief we will be rewarded for it.</p>
A. An expectation of a return premium is required to take risk; CalPERS aims to maximize return for the risk taken.
B. Markets are not perfectly efficient, but inefficiencies are difficult to exploit after costs.
C. CalPERS will use index tracking strategies where we lack conviction or demonstrable evidence that we can add value through active management.
D. CalPERS should measure its investment performance relative to a reference portfolio of public, passively managed assets to ensure that active risk is being compensated at the Total Fund level over the long-term.

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<p>Investment Belief VIII Costs matter and need to be effectively managed.</p>
A. CalPERS will balance risk, return and cost when choosing and evaluating investment managers and investment strategies.
B. Transparency of the total cost to manage the CalPERS portfolio is required of CalPERS business partners and itself.
C. Performance fee arrangements and incentive compensation plans should align the interests of the fund, staff and external managers.
D. CalPERS will seek to capture a larger share of economic returns by using our size to maximize our negotiating leverage. We will also seek to reduce cost, risk and complexity related to manager selection and oversight.
E. When deciding how to implement an investment strategy, CalPERS will implement in the most cost effective manner.
<p>Investment Belief IX Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error.</p>
A. CalPERS shall develop a broad set of investment and actuarial risk measures and clear processes for managing risk.
B. The path of returns matters, because highly volatile returns can have unexpected impacts on contribution rates and funding status.
C. As a long-term investor, CalPERS must consider risk factors, for example climate change and natural resource availability that emerge slowly over long time periods, but could have a material impact on company or portfolio returns.
<p>Investment Belief X Strong processes and teamwork and deep resources are needed to achieve CalPERS goals and objectives.</p>
A. Diversity of talent (including a broad range of education, experience, perspectives and skills) at all levels (Board, staff, external managers, corporate boards) is important.
B. CalPERS must consider the government agency constraints under which it operates (e.g., compensation, civil service rules, contracting, transparency) when choosing its strategic asset allocation and investment strategies.
C. CalPERS will be best positioned for success if it: <ol style="list-style-type: none"> 1. Has strong governance. 2. Operates with effective, clear processes. 3. Focuses resources on highest value activities. 4. Aligns interests through well designed compensation structures. 5. Employs professionals who have intellectual rigor, deep domain knowledge, a broad range of experience and a commitment to implement CalPERS Investment Beliefs.

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Appendix 4
Public Employees' Retirement Fund Asset Allocation Targets & Ranges

The targets and ranges are effective July 1, 2015.

Table 1 – Strategic Asset Allocation Targets and Ranges

Asset Class	Policy Target	Interim Target	Policy Range Relative to Target
Growth	59%	61%	+/- 7%
Global Equity	47%	51%	+/- 7%
Private Equity	12%	10%	+/- 4%
Income - Global Fixed Income	19%	20%	+/- 5%
Real Assets	14%	12%	+/- 5%
Real Estate	11%	10%	+/- 5%
Infrastructure & Forestland	3%	2%	+/- 2%
Inflation	6%	6%	+/-3%
Liquidity	2%	1%	+/-3%
Total Fund	100%	100%	N/A

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Table 2 outlines the asset allocation target weight changes that will be implemented following a Funding Risk Mitigation Event as defined in the Funding Risk Mitigation Policy.

Table 2: Funding Risk Mitigation Event Asset Allocation Target Changes

Starting Point Target Allocations (%)	Cumulative Reduction in Expected Investment Return of (%):	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
		Allocation Target Weights with Reduced Expected Returns (%)									
51	Public Equity	49	48	46	45	44	42	41	39	38	36
10	Private Equity	10	10	10	10	10	10	10	10	10	10
20	Fixed Income	22	23	25	26	27	29	30	32	33	35
10	Real Estate	10	10	10	10	10	10	10	10	10	10
2	Infrastructure & Forestland	2	2	2	2	2	2	2	2	2	2
6	Inflation Assets	6	6	6	6	6	6	6	6	6	6
1	Liquidity	1	1	1	1	1	1	1	1	1	1

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Appendix 5
Investment Benchmarks
Effective July 1, 2015

Table 1: Public Employees' Retirement Fund Policy Benchmarks

The Total Fund Policy Benchmark is the average return of the asset class benchmark indices weighted by asset class benchmark allocations. The Total Fund Policy benchmark return is the return attributable to the target asset class allocations. Staff employs active strategies in an effort to achieve a Total Fund portfolio return that exceeds the Total Fund Policy benchmark return.

Asset Class	Benchmark	Policy Weight	Interim Target Weight
Growth	84% Public Equity benchmark + 16% Private Equity benchmark	59.0%	61.0%
Income	90% Barclays Long Liabilities + 10% Barclays International Fixed Income Index GDP weighted ex-US	19.0%	20.0%
Inflation Assets	75% ILB benchmark + 25% Commodities benchmark	6.0%	6.0%
Real Assets	83% Real Estate benchmark + 8.5% Infrastructure benchmark + 8.5% Forestland benchmark	14.0%	12.0%
Liquidity	91-day Treasury Bill	2.0%	1.0%

During the transition of implementing the approved strategic policy targets, interim weights will be used to calculate the Total Fund Policy benchmark. Interim weights will remain in use at the discretion of the Committee and will be reviewed on an annual basis.

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

Table 2: Public Employees' Retirement Fund Policy Benchmarks		
Policy	Program	Benchmark
TOTAL FUND POLICY BENCHMARK		
Asset Allocation Strategy		Policy Index (Total Fund Policy Benchmark)
GROWTH POLICIES		
Growth	Total Growth	84% Public Equity benchmark +16% Private Equity benchmark
Public Equity	Total Public Equity	FTSE CalPERS Global (All-World, All Capitalization) customized to exclude Board directed divestments
Private Equity (PE)	Total Private Equity	(67% FTSE U.S. TMI + 33% FTSE AW ex U.S. TMI) +3% lagged one quarter.
INCOME POLICIES		
Global Fixed Income Program	Dollar-Denominated Fixed Income Program	Barclays Long Liabilities Index.
	International Fixed Income Program	Barclays International Fixed Income Index GDP weighted ex-US
Low Duration Fixed Income Program	Dollar-Denominated Fixed Income High Quality LIBOR (HQL) Program	Federal Funds based index
	Dollar-Denominated Fixed Income Short Duration Program	Federal Funds based index
	Internally Managed Dollar-Denominated Short-Term Program	Total rate of return of the State Street Bank Short-Term Investment Fund after investment management fees.
INFLATION ASSETS POLICIES		
Inflation Assets	Overall Program	75% ILB benchmark + 25% Commodities benchmark
	Commodities Program	Standard & Poor's GSCI Total Return Index
	Inflation-Linked Bond Program	ILB Custom Index: Blend of 67% Barclays Global Inflation-Linked U.S. and 33% Barclays Universal Government Inflation Linked Bond Index ex-US.

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

Table 2: Public Employees' Retirement Fund Policy Benchmarks		
Policy	Program	Benchmark
REAL ASSETS POLICIES		
Real Assets	Total Real Assets	83% Real Estate benchmark + 8.5% Infrastructure benchmark + 8.5% Forestland benchmark.
	Real Estate Program	Exceed (net of fees) NCREIF ODCE
	Infrastructure Program	Consumer Price Index +4%, lagged one quarter
	Forestland Program	NCREIF Timberland
LIQUIDITY POLICIES		
Liquidity Program	Total Liquidity Program	91-day Treasury Bill
OPPORTUNISTIC POLICIES		
Opportunistic Program	Multi Asset Class Program	Absolute 7.5%
ABSOLUTE RETURN STRATEGIES POLICIES		
Absolute Return Strategies	Absolute Return Strategies Program	One year Treasury Note + 5%

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

Table 3: Affiliate Fund Policy Benchmarks		
Policy	Asset Class	Benchmark
California Employers' Retiree Benefit Trust (CERBT) Fund		The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.
	Global Equity	MSCI ACWI IMI (Net)
	U.S. Fixed Income	Barclays Long Liability Index
	Treasury Inflation-Protected Securities (TIPS)	Barclays U.S. TIPS Index, Series L
	Commodities	S&P GSCI Total Return Daily
	Real Estate Investment Trusts (REITs)	FTSE EPRA/NAREIT Developed Liquid (Net)
Judges' Retirement System Fund	Cash Equivalents	91-day Treasury Bill
Judges' Retirement System II Fund		The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.
	Global Equity	CalPERS Custom FTSE Global Composite
	U.S. Fixed Income	Barclays Long Liability Index
	TIPS	Barclays U.S. TIPS Index, Series L
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Index
Legislators' Retirement System Fund		The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.
	Global Equity	CalPERS Custom FTSE Global Composite
	U.S. Fixed Income	Barclays Long Liability Index
	TIPS	Barclays U.S. TIPS Index, Series L
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Index

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

Table 3: Affiliate Fund Policy Benchmarks			
Policy	Asset Class	Benchmark	
Long-Term Care Fund		The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.	
	Global Equity	MSCI ACWI IMI (Net)	
	U.S. Fixed Income	Barclays Long Liability Index	
	TIPS	Barclays U.S. Treasury Inflation Protected Securities(TIPS) Index	
	Commodities	S&P GSCI Total Return Daily	
	REITs	FTSE EPRA/NAREIT Developed Liquid (Net)	
	Liquidity	91-day Treasury Bill	
Public Employees' Health Care Fund	U.S. Fixed Income	Barclays U.S. Aggregate Bond Index	
Supplemental Income Plans		The performance of each individual investment fund will be evaluated against its appropriate asset class benchmark. The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.	
	U.S. Equity	Russell 3000 Index	
	International Equity	MSCI ACWI ex-USA IMI Index (Net)	
	U.S. Fixed Income		Barclays U.S. Aggregate Bond Index
			Barclays U.S. 1-3 Year Government/Credit Bond Index
	Real Assets	The benchmark is a weighted benchmark consisting of: Dow Jones-U.S. Select REIT Index; Bloomberg Roll Select Commodity Index; S&P Global Large MidCap Commodity and Resources Index; Barclays U.S. TIPS Bond Index; S&P Global Infrastructure Equity Index	
Cash Equivalents	BofA Merrill Lynch U.S. 3-Month Treasury Bill Index		

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

Appendix 6
Summary of Permissible and Prohibited Types of Leverage

Program	Notional Leverage	Non-Recourse Debt	Recourse Debt
Forestland	Prohibited	Permissible: Loan-to-Value ratio (Non-Recourse + Recourse) shall not exceed 50%	Prohibited
Global Equity	Permissible: Will be calculated on a net exposure basis and shall not exceed 10% of the Global Equity market value.	Permissible	Prohibited
Global Fixed Income	Permissible: Shall not exceed 10% of the Global Fixed Income market value.	Prohibited	Prohibited
Inflation Assets	Prohibited	Prohibited	Prohibited
Infrastructure	Prohibited	Permissible: Loan-to-Value ratio (Non-Recourse + Recourse) shall not exceed 65%	Prohibited
Liquidity	Permissible: Total leverage within the Liquidity Program shall not exceed 2% of the total fund value	Not Applicable	Permissible: Total leverage within the Liquidity Program shall not exceed 2% of the total fund value
Low Duration Fixed Income Program	Prohibited	Prohibited	Prohibited
Opportunistic	Permissible	Permissible	Prohibited
Private Equity	Permissible	Permissible: Some investments may use non-recourse debt (leverage) which may increase the volatility of returns.	Permissible: Subscription Financing allowed providing that Total Recourse Debt Allocated shall not exceed 15% of the lower of the current Net Asset Value or the target Net Asset Value of the Portfolio.

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

Program	Notional Leverage	Non-Recourse Debt	Recourse Debt
Real Estate	Prohibited	Permissible: Loan-to-Value ratio (Non-Recourse + Recourse) shall not exceed 50%	Permissible: <ul style="list-style-type: none"> • Two types of recourse debt are allowed: Subscription Financing and Credit Accommodation • Loan-to-Value ratio (Non-Recourse + Recourse) shall not exceed 50% • Total Recourse Debt Allocated shall not exceed 10% of the lower of the current Net Asset Value or the target Net Asset Value of the Portfolio.
Securities Lending	Permissible: Shall not exceed 70% of the Program.	Prohibited	Prohibited

California Public Employees' Retirement System
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Appendix 7
Investment Constraints & Limitations
for Public Employees' Retirement Fund

**Asset
Allocation
Strategy**

- A. With reference to the Asset Allocation Targets & Ranges indicated in Appendix 4:
1. For Global Equity and Global Fixed Income, the cumulative adjustment of the asset class weighting by staff shall not exceed 50% of the policy range of the asset class within any quarter without advance Committee consent.
- B. Overlay portfolios may be established to manage currency risk within the following parameters:
1. Currency overlay portfolio risk will be managed within the Asset Allocation program target tracking error.
 2. Currency overlay portfolios may only be utilized to hedge currency risk and will not decrease the net notional exposure to any one non USD underlying developed market currency (either in the portfolio or in the Policy benchmark) by more than 25%. The foregoing percentage limit restrictions do not apply to currency derivatives used to settle security transactions denominated in those foreign currencies and any authorized instrument or contract intended to manage transaction or currency exchange risk within an asset class implementation.
- C. Target Tracking Error
1. The Asset Allocation Program will be managed within a target forecast annual tracking error to the Policy benchmark of 0.75% using the CalPERS Risk Management System. This implies that over any one-year period, there will be a less than 5% probability that the active asset allocation return will be less than negative 1.2%. The CalPERS Total Fund shall be managed with a target forecast annual tracking error of 1.5%, inclusive of active asset allocation and other active management decisions, using the CalPERS Risk Management System. For both of the above tracking error statistics, staff will evaluate forecast values against subsequent realized values over rolling three-year periods.

Benchmarks

See Appendix 5

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

**Global
Derivatives &
Counterparty
Risk**

Derivatives Risk Limitations

- A. Staff must reference the Investment Office Derivatives and Counterparty Risk Procedures Manual, and asset class investment policies for additional limitations specific to their portfolios inclusive of cash and derivatives instruments.
- B. Managers should reference their Investment Management Agreements (IMAs) including Investment Guidelines for risk limitations specific to their portfolio or to the asset class or trust for which that they are managing investments.

**Investment
Leverage**

See Appendix 6

**Liquidity
Program**

Internally Managed Dollar-Denominated Short-Term Program					
1. All securities purchased shall have a maximum final stated maturity of 15 months unless specified otherwise within Investment Policy Procedures & Guidelines for the Program.					
2. Authorized nationally recognized statistical rating organizations (NRSROs) are limited to: <ul style="list-style-type: none"> • Standard & Poor's (S&P) • Moody's Investors Service, Inc. (Moody's) • Fitch Ratings (Fitch) 					
3. Credit Risk will be controlled by requiring minimum ratings outlined in the table below.					
<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #d9ead3;">Asset</th> <th style="background-color: #d9ead3;">Minimum Credit Rating</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">All Securities (at time of purchase)</td> <td style="text-align: center;">Short Term: A2/P2/F2, or Long Term: A-/A3/A-</td> </tr> </tbody> </table>		Asset	Minimum Credit Rating	All Securities (at time of purchase)	Short Term: A2/P2/F2, or Long Term: A-/A3/A-
Asset	Minimum Credit Rating				
All Securities (at time of purchase)	Short Term: A2/P2/F2, or Long Term: A-/A3/A-				
<p>Note: In the case of a split-rated security, staff may rely upon the highest rating. If a security is not rated by an authorized NRSRO, staff's equivalent rating would apply.</p>					

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

**Low Duration
Fixed Income
Program**

The following tables provide details regarding investment constraints/ limitations related to the following programs:

- Dollar-Denominated Fixed Income **High Quality LIBOR** (HQL) Program
- Dollar-Denominated Fixed Income Short Duration (SD) Program
- Dollar-Denominated Fixed Income Limited Liquidity Enhanced Return (LLER) Program

All Dollar-Denominated Fixed Income Programs
1. Authorized NRSROs are limited to: <ul style="list-style-type: none"> • Standard & Poor's (S&P) • Moody's Investors Service, Inc. (Moody's) • Fitch Ratings (Fitch)

Dollar-Denominated Fixed Income HQL Program														
1. Interest Rate Risk must be controlled by limiting duration to not exceed 90 days due to the stable return mandate of the HQL Program.														
2. Credit Risk will be controlled by requiring minimum ratings by asset type as outlined in the table below. A downgrading of a security that causes a violation in the guidelines shall not require an immediate sale if the Managing Investment Director of Global Fixed Income believes that no further risk of credit deterioration exists or the sale diminishes the total return to CalPERS. The CalPERS internal research staff shall analyze such situations to ensure that an informed decision is made. The following is the minimum quality for each of the sectors.														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #d3d3d3;">Asset / Counterparty</th> <th style="background-color: #d3d3d3;">Minimum Credit Ratings</th> </tr> </thead> <tbody> <tr> <td>US Treasury and Government Sponsored</td> <td>AAA/Aaa/AAA</td> </tr> <tr> <td>Repurchase Agreements</td> <td>A1/P1/F1</td> </tr> <tr> <td>Structured Securities</td> <td>AAA/Aaa/AAA</td> </tr> <tr> <td>Money Market Securities</td> <td>A2/P2/F2</td> </tr> <tr> <td>Corporate Securities</td> <td>BBB+/Baa1/BBB+</td> </tr> <tr> <td>Yankee Sovereign Securities</td> <td>A-/A3/A-</td> </tr> </tbody> </table>	Asset / Counterparty	Minimum Credit Ratings	US Treasury and Government Sponsored	AAA/Aaa/AAA	Repurchase Agreements	A1/P1/F1	Structured Securities	AAA/Aaa/AAA	Money Market Securities	A2/P2/F2	Corporate Securities	BBB+/Baa1/BBB+	Yankee Sovereign Securities	A-/A3/A-
Asset / Counterparty	Minimum Credit Ratings													
US Treasury and Government Sponsored	AAA/Aaa/AAA													
Repurchase Agreements	A1/P1/F1													
Structured Securities	AAA/Aaa/AAA													
Money Market Securities	A2/P2/F2													
Corporate Securities	BBB+/Baa1/BBB+													
Yankee Sovereign Securities	A-/A3/A-													
Note: In the case of a split-rated security, staff may rely upon the highest rating. If a security is not rated by an authorized NRSRO, staff's equivalent rating would apply.														

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

**Low Duration
Fixed Income
Program
(continued)**

Dollar-Denominated Fixed Income SD Program	
1. Interest Rate Risk must be controlled by limiting the SD Program's duration to not exceed 180 days.	
2. Credit Risk will be controlled by requiring minimum ratings by asset type as outlined in the table below. Credit Risk shall be actively managed on a risk/return basis. A downgrading of a security that causes a violation in the guidelines shall not require an immediate sale if the Managing Investment Director of Global Fixed Income believes that no further risk of credit deterioration exists or the sale diminishes the total return to CalPERS. The CalPERS internal research staff shall analyze such situations to ensure that an informed decision is made. The following is the minimum quality for each of the sectors.	
Asset / Counterparty	Minimum Credit Rating
US Treasury and Government Sponsored Repurchase Agreements	AAA/Aaa/AAA
Structured Securities	A1/P1/F1
Money Market Securities	BBB/Baa2/BBB
Corporate Securities	A2/P2/F2
Yankee Sovereign Securities	BBB+/Baa1/BBB+
	A-/A3/A-
Note: In the case of a split-rated security, staff may rely upon the highest rating. If a security is not rated by an authorized NRSRO, staff's equivalent rating would apply.	

Dollar-Denominated Fixed Income LLER Program	
1. Interest Rate Risk must be controlled by limiting the LLER Program's duration to not exceed 270 days.	
2. Credit Risk will be controlled by requiring minimum ratings by asset type as outlined in the table below. Credit Risk shall be actively managed on a risk/return basis. A downgrading of a security that causes a violation in the guidelines shall not require an immediate sale if the Managing Investment Director of Global Fixed Income believes that no further risk of credit deterioration exists or the sale diminishes the total return to CalPERS. The CalPERS internal research staff shall analyze such situations to ensure that an informed decision is made. The following is the minimum quality for each of the sectors.	
Asset / Counterparty	Minimum Credit Rating
All Securities (at time of purchase)	BBB-/Baa3/BBB-
Note: In the case of a split-rated security, staff may rely upon the highest rating. If a security is not rated by an authorized NRSRO, staff's equivalent rating would apply.	

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

Opportunistic Program

A. Allocation

1. The market value of program investments shall not exceed 3% of the Total Fund. A violation of this limit shall be restored in a timely manner not to exceed three months, with the exact time period primarily dependent on transaction costs and liquidity.

B. Diversification Guidelines

1. The market value of program non-publicly traded investments (excluding fixed income securities) shall not represent more than 1.5% of the Total Fund.
2. The market value of any program strategy or type of asset shall not exceed 2% of the Total Fund.
3. The aggregate market value of program assets of a single country other than the United States shall not exceed 1% of the Total Fund.

Securities Lending

The following tables provide details regarding investment constraints/ limitations related to the following:

- Lending Guidelines
- Cash Collateral Re-Investment Guidelines
- Liquidity Guidelines

Lending Guidelines	
1.	Initial Margin: The proper amount of collateralization shall be market value times the appropriate percentage for each security type. <ol style="list-style-type: none"> a. Domestic securities – 102% b. Matching currency investment for G10 domiciled issuers – 102% c. All other international securities – 105%
2.	Maintenance Margin: Loan collateral below these specified maintenance levels must be adjusted within the next business day and before the securities being re-lent to the same borrowers. <ol style="list-style-type: none"> a. The maintenance margin is 102% for securities with an initial margin of 102% b. The maintenance margin is 105% for securities with an initial margin of 105%
3.	Non-material Margin Call: Despite the maintenance margin percentages above, non-material margin calls of \$100,000 or less need not be made as long as collateral is 101.5% or more for securities with an initial maintenance margin of 102% and 104.5% or more for securities with an initial maintenance margin of 105%.

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

Securities Lending (continued)

Cash Collateral Re-Investment Guidelines	
1.	The duration of the collateral investment portfolio shall not differ from the duration of the outstanding loans by more than 60 days.

Liquidity Guidelines	
1.	A minimum of 10% of the Securities Lending cash collateral pool must be invested in securities that mature or are subject to a demand feature exercisable within one business day.
2.	A minimum of 20% of the Securities Lending cash collateral pool must be invested in securities that mature or are subject to a demand feature exercisable within seven business days.*
3.	A minimum of 30% of the Securities Lending cash collateral pool must be invested in securities that mature or are subject to a demand feature exercisable within thirty days.*
*The liquidity constraint includes the preceding requirement(s) as cumulative.	

Terminated Agency Pool

Authorized securities for the “immunization” and surplus segments are indicated in the following table.

Segment	Authorized Securities
“Immunization”	U.S. Treasury STRIPS U.S. Treasury TIPS Cash or cash equivalents
Surplus	All securities included within the rest of the PERF

California Public Employees' Retirement System
Total Fund Investment Policy Appendices

Appendix 8 Total Fund Investment Policy Document History

Adopted by the Investment Committee	March 16, 2015
Administrative Changes to Appendix 5, Investment Benchmarks, to reflect closure of State Peace Officer & Firefighters (POFF) Fund	April 14, 2015
Approved by the Investment Committee Revisions relevant to the strategic asset allocation process and the Long-Term Care Fund	June 15, 2015
Approved by the Investment Committee Effective Revisions relevant to Liquidity Program changes to ensure enough liquidity is available to meet obligations; and benchmark change to cash-only	June 15, 2015 July 1, 2015
Approved by the Investment Committee Revisions relevant to the 2015 Investment Policy Revision Project, including revisions to current policy content, new policy content, and general changes to enhance clarity and address non-material inconsistencies and formatting.	April 18, 2016

The following policies were incorporated into the Total Fund Investment Policy and repealed on April 18, 2016:

- Currency Overlay Program
- Liquidity Program
- Low Duration Fixed Income Program
- Multi-Asset Class Partners Program
- Securities Lending

The following policies were incorporated into the Total Fund Investment Policy and repealed on March 16, 2015:

- Total Fund Statement of Investment Policy
- Investment Beliefs
- Asset Allocation Strategy
- Benchmarks
- Risk Management Program
- Global Derivatives and Counterparty Risk
- Leverage
- Divestment
- Opportunistic Program
- Plan Level and Asset Class Transition Portfolios
- Role of Private Asset Class Board Investment Consultants
- Custody Management
- Economically Targeted Investments
- Terminated Agency Pool



May 12, 2016

To the Members of the CalPERS Board of Administration:

We are writing to express our concern that the CalPERS Board is considering re-investing in tobacco. As you may be aware, tobacco products kill more people than alcohol, AIDS, car accidents, illegal drugs, murders and suicides combined worldwide. An average of 40,000 Californians die each year from tobacco related causes. Left unchecked, tobacco use will kill 1 billion people in the 21st century.

CalPERS is one of the largest and most influential pension funds in the U.S. Deciding to reinvest in tobacco would be a risk; both a reputational risk and a financial risk. Reinvestment would also violate several of CalPERS stated investment beliefs, including considering the impact of long-term investments on future generations, taking risks that may not be rewarded and integrity/ethics. By choosing to reinvest, CalPERS has the potential to negatively impact the movement towards socially responsible investing nationwide.

Reputational risk is an important consideration in reinvestment. The reputations of governments and retirement funds are at stake when they invest in and therefore profit from the death and disease caused by tobacco companies. It is also harmful to a reputation to continue to do business with tobacco corporations, which lobby and sue governments in an effort to delay or deter the introduction of stronger tobacco control regulation. There is no evidence that divestment from tobacco causes financial harm to portfolios, so funds that choose to divest are unlikely to lose any profit, and they have the potential to enhance their reputations.

In addition to the moral implications and reputational risk, the tobacco industry is not a good investment. The tobacco market is seeing dramatically increasing regulation as well as escalating litigation. Several countries have vowed to end tobacco use by 2030. In California, the governor just signed a law increasing the minimum legal age to purchase tobacco to 21, which will certainly negatively impact the profits of tobacco corporations. This is a national trend that is gaining momentum, and we will likely see other states doing the same in the next few years.

The new legal age is the latest indication of the strong pro-health stance that the State of California has taken for several decades. Public investment in the tobacco industry creates a government-wide conflict of interest, as well as an obvious argument for the tobacco industry in its efforts to hinder further steps against tobacco use.

Tobacco also costs the citizens and the state of California a significant amount of money. Annual health care costs in California caused directly by smoking are approximately \$13.29 billion. The tax burden on residents is about \$777 per household per year. Smoking productivity losses in California are over \$10 billion.¹ Tobacco is bad for business.

¹ Campaign for Tobacco Free Kids, The Toll of Tobacco in California, available at https://www.tobaccofreekids.org/facts_issues/toll_us/california.

ASH

**ACTION
ON SMOKING & HEALTH**

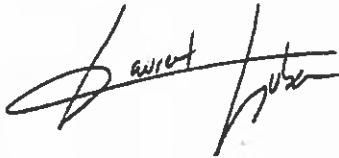
Global action for everyone's health.

Opponents may argue that tobacco divestment is a “slippery slope” that will force governments to divest from other industries which may be considered “undesirable;” however, tobacco is a unique product which can be placed in a category all its own:

- Tobacco kills when used exactly as intended. There is no safe level of use.
- The scale of the negative impact of tobacco is profound. Six million people die each year from tobacco related illness. It is estimated that one billion people will die this century from tobacco-related causes, unless there is significant change in tobacco consumption.
- Many financial institutions actively try to engage with companies in which they own stock, in order to create positive change. Positive influence on the tobacco industry via engagement is not possible, as the only acceptable outcome would be for the industry to cease its primary business.

For these reasons, the case for divestment of tobacco stocks is black and white. We encourage the Board to continue to forego investment in tobacco companies, and we would be happy to answer any questions or assist in any way.

With highest regards,



Laurent Huber
Executive Director



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Rob Feckner, President, CalPERS Board of Administration
Henry Jones, Chairman, CalPERS Investment Committee
400 Q Street
Sacramento CA 95811

May 13, 2016

Dear President Feckner and Chair Jones:

The Board of Directors of the California Faculty Association is disturbed to learn that in the course of reviewing your policies you are considering reinvestment in tobacco.

Given all that we know about tobacco and its cost to smokers' lives in terms of chronic illness, death, addiction, and financial stability, and the cost to their families and to society, we conclude that it is ethically wrong to promote that addiction through CalPERS investments.

But this action you are taking is doubly disturbing because CalPERS is not only a public institution that provides retirement benefits; it is also a public institution that provides health care benefits for large numbers of Californians, including the California State University faculty that we represent.

Every year, we hear about the difficulties CalPERS encounters negotiating the cost of health insurance for CalPERS members, and even with the advantages CalPERS offers, we see our faculty and their families struggle with the ever-rising cost of insurance.

As has been well-established by medical organizations, the cost of medical care is dramatically inflated due to the use of tobacco—the only legal product we can identify that kills half of its users when used as directed.

Just this week, researchers at UC San Francisco Medical Center (see link below) issued a report on the dramatic reductions in health care expenditures in just one year from a 10 percent reduction in smoking by a population.

Can CalPERS actually afford not to support those kind of savings to keep our public health insurance program afloat?

Furthermore, CalPERS as a pension fund lives in perpetuity, unlike like mere mortals. CalPERS, through its investments, affects future people and shapes society as a whole. Any analysis of the cost or loss of opportunity from not investing in tobacco needs to be offset against long-term future medical care costs of treating future patients, not to mention the effects on public health.

From both short- and long-term views, promotion of tobacco is harmful not just to individuals and to society, but to CalPERS itself.

It would be grossly ironic for CalPERS to profit from the promotion of sickness on one hand while CalPERS and our members confront the astronomical costs of that sickness on the other. It is short-sighted and wrong. We cannot address financial concerns that way.

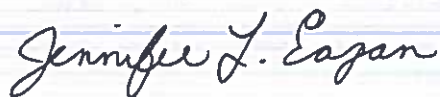
Furthermore, it is cynical enough that the tobacco industry promotes its products overseas in ways that are not allowed here in California, and that it promotes smoking directly to children. Here at home, we see promotion of smoking to the students on the campuses where we teach. The California State University is now in a process of adopting rules that restrict that practice.

We cannot build the stability of our own retirements on profits predicated on the addiction of our students or on other teachers' students in another country.

We realize that no investment is perfect and that investing is fraught with conflicts. But some decisions are easy ones. This is an example.

Decide today. Do not revisit tobacco investments.

Sincerely,



Jennifer Eagan
*President, California Faculty Association
on behalf of the CFA Board of Directors*

cc: Members, CalPERS Board of Administration

Micheal Bilbray
John Chiang
Richard Costigan
Richard Gillihan
Dana Hollinger
J.J. Jelincic
Ron Lind
Priya Mathur
Bill Slaton
Teresa Taylor
Betty Yee

Reference

Smoking Behavior and Healthcare Expenditure in the United States, 1992–2009: Panel Data Estimates

UCSF study on tobacco use:

<http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002020>

KQED news report:

<http://ww2.kqed.org/stateofhealth/2016/05/11/ucsf-study-smokers-quit-and-health-care-costs-drop-in-next-year/>

CalPERS Stakeholder Relations

From: Diana Douglas <Diana.Douglas@lung.org>
Sent: Friday, November 11, 2016 12:48 PM
To: CalPERS Stakeholder Relations
Cc: Vanessa Marvin; Jim Knox; Eric Batch; Josh Brown; Jamie Morgan; Tim Gibbs; Erin Reynoso
Subject: CalPERS divestment comments - ALA, ACSCAN, AHA
Attachments: CalPers Divestment Letter - ALA - ACSCAN - AHA - Nov 2016 .pdf

Please find attached a letter on behalf of the American Lung Association in California, American Cancer Society Cancer Action Network, and American Heart Association urging CalPERS to continue its current policy of tobacco divestment.

Best regards,
Diana Douglas

Diana Douglas | Tobacco Policy Analyst

American Lung Association in California
1531 I Street, Suite 201, Sacramento, CA 95814

email: diana.douglas@lung.org | office: 916-585-7673



November 11, 2016

Rob Feckner
Board President
CalPERS Board of Administration
P.O. Box 942701
Sacramento, CA 94229-2701

Dear Mr. Feckner,

Smoking is the single leading cause of preventable death in this nation and in California, killing 40,000 Californians annually. According to the most recent Federal Trade Commission reports on cigarettes and smokeless tobacco marketing, the tobacco industry spends nearly \$26 million dollars every day to promote their products.^{1,2} Although this industry claims to have ceased all intentional advertising to kids, evidence shows that stores that have more youth customers have more than three times as many tobacco ads as stores in areas with fewer youth.³

As health organizations who have led the way in reducing the death and suffering from tobacco, we are extremely disappointed to learn that the California Public Employees Retirement System (CalPERS) is considering reversing a decision made 16 years ago to divest from tobacco companies. Investing in tobacco would pit CalPERS's portfolio against the financial and physical well-being of its members and the rest of California. We also urge CalPERS to take this opportunity to close the loophole in its policy which currently exempts third-party fund managers from divestment requirements.

The tobacco industry inflicts more than \$23 billion of health care and lost productivity costs upon Californians on an annual basis—including \$3.5 billion of direct costs to California taxpayers to pay for treating tobacco related disease of Medi-Cal patients.⁴ Meanwhile, California continues to invest heavily in its tobacco control program, with appropriations totaling over \$70 million in 2016-2017.⁵ Investing in the same companies whose products we spend millions to suppress is at odds with the financial interests of Californians, including members of CalPERS.

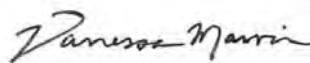
However, it is not just about the money. CalPERS' divestment from tobacco companies represents not only a financial decision, but also an ethical decision made on behalf of all Californians. There is precedent for CalPERS to weigh ethical and public safety concerns alongside fiduciary responsibility to its investors—in 2013, the board voted to eliminate investments in certain manufacturers of assault weapons, citing a commitment to playing a part in reducing acts of gun violence.⁶ Given that half of all smokers expect to die from their addiction, we implore CalPERS to give similar consideration to the implications of investing in tobacco companies.

Each year, 16,800 kids in California become new regular, daily smokers. That's 441,000 kids now under 18 and alive in our state that will ultimately die prematurely from smoking.⁴

Every dollar we invest in the tobacco industry helps it addict more of our youth to a product that will ultimately degrade their quality of life, kill thousands, and cost all of us billions of dollars in health care expenses.

It is simple: investing in Big Tobacco may bring in some additional funds, but at what cost? California will end up paying much more, physically and financially. That is not a wise investment in our future. We respectfully urge you to continue the current divestment policy, extend the policy to CalPERS' third-party fund managers, and send a message that California will not trade the health of its kids for tobacco profits.

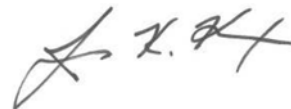
Sincerely,



Vanessa Marvín
Vice President,
Public Policy & Advocacy
American Lung Association in
California



Eric Batch
Vice President, Advocacy
American Heart Association



Jim Knox
Vice President,
Government Relations, California
American Cancer Society
Cancer Action Network

Cc: Members, CalPERS Board of Administration
The Honorable Rob Bonta, Chair, Assembly Public Employees, Retirement and Social Security Committee
The Honorable Richard Pan, Chair, Senate Public Employment and Retirement Committee

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3. Henriksen, L, et al., "Reaching youth at the point of sale: Cigarette marketing is more prevalent in stores where adolescents shop frequently," Tobacco Control 13:315-318, 2004.
4. The Campaign for Tobacco Free Kids, The Toll of Tobacco in California, March 29, 2016. https://www.tobaccofreekids.org/facts_issues/toll_us/california
5. CTCP Budget <http://www.cdph.ca.gov/programs/tobacco/Documents/CDPH%20CTCP%20Refresh/About%20Us/Program%20Budget/CTCPBudget-web.pdf>
6. CalPERS to Divest from Manufacturers of Assault Weapons Illegal Under California Law. February 19, 2013. <https://www.calpers.ca.gov/page/newsroom/calpers-news/2013/divest-assault-weapons>

CalPERS Stakeholder Relations

From: Delos Reyes, Ma Elloi Glenn T. <MGDeLosReyes@mednet.ucla.edu> on behalf of Ong, Michael M.D. <MOng@mednet.ucla.edu>
Sent: Thursday, November 10, 2016 9:46 AM
Subject: CalPERS DIVESTMENT FROM THE TOBACCO INDUSTRY
Attachments: TEROC Public Comments to CalPERS_Divestment_Final.pdf

Please read the attached letter RE: CalPERS DIVESTMENT FROM THE TOBACCO INDUSTRY

Sent on behalf of Dr. Michael Ong.

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**STATE OF CALIFORNIA
TOBACCO EDUCATION AND RESEARCH OVERSIGHT COMMITTEE**

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Deputy Director for Environmental Health
California Department of Public Health

November 10, 2016

C/O Office of Stakeholder Relations
CalPERS Board of Administration
400 Q Street
Sacramento, CA 95811

RE: CalPERS DIVESTMENT FROM THE TOBACCO INDUSTRY

To Whom It May Concern:

The Tobacco Education and Research Oversight Committee (TEROC) is a legislatively mandated oversight committee (California Health and Safety Code Section 104365-104370) that monitors the use of Proposition 99 tobacco tax revenues for tobacco control, prevention education, and tobacco-related research in California. TEROC advises the California Department of Public Health, the University of California, and the California Department of Education with respect to policy development, integration, and evaluation of tobacco education programs funded by Proposition 99. TEROC is also responsible for the development of a master plan for the future implementation of tobacco control and tobacco-related research, and making recommendations to the State Legislature for improving tobacco control and tobacco-related research efforts in California. TEROC's 2015-2017 Master Plan, Changing Landscape: Countering New Threats lays out a vision for preventing and reducing tobacco use in California, which includes objectives to prevent youth and young adults from beginning to use tobacco and to minimize tobacco industry influence and activities.

On October 18, 2016, the California Public Employees' Retirement System (CalPERS) hosted a webinar to provide information about its past and future investment strategies. CalPERS encouraged stakeholders to submit public comments regarding the CalPERS future decision to remain divested from the tobacco industry. **TEROC appreciates the opportunity to submit a public comment and strongly urges CalPERS to continue to divest from the tobacco industry. Reinvesting in the tobacco industry conflicts with California tobacco control policies, sends mixed messages about tobacco use, and could potentially link CalPERS to racketeering.**

The public policy of California regarding tobacco use, since the passage of Proposition 99 in 1988, has been to save lives by reducing tobacco use. Under this initiative, smoking prevalence and tobacco consumption have steadily declined. CalPERS' decision to reinvest in the tobacco industry would not only conflict with California's tobacco control efforts, but would send the wrong message to its beneficiaries and other Californians that tobacco use is acceptable.



C/O Office of Stakeholder Relations
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CalPERS provides retirement and health benefits to more than 1.4 million public employees, retirees, and their families. With your mission being “to advance the financial and health security for all who participate in the System, it is contrary to your mission and service to beneficiaries if CalPERS added tobacco stocks and bonds to its portfolio.¹

In California, tobacco use is a major contributor to the leading causes of death: heart disease (24.1%) and cancer (23.2%).² Moreover, the cost of smoking to California totals \$18.1 billion each year, including direct healthcare costs and lost productivity costs from illnesses and premature death.³ A little more than five percent of CalPERS beneficiaries are smokers and contribute to the cost of smoking in California.⁴ It is in CalPERS’ best interest to support and reinforce the tobacco control policy efforts to reduce tobacco use, tobacco-related death and disease, and the healthcare costs associated with tobacco use and exposure to secondhand smoke. Furthermore, activities undertaken by the tobacco industry directly conflict with the healthcare services CalPERS provides, and contributes to premature death, disease, and rising healthcare costs.

TEROC recommends that CalPERS retains its position to divest from the tobacco industry, which will continue to ‘advance financial health and security of its’ beneficiaries, and diminish tobacco industry influences. Reinvesting in the tobacco industry is a threat to population health in California, which must be countered. TEROC’s 2015-2017 Master Plan, *Changing Landscape: Countering New Threats* underscores the importance of healthy investments in human capital, and presents seven objectives and a comprehensive approach to improve the health of all Californians through tobacco control research, prevention education, and advancing tobacco use norm change. All of which aligns with the November 2015, CalPERS Investment Belief #4: Long-term value creation requires effective management of three forms of capital - financial, physical and human.⁵

Continued divestment from the tobacco industry directly aligns with TEROC’s 2015-2017 Master Plan Objective 5: Prevent Youth and Young Adults from Beginning to Use Tobacco and Objective 7: Minimize Tobacco Industry Influence and Activities. Strategies in support of Objective 5 include building capacity for preventing tobacco use and combating tobacco industry actions. Continued divestment would send a clear message that CalPERS does not support marketing of e-cigarettes, flavored tobacco, or any other tobacco product that either entice or engage youth in tobacco initiation.

Strategies supporting Objective 7 include increased rejection of tobacco industry funding, sponsorship, and partnership. Large investors often use “partnership and/or engagement” with outlier industries as justification for investment, arguing that, as a large shareholder, they can engage with management to obtain business reforms. To

C/O Office of Stakeholder Relations
Page 3
November 10, 2016

the contrary, the tobacco industry uses involvement and/or inclusion of stakeholders to surreptitiously polish their brand and addict customers to traditional and emerging products. CalPERS reinvestment would only lead to preservation rather than cessation of the tobacco industry business.

TEROC also urges CalPERS to consider the impact of its investment practices on its reputation if it reinvests in racketeering. The United States (U.S.) tobacco industry was found to have violated the federal Racketeer Influenced and Corrupt Organizations Act (RICO) by a federal court in 2006. The court found the tobacco companies fraudulently covered up the health risks associated with smoking and marketing their products to children. “As set forth in these Final Proposed Findings of Fact, substantial evidence establishes that Defendants have engaged in and executed – and continues to engage in and execute – a massive 50-year scheme to defraud the public, including consumers of cigarettes, in violation of RICO.” The U.S. Court of Appeals for the District of Columbia Circuit upheld the decision and the U.S. Supreme Court declined to hear the appeal.

Additionally, the long-term prospects for the tobacco industry are not promising. Regulations globally are increasing under the World Health Organization’s Framework Convention on Tobacco Control, including smokefree laws, plain packaging and graphic warning labels on packaging. The tobacco industry has fought these global developments vigorously because it knows the measures will adversely affect its business prospects. The U.S. Food and Drug Administration regulations are just beginning, with graphic warning labels and plain packaging on the horizon. Private litigation by smokers suffering from tobacco-related diseases is still thriving in the U.S. and abroad. Canadian provinces are suing to recover healthcare costs. The federal RICO litigation against the industry is ongoing with the Corrective Statements by the industry yet to be finalized; in these Statements, the industry must publicly admit to the world that it engaged in misrepresentation and fraud.

California also is not looking to support the tobacco industry, given the recent vote on Proposition 56. The passage of Proposition 56 will also adversely affect the tobacco industry. According the Centers for Disease Control and Prevention (CDC), a 10 percent price increase results in a 3 to 5 percent decline in tobacco consumption.⁶ A study shows that the same 10% price increase also results in up to a 7% drop in youth smoking rates.⁷

In closing, all sectors of California government need to do their part in preventing and reducing tobacco use, the leading preventable cause of death. CalPERS has a long history of recognizing the harms incurred by tobacco and the industry that supports it, and we applaud CalPERS for its prior actions that minimize the effects of tobacco in California. We encourage CalPERS to take further steps and provide the necessary

C/O Office of Stakeholder Relations
Page 4
November 10, 2016

leadership to ensure that its investment portfolio continues to exclude tobacco stocks and bonds. If TEROC can provide further information that would facilitate your decision-making regarding this matter, please contact me directly at (310) 794-0154 or via e-mail at mong@mednet.ucla.edu.

Most respectfully,



Michael Ong, M.D., Ph.D.
Chairperson

REFERENCES

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7. Chaloupka FJ. Macro-social influences: the effects of prices and tobacco-control policies on the demand for tobacco products. *Nicotine & Tobacco Research*. 1999;1(Suppl 2):S77-S81.

CalPERS Stakeholder Relations

From: Cynthia Hallett <Cynthia.Hallett@no-smoke.org>
Sent: Friday, November 11, 2016 10:27 AM
To: CalPERS Stakeholder Relations
Subject: Comments on Maintaining Tobacco Divestment Policy
Attachments: ANR Comments to CalPERS re Tobacco Divestment.pdf

November 11, 2016

CalPers Stakeholder Relations,

On behalf of Americans for Nonsmokers' Rights, a member-based public health advocacy non-profit organization, we wish to express our concern regarding the CalPERS proposal to reinvest in tobacco. Tobacco is still by far the leading preventable cause of health costs, disease, and death in California, the U.S., and much of the world. We strongly urge you to maintain the current divestment policy. Reinvesting in tobacco is contrary to CalPERS mission of well-being for the long-term.

Tobacco stocks are still risky.

- The U.S. adult smoking rate today is only 15%, a record low. Millennials also have a record low smoking rate. For context on how much tobacco use rates have declined, the national adult smoking rate was 21% in 2005. The recently voter approved Prop 56 in California is expected to dramatically further reduce tobacco use rates in California –possibly down to 5%. It will cost tobacco companies an estimated \$250 million in lost sales starting next year and will save billions in health costs.
- Numerous market analysts have recently stated they believe that tobacco stocks are at a peak – the result of mergers and consolidation and product price increases to make up for a quickly declining user base across mature markets. Even in emerging markets such as Indonesia that initially showed increased smoking, smoking rates declined as their market matured and the tobacco industry had to increase prices to make up for the decline in sales.

Tobacco Companies are Racketeers and Face Growing Regulatory Pressure Worldwide

In 2006, tobacco companies were found by a federal district court to have engaged in racketeering acts in violation of the Racketeer Influenced and Corrupt Organizations (RICO) Act. In her ruling, Judge Kessler noted that the industry's illegal behavior was likely to continue. The remedies from the Department of Justice case are still being challenged in court by tobacco companies. However the process is still moving forward. The remedies could still have a major impact on tobacco stocks in the next few years. CalPERS should not be investing in companies whose profits depend on illegal behavior, addiction, and death.

Additionally, FDA now has significant regulatory authority over tobacco, including electronic smoking devices. The potential for regulatory action via the RICO case and FDA mean tobacco stocks remain risky.

Internationally, scores of developing countries are boosting best practice regulatory pressure on tobacco companies and tobacco use rates, steadily closing the gap with developed countries. In the past, tobacco companies were able to grow their international user base in developing nations without much push back from governments but that paradigm has shifted as a result of the Framework Convention on Tobacco Control (FCTC), which provides party countries with a

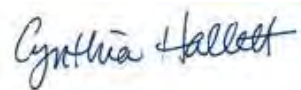
powerful counter balance to tobacco industry interference. For example, plain packaging regulations are expanding in many developing countries along with numerous other “best practice” regulations such as smokefree laws.

Socially Responsible Investing is Profitable

Many institutional investors around the world are adopting screens (divestments) for tobacco in light of both industry behavior and the outlook for long term decline. For example insurance group AXA [adopted such a policy earlier this year](#). Since the CalPERS policy was adopted in 2000, there has been a significant trend toward “Socially Responsible Investing” (SRI) and ESG (Environmental, Social, Governance) factors in investment decisions. There is a growing body of academic research shows a strong link between ESG and financial performance. Several research studies have demonstrated that companies with strong corporate social responsibility policies and practices are sound investments. For example, in 2015 [Deutsche Asset & Wealth Management and Hamburg University](#) conducted a meta-analysis of over 2,000 empirical studies, making it the most comprehensive review of academic research on this topic. They found that the majority of studies show a positive correlation between ESG standards and corporate financial performance. **Therefore, we believe that tobacco investments are not required in order for a plan to perform well and strongly urge CalPERS to refrain from reinvesting in tobacco.**

Many thanks for the opportunity to weigh in on this important matter.

Sincerely,



Cynthia Hallett, MPH
President and CEO

(Letter is also attached to this email.)

Cynthia Hallett, MPH
President & CEO
Americans for Nonsmokers' Rights
ANR Foundation
2530 San Pablo Avenue, Suite J
Berkeley, CA 94702
work (510) 841-3045
mobile (510) 460-0748
skype and twitter: cynhallett
<http://www.no-smoke.org>



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Follow us on Twitter: http://twitter.com/ANR_Smokefree

Please remember the ANR Foundation in your will or trust.

November 11, 2016

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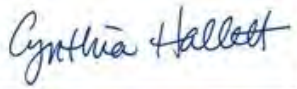
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Many thanks for the opportunity to weigh in on this important matter.

Sincerely,

A handwritten signature in cursive script that reads "Cynthia Hallett". The signature is written in black ink on a white background.

Cynthia Hallett, MPH
President and CEO

From: [CalPERS Stakeholder Relations](#)
To: [CalPERS Stakeholder Relations](#)
Subject: RE: Cenkos: Global Tobacco - On Ethics
Date: Friday, November 18, 2016 10:27:06 AM
Attachments: [image001.png](#)

From: Rae Maile [<mailto:rmaile@cenkos.com>]
Sent: Wednesday, October 05, 2016 2:26 AM
To: Newsroom
Subject: FW: Cenkos: Global Tobacco - On Ethics

Further to your decision to review your (lack) of investments in tobacco, your investment committee may find the attached report of some interest.

With best regards

Rae Maile

Rae Maile

Institutional Equities | Cenkos Securities plc

Tel : 020 7397 8941

Mob : 07702 456389

Fax : 020 7397 8901

Email : rmaile@cenkos.com



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From: Rae Maile [<mailto:equityresearch@cenkos.com>]
Sent: 26 September 2016 07:18
To: Cenkos London
Subject: Cenkos: Global Tobacco - On Ethics

[Download the full report](#)

Tobacco

Global Tobacco

On Ethics

Smoking has been controversial since its first appearance in Europe. The first recorded European smoker, Rodrigo de Jerez who had sailed with Christopher Columbus, was imprisoned by the Spanish Inquisition. This started a long history of tighter regulation, higher taxes and increasing demonisation of smokers. This has been for their own good and for the good of society as smokers face considerable risks to themselves, pose risks to others and are a drain on society. They cannot help themselves as they are addicted to nicotine, and kept that

way by the tobacco industry which has long withheld the truth from them. Smoking, it is said, will be the cause of a billion preventable deaths over the next century. It follows, therefore, that investment in the tobacco industry is "unethical".

Although this summary may appear a compelling damnation of the tobacco industry it is based on a fundamental assumption regarding the motives of smokers which is barely discussed, namely that smokers simply cannot be making a rational choice in deciding to smoke, cannot ever derive utility from smoking. It is compounded by selective use and manipulation of statistics, science, politics and history by those averse to the freely-made choice of others to use tobacco.

We do not deny that there are risks to health borne by tobacco users from their smoking. We do believe, however, that those risks have been overstated. We dispute that there is a risk to non-smokers from others' smoking. Giving up smoking may be difficult, but the fact that ex-smokers outnumber current smokers in the UK and the US, for example, shows that it is far from impossible. The idea that smoking imposes a cost to society confuses public costs with private costs. The direct costs to the health service in the UK from smoking are dwarfed by tax revenues from smokers.

We can rightly question and certainly not condone the past behaviour of the tobacco industry, but we should bear in mind that the current generation of tobacco company executives were not born, were children or were very junior within the industry at the time. In terms of current behaviour the leading tobacco companies are proponents of products which may well reduce harm. The introduction of such products is, however, being complicated by some elements of Tobacco Control who seem to believe that the only way for harm to be reduced is for the tobacco industry to be destroyed and for smokers to quit, or die. The ethics of this approach should be questioned, we believe.

We ourselves may not choose to smoke and we may not like the smell of cigarette smoke. But personal prejudice is not the same as an ethical point of view. Indeed, to conflate the two is, perhaps, unethical.

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On Ethics

Introduction

Some disclosures: my youngest son owns 110 shares of British American Tobacco (disclosed in this, and previous reports, as being held by me); I and my wife have investments in collective investment schemes which own various tobacco companies' shares; I have accepted hospitality from tobacco companies in the past, and may do so again in the future if I am invited. Cenkos has no tobacco company as a corporate client. The idea and the decision to research and publish this note were mine.

I do not smoke and never have, as a matter of personal choice; I believe smoking tobacco to be a potential risk to a person's health and that if someone wishes to avoid the health risks of smoking then not smoking is the best policy. I am very strongly of the belief that should someone choose to smoke, and to continue to smoke, then that is a choice that they have made in full understanding of the potential risks, and it is nothing to do with me. I do not believe that someone smoking near me is a risk to my health.

It is also important to understand that the views expressed are my own, and have been reached through considerable research and thought. I have been researching the tobacco sector, initially as a fund manager and subsequently as a stockbroker, for some 25 years. Through essentially all of that time I have held the view that share prices in the sector offered investors a rate of return which was in excess of the risks being run, both in an absolute sense and also relative to broader stock markets. There have been times when that has been wrong but over the long term investors have been handsomely rewarded. I do not need to be positive on the business prospects for the industry, or for any particular company within the industry. There are no stock recommendations in this note, deliberately, but my stock recommendations are a matter of public record.

I set out these statements as the subject of this note will be seen as controversial to many people. I am not an "industry shill" and I am definitely not "in the pay of Big Tobacco". As stated, I do believe that smoking entails risks to the smoker. But I also believe that there is an important debate to be had with respect to the tobacco sector but one which is rarely had. As far as the debate has been staged, it has been one-sided and lazy. Some (and perhaps many) of the "facts" regularly presented against the industry are actually no more than "opinions". An untruth repeated often and loudly does not become the truth.

Although the decision to exclude tobacco investments from a portfolio is often said to have been "on ethical grounds" in our view it is more often a case of personal prejudice. That is absolutely fine as we are all entitled to our own opinions, but to claim that it is more is, perhaps, unethical.

The background to this paper

This year has seen the debate regarding investment in the tobacco sector highlighted in a way that it has not in some considerable years.

In April the California Public Employees Retirement System, CalPERS, [announced](#) that it was reviewing its policy of divestment from certain industries, and in particular the decision it took in 2000 to divest from the tobacco industry. It was reported that

CalPERS estimated that its decision to divest had cost it, at that point, some \$3bn in missed profits.

It was also reported that Norges, the Norwegian Government Pension Fund, which has excluded most tobacco related investments since the end of 2009, had missed \$1.9bn of potential profit and reduced its returns by 0.68% per annum from 2010 to 2015. Although CalPERS was reviewing its policy, Norges was not.

Subsequently, in May AXA [announced](#) that it would sell immediately its €200m own-account investments in tobacco company equities and stop all new investments in tobacco industry corporate bonds, running off its €1.6bn of existing holdings as they matured. It was not selling either equity holdings or bonds in funds managed as third party mandates. AXA argued that smoking posed the biggest threat to public health in the world today and that “tobacco will kill one billion people worldwide during the 21st century”, citing statements from the World Health Organisation (WHO).

Alongside these debates has been the continuing and active debate regarding the safety or otherwise of e-cigarettes, their role in harm reduction, the regulation of the sector and the role of the tobacco companies in production and promotion of the category. This debate has seen a schism in "Public Health" with [those in favour](#) of the products being countered by others who claim "[it isn't yet known if they are safe](#)". Media headlines ("[Vaping as bad as fags](#)" for example) have played a role in changing public perceptions of the relative risks of e-cigarettes compared with combustible cigarettes, with ASH [suggesting](#) that the proportion of survey respondents thinking that e-cigarettes were equally or more harmful than tobacco cigarettes increasing from 12% in 2013 to 23% in 2015. In many cases the tactics and language used by the detractors of e-cigarettes are reminiscent of earlier chapters of tobacco's history and not in a way which is flattering to the current generation.

The regulatory environment with respect to tobacco has been developing over many decades and, as the majority of the population in most countries are not smokers, the impact of that regulation is rarely considered as it does not, *prima facie*, impact upon most of us. Many of us may have welcomed "smoke-free workplaces" although at the time of the introduction of such legislation in the UK most of us were already working in smoke-free workplaces (according to the [ONS](#) by 2005 only 8% of adults were working where there were no restrictions on smoking). We may well have welcomed the restriction on smoking in pubs from a personal perspective, although the introduction of such legislation has undoubtedly been bad for the pub trade in the UK (with [similar evidence overseas](#)). The banning of point of sale display of tobacco products in the UK and the introduction of plain packaging this year will barely have made a ripple in most of our lives. Given that the majority of us are not tobacco users, and many may not personally approve of tobacco use, each of these further restrictions would have either gone unnoticed or have been welcomed as “a good thing”.

That the experience of tobacco control is being widely quoted as a template to be used in other areas “of concern” is probably less well recognised. The idea of a “slippery slope” in regulation of legal products has been [vehemently denied](#) by some supporters of tobacco regulation, but not by all as the following entries from the 2015 WHO Tobacco Atlas show quite clearly.

Figure 1: WHO Tobacco Atlas 2015 (p80)

CALL TO ACTION

The tobacco control community must work closely with the broader movement addressing the global non-communicable disease (NCD) crisis; moreover, tobacco control proponents must stand together with other public health communities to lift the fight against NCDs to the very top of the global health and development agendas.

Source: WHO

While restrictions on tobacco impact a minority, and a minority which has become wearily accustomed to being singled out, the fact is that the approach used in tobacco (which itself originally stemmed from the campaign for Prohibition in the US) is now starting to reveal itself in products which might be closer to home for many more of us. The reduction in "safe" [drinking levels in the UK](#) is a clear case in point with the UK now having the lowest "safe" levels anywhere in the world and being the only country where the levels are the same for men and women. Moreover *"there is no level of regular drinking that can be considered as completely safe"* (p17) according to the Chief Medical Officer. This is in stark contrast to the [weight of evidence](#) on this matter and therefore also completely counter to the introduction of the document which states *"People have a right to accurate information and clear advice about alcohol and its health risks"*. It does, however, follow as advice from a committee of experts who are by and large from a [temperance](#) background.

Concerns have been raised with respect to obesity levels in society, and this in turn has prompted the proposed introduction of the [Soft Drinks Industry Levy](#) in the UK with similar approaches taken in Mexico, France, Finland, Hungary and Philadelphia. The wide availability of low or no-sugar variants of "sugary" drinks does not appear to have influenced the decision to introduce the levy nor indeed the lack of evidence of either sugary drinks in excess calorie consumption or of success elsewhere from taxation. Any of us that prefers "core" styles of fizzy drinks will face either changes to the product and/or higher prices, and yet we would probably not have regarded ourselves as "at risk" and therefore not in need of reformulation or being charged more for a product we freely choose.

In the last 12 months, WHO has deemed [Processed Meat](#) to be a "Group 1" carcinogen, ranking it alongside plutonium, alcoholic drinks, coal fires in the home and sunshine, based on *"limited evidence"*. The report regarding processed meat caused an immediate [reduction in demand](#) from UK consumers for bacon and sausages. WHO has also deemed drinking [very hot beverages](#) as a *"probable cause of oesophageal cancer"* although coffee was granted a respite and is no longer considered "possibly carcinogenic to humans (Group 2B)". Many probably looked askance at the idea that bacon was so high risk and have little intention on changing their consumption, and probably never considered that coffee had previously been deemed to be carcinogenic.

Figure 2: WHO Tobacco Atlas 2015 (p80)

SHARING THE TOOLS

Packaging regulations, a method employed to control tobacco use, can also serve to deter people from consuming other unhealthy products.



Existence of a global health treaty (WHO FCTC) as well as effective national and sub-national legislation make tobacco control a model for addressing other pressing NCD-related issues that require better regulations, including harmful use of alcohol and unhealthy diet.



The apparently frequent and contradictory messages regarding the ideal diet (is it carbs, sugar, fat or something else that should be avoided this week?) capture headlines but do not inspire confidence in the scientific basis of the claims made. It is, perhaps, no wonder that Britain has "[had enough of experts](#)", although it does highlight an understandable personal tendency to believe statements that chime with our own prejudices and behaviours but to discount those that do not.

The argument against tobacco

The case against the tobacco industry includes, according to [WHO](#), that:

- Tobacco use is the leading preventable cause of death and disease globally.
- A billion people will die from smoking over the next century.
- Tobacco kills up to half of its users (sometimes [two-thirds](#) of smokers).
- There is no safe level of exposure to second-hand tobacco smoke.
- Smoking imposes a cost on society.

In addition it is widely reported that "[many adult cigarette smokers want to quit](#)" although success in quitting is low because cigarettes "[contain the addictive drug nicotine](#)". Indeed it has been reported that "[nicotine is as addictive as cocaine](#)".

It is further argued that the industry has a [long and chequered history](#) and so nothing it says today can be trusted. It has sought to work against regulation of the industry. Tar and nicotine levels have been [manipulated](#). It has long argued that the case against the risks of smoking was overstated.

We can consider this list to cover most, but probably not all, of the usual arguments as to why an investment in the tobacco industry is "unethical".

Challenging the conventional wisdom

Demonic possession

"... being a smoker is not a matter of free choice; they're gripped by an addiction fuelled by the tobacco industry and they need support to give up"

[Deborah Arnott, Head of ASH](#)

The first and most important issue to raise is the one which is least often discussed in polite company, namely the fundamental question as to why someone should choose to smoke in the first place, and then continue to smoke, despite the risks of doing so. Maybe, just perhaps, [smokers like smoking?](#)

This is fundamental to the question of "tobacco control" as control is only required if consumers are acting in an entirely irrational manner, causing harm to themselves and (in the next logical development of the argument) harm to others. This, it is implicitly argued, is because tobacco is "addictive", and customers are lured into smoking through aggressive marketing by "Big Tobacco" as the comment from Deborah Arnott above suggests.

This has been eloquently described as the "[theory of demonic possession](#)" whereby the individual's responsibility for their actions has been subverted by some greater (and inherently, therefore, evil) force. The implication of this theory is that any intervention can be justified in the name of "public health" including punitive taxation; ever increasing regulation of both the product and the ways in which consumers use the product; and outright stigmatisation of the consumer by "denormalisation".

Figure 3: Government-mandated commentary on smokers



Source: NHS

For this characterisation of smokers to be true we would have to believe that there was no personal choice being exercised and that smokers derive absolutely no utility (in an economic sense, ie "pleasure") from smoking at all. The obvious fallacy of the argument is that, despite everything, millions of people around the world continue to smoke **in knowledge and therefore acceptance of the apparent risks**. A rational view must be that smokers have accepted the potential risks of their habit, and borne the obvious financial cost imposed on them for maintaining in their habit, because they "value" smoking – for the taste, the sensation, the stimulation, the relaxation, the conviviality or for whatever other reason or combination of reasons.

On a personal level we may not see that trade off in the same way as we ourselves have either chosen not to smoke or to cease smoking. But then people may well disagree with our personal life choices, each of which themselves may come with their own costs, risks and pay backs.

Figure 4: Risk of a "healthy" commute in London



Source: R. Maile, courtesy of an altercation with a Boris bike which was in the wrong place, Feb 2016

The counter to this is, inevitably, the survey data which suggest that the vast majority of smokers want to give up and/or wish they had never started. But then asked if you think you really should lose some weight, drink less, eat more healthily and give more to charity you would probably agree with all of those sentiments, especially if asked by an interviewer who catches you on the High Street. Each is within your gift if, that is, you want to forego that chocolate cake, not finish that bottle of claret (and open a second), eat more kale (really?) and hand over more cash to every worthy cause that asks. Each of these would, however, require a reduction in utility (pleasure) in the short term which may not be balanced by the promised benefit in terms of increased longevity in the very long term.

We discuss the question of "Addiction" more fully below, but at this point we make a number of points.

- There is no accepted medical or scientific definition of "addiction".
- There are more ex-smokers in the UK and the US as current smokers.
- Until 1988 the Surgeon General did not regard nicotine as "addictive", rather it was an "habituation".
- Even when declaring nicotine to be "addictive" in 1988, the view of the then Surgeon General was that *"For many smokers, a genuine desire to quit and, if necessary, persistent and repeated attempts to quit may be all that is necessary"*.

Quitting smoking may well be difficult for many, we do not doubt that, but it is not impossible (as many millions of people have proven) and it is certainly not life-threatening. The "addictive" properties of nicotine (using the word in the sense of common, current parlance) are only one part of the reason for smoking and are, in many ways, no different to the "addictive" qualities of caffeine. And no-one judges you for drinking coffee.

Preventable deaths, premature deaths and "a billion lives"

We can look at these charges as a group as they are interlinked.

It is widely and often claimed that "smoking is the leading cause of preventable death". By implication, presumably, not using tobacco would mean that death could be prevented. That is patently not true of course as even we non-smokers are going to die. Death simply cannot be prevented.

What could be argued is that of all the life style choices that can be made freely by individuals, smoking may result in a reduction in expected longevity, *ceteris paribus*, and, if measured in terms of "years of potential life lost" (YPLL), it may be one of the "most costly". This, however, requires many more assumptions to be made and in particular a definition of how long anyone is **meant** to live which is an entirely subjective construct. YPLLs are often stated with respect to a reference age, for example 75, as though we all live "normalised" lives and should all live the same length of time. Clearly we do not and while smoking is one major point of difference so will be how we eat, drink, work, play and our genetic composition. The debate about what constitutes "a healthy diet" is a case in point, as everyone eats and therefore not eating "properly" will aggregate to a much greater impact on YPLLs than smoking which is undertaken only by a minority.

This concept may sound counterintuitive because "smokers die young". Probably the disease which most would commonly associate with smoking, and where the epidemiology suggests that the risk is most elevated for smokers relative to non-smokers, would be lung cancer. According to Cancer Research UK the average age of diagnosis with lung cancer is over 70. In [2000](#) there were an estimated 63,000 male "smoking-related" deaths in the UK from a total of 290,000 (22%); 42,000 were in men over the age of 70. Of the estimated 51,000 female smoking-related deaths (16% of the total), 40,000 were over the age of 70. In 2014 the average age of death of men was 75.4 years, while the average age of death from lung cancer was 73.8 years, a difference of 19 months. It is normal to assume that 80% of lung cancer cases are associated with smoking, and there is clearly a reduction in longevity, but perhaps not to the degree which might have been expected.

This raises a number of important points. There are no illnesses which are unique to smoking. Moreover the illnesses which are normally associated with smoking are typically illnesses of old age and not of youth. "The dose makes the poison" and the likelihood of illness from smoking is closely associated with duration and frequency of smoking. While it is stated that "half of all smokers will die from smoking" this is both overstated and is consistent with saying that "half of all smokers will NOT die from smoking". The chances of developing lung cancer as a smoker are put anywhere between eight and 40 times the risks faced by non-smokers. The chance of developing lung cancer as a non-smoker is very low and so even at a high multiple of a very small risk the absolute risk of developing lung cancer as a smoker is around one in ten.

Returning to the point of what constitutes a "premature" death there is, as with addiction, no formal definition. Defining a smoking-related death as a premature death therefore makes the assumption that smoking, and smoking alone, was responsible for death. But it is readily observable that income levels, education and even where you live are also statistically significant variables. If longevity alone is your objective in life then it is best that you are rich, well educated, eat well, drink moderately, exercise and live in a nice part of the country. Even then you may not necessarily live longer, but it may well feel like you have.

Given that the basis for determining what constitutes a “smoking related” death is itself questionable, the idea that smoking will “kill a billion people over the next century” is clearly an extrapolation of poorly based assumptions. According to WHO there are currently over a billion smokers in the world. To argue that smoking will kill a billion over the next century really amounts to saying nothing other than “people alive today are unlikely to be alive 100 years from now”. This is simply, therefore, a truism.

A derivation of this argument is that “smoking kills someone every X minutes”. Taking the figures quoted above for the UK, in 2000 that would have amounted to “a smoker died every five minutes”. And a non-smoker died **every** minute.

It is not about you, it is about me

“The health risks from Second Hand Smoke (“SHS”) exposure are now well documented and there is no risk-free level of exposure to SHS”

[ASH](#)

With this argument the debate about smoking risks moves beyond the smoker and on to the population in general. No longer is the smoker simply increasing their own risk but they are threatening all those around them.

Prior to the early 1970s smokers, only recently displaced as the majority of the UK or US adult population, were tolerated by non-smokers. The change came from the mid 1970s onwards, in part encouraged by the decision taken at the 1975 Third World Conference on Smoking and Health which called for “[Programs aimed at creating a social environment in which smoking is unacceptable](#)”. In the words of [Sir George Godber](#): “We must foster an atmosphere where it is **perceived** that active smokers would injure those around them” (our emphasis added).

It certainly seems sensible to assume that non-smokers must be exposed to risk from being near smokers after all we are all aware of the smell. But as we have seen the risks faced by smokers themselves are easily overstated, and so even elevated risk is not the same as material, absolute risk.

The [SCOTH](#) report suggested a 24% increase in risk to non-smokers of lung cancer from exposure to SHS. This sounds material but, once again, the absolute risk of lung cancer in non-smokers is negligible and therefore a 24% increase will still render the absolute risk negligible. The suggestion was made that the risk was dose responsive, and therefore those with the greatest exposure over the longest time periods were the most in need of protection. From this comes the requirement to protect, for example, bar workers who worked in smoky venues hence the 2007 introduction of “smoke free workplace legislation” which brought an end to smoking in pubs and increased materially the rate of smoking on the streets.

There are many problems with the theory of SHS and the risk to non-smokers. The most obvious problem is that WHO’s own investigation of the risks showed no statistically significant increase in risk from either spousal smoking or smoking in the workplace, and a reduced risk for children. Those studies which purport to show an increased risk tend to be very small sample sizes where statistical significance is rather easier to achieve. But even with these studies, most fail the usually accepted norms of “increased risk”. There is, of course, the fact that we, and certainly our parents’ generation, would have grown up in a considerably smokier environment than we

have done. The general health and well-being of the population had been improving long before the idea of restricting where people could smoke was introduced.

There is also the fact that smoking restrictions on “public places” are more usually restrictions in private places. Public houses are not “public places”, they are private enterprises. No-one is forced to enter any particular pub or restaurant, while the claim made that there would be no impact (and that indeed there would be a benefit) to the hospitality trade from the introduction of restrictions on smokers has been demonstrated to be palpably false.

Again the point is that the claim made against tobacco is not borne out by the evidence. In the end the introduction of restrictions on smoking in public places was not about “health” it was simply the “next logical step” which opponents of tobacco wished to pursue.

The societal cost of smoking

“The government believe it is right that tobacco manufacturers and importers make a greater contribution to the societal costs of smoking”

HM Treasury Tobacco Levy consultation document, December 2014

As well as the health impact on non-smokers of smokers, it is argued that the “true” costs to society (and hence non-smokers) are greater than the income in respect of tax and duty. It is argued that while tax and duty raised from English smokers ([78%](#) of the total take from UK smokers) was around £10bn, the [“true” cost of smoking in England](#) was £13.9bn. Smoking therefore “imposes a cost to society”.

The derivation of annual income is straightforward enough but the “cost” side of the equation is not. To derive the costs to society there is the inclusion of estimated, tangible costs to the Health Service but to this are added various imputed costs including, for example, the cost of “smoking breaks”. This conflates two ideas; firstly that smoking breaks are a cost to society as a whole whereas these are quite clearly costs to individual employers; and that non-smokers never deviate from their work. As we all know well we can all find ways to waste time at work and if we were to consider the “cost to society” of social media, internet shopping and the time spent complaining about colleagues who do not share our Stakhanovite work ethic then the costs of smoking breaks taken by a minority of employees quite clearly is shown to be irrelevant.

If we were to be completely cold hearted in this analysis we should compare lifetime income generated from a smoker with the lifetime costs which will include both healthcare costs but also pensions. As we have described already, there is a modest reduction in life expectancy for smokers and hence a “saving” relative to non-smokers from pension payments. In the case of lung cancer we demonstrated that diagnosis tends to come quite late in life, but survival rates are low and this is generally true of “smoking-related” illnesses that expiry tends to follow quickly from diagnosis. This compares with “healthy” non-smokers (especially the skinny ones) where a long period of old age will be associated with material costs of treating the ailments which come with a long life and require significant levels of care.

They cannot be trusted

“The evidence presented also permits the jury to find a tobacco industry conspiracy, vast in its scope, devious in its purpose and devastating in its results.”

District Judge Sarokin, the Cipollone Decision, April 21 1988

“... at all material times and in particular by 1964 the general public in the United Kingdom were well aware of the risks to health associated with smoking, above all the view that cigarette smoking could cause lung cancer”

Lord Nimmo Smith, McTear case, 31 May 2005

The release of secret industry documents as part of the litigation wars in the US in the 1990s has fomented the idea of a vast industry conspiracy to hide the truth about the risks of smoking. Moreover the past is regularly raised as a reason not to trust the industry today, as stated explicitly by [Article 5.3](#) of the WHO's Framework Convention on Tobacco Control.

It is certainly the case that the industry challenged the epidemiological evidence linking smoking with illness over very many years, and to suggest that it did not would be simply wrong. It also raised questions regarding addiction, but quite fairly in my opinion. But to suggest that the tobacco industry, and the industry alone, framed the debate about smoking's risks in the period is equally wrong.

Roy Norr, author of “Cancer in a Carton” published by Readers’ Digest in 1952 gave a [speech in 1953](#) in which he referred to the warning of Ewing in 1926 that “cancer propaganda should emphasise the danger signs that go with [smoking]” and highlighted similar concerns from Tylecote (1927), Hoffman (1929), McNally (1932), Lickint (1935), Arkin and Wagner (1936), Raffo (1937), Muller (1939), Proetz (1939), Flory (1941), Ochsner (1949), Wynder and Graham (1950) and, of course, Doll and Hill (1952). As those “secret” documents make [clear](#) the suggestions of a link between smoking and ill health “have been given extensive publicity in magazines of national circulation”. Despite all of these warnings, in 1957 the Surgeon General did not advise smokers to give up and the view that causality did not follow necessarily from correlation was not a view held solely by the industry.

On 13 February 1954 the UK Government declared that the relationship between smoking and lung cancer should be regarded as established. Since that time there has been an ever rising level of regulation of the product and packaging; consistently tightening restrictions on advertising and promotion; and restrictions on where and when smokers can smoke. Health warnings have been introduced, enlarged and made graphic. In addition taxes have risen inexorably. Smoking has not, however, been prohibited (except in Bhutan). To suggest that the tobacco industry has successfully lobbied against any of these developments is to ignore the evidence that every demand made by Tobacco Control to date has been implemented.

While fully recognising the (increasingly distant) past, it is also important, in our view, to consider the present and the future. The fact is that for almost two decades the various tobacco companies have made no secret of the fact that smoking comes with risks. It is also the case that each of the majors now has at least one form of product in the category of “reduced harm” be it in nicotine replacement, snus, heat-not-burn or e-cigarettes. A number of the companies have much longer histories in attempting to develop “less hazardous” products for consumers, based on the knowledge and

understanding of the complex nature of the risk exposure as it was understood at the time.

Until relatively recently reduced harm products have had very limited experience of success with customers. Reasons for this are many including, but not restricted to, the failure of the product to replicate “the theatre of smoking” much less the physical experience of smoking. It is also the case that attempts to introduce potentially safer products have encountered hostility from regulators and/or Public Health bodies where the attitude in the 1960s of “harm reduction” had stiffened into the harder line of “quit or die”.

The increasingly hard-line attitudes of some elements of Public Health have been vividly demonstrated by the response to the latest innovation in reduced harm, namely e-cigarettes. The behaviour of some elements of Public Health, in questioning the accumulated and accumulating science in favour of e-cigarettes and in dismissing the views of proponents of e-cigarettes, is reminiscent of the behaviour of the tobacco industry in the 1950s so lambasted by Tobacco Control campaigners. Opponents of e-cigarettes are accused, fairly we believe, of selective use of science, of *ad hominem* attacks on opponents, and of creating increasing uncertainty with respect to the relative safety of e-cigarettes compared with combustible cigarettes.

The science of tobacco smoke is no less complicated today than it was in the 1950s but today it is only the tobacco industry which has the financial resources and more importantly the inclination to pursue the science to seek a reduced harm product which is acceptable to consumers. Of course the tobacco companies have a vested interest in this, but the whole point about e-cigarettes surely is that they have been a free market answer not having been sought, financed or developed by Public Health or by tobacco regulators.

The interesting question is the degree to which the e-cigarette debate being had within Public Health today reveals a new policy or simply one which has highlighted past behaviour by Tobacco Control. In our opinion the traits are not new, and have been justified previously by being part of a noble lie that “smoking is bad”. But a lie repeated often does not become the truth, and our reading of the analysis is that the case against tobacco has been wilfully exaggerated by a relatively small number of individuals with a personal dislike of smoking and smokers. We may share that dislike of smoking, but ultimately that is a personal opinion not an ethical stance.

The statistics of smoking

“Epidemiology cannot be used to establish causation in any individual case, and the use of statistics applicable to the general population to determine the likelihood of causation in an individual is fallacious. Given that there are possible causes of lung cancer other than cigarette smoking, and given that lung cancer can occur in a non-smoker, it is not possible to determine in any individual case whether but for an individual’s cigarette smoking he probably would not have contracted lung cancer.”

Lord Nimmo Smith, 31 May 2005

“Smoking is one of the leading causes of all statistics”

Liza Minnelli

In 1950 Doll and Hill published their Preliminary Report on [“Smoking and Carcinoma of the Lung”](#), followed up in 1954 by their second report [“The mortality of doctors in respect of their smoking habits”](#). Their original investigation looked into the “phenomenal” increase in deaths attributed to lung cancer between 1922 and 1947, and the question as to whether it may have been due to better diagnosis, environmental factors or something else, in this case smoking. It is regarded as one of the ground-breaking pieces of epidemiology, then a very new branch of medicine. In the early 1950s there had been a number of reports looking at the potential links between smoking and health and by the time of the second report Doll and Hill concluded “All these studies agree in showing that there are more heavy smokers and fewer non-smokers among patients with lung cancer than among patients with other diseases”. On 13 February 1954 the UK Government declared that the relationship between smoking and lung cancer should be regarded as established.

Smoking-related illnesses

Since the 1950s smoking has been linked to an ever increasing list of illnesses, with the US National Cancer Institute’s website listing cancers of the lung, oesophagus, larynx, mouth, throat, kidney, bladder, liver, pancreas, stomach, cervix, colon, rectum, acute myeloid leukaemia, heart disease, stroke, aortic aneurysm, chronic obstructive pulmonary disease (COPD) (chronic bronchitis and emphysema), diabetes, osteoporosis, rheumatoid arthritis, age-related macular degeneration, cataracts, pneumonia, tuberculosis, and other airway infections. In addition, “smoking causes inflammation and impairs immune function”.

In addition [ASH](#) states

- Smoking is the primary cause of preventable illness and death. Every year smoking causes around 96,000 deaths in the UK.
- Smokers under the age of 40 have a five times greater risk of a heart attack than non-smokers.
- Smoking causes around 80% of deaths from lung cancer, around 80% of deaths from bronchitis and emphysema, and about 14% of deaths from heart disease.
- More than one quarter of all cancer deaths can be attributed to smoking. These include cancer of the lung, mouth, lip, throat, bladder, kidney, pancreas, stomach, liver and cervix.
- About a half of all life-long smokers will die prematurely.
- On average, cigarette smokers die 10 years younger than non-smokers.

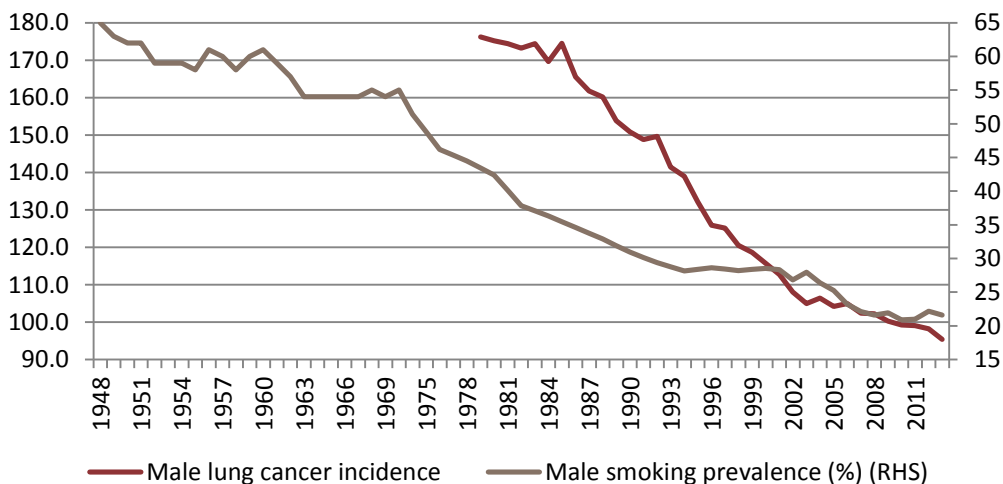
One important thing to note, however, is that there is no disease which is uniquely associated with smoking. While smoking can increase the risk of any particular disease non-smokers can and do succumb to exactly the same diseases.

Smoking and lung cancer

The disease probably most commonly associated with smoking is lung cancer and, as per ASH's statement, it has been suggested that 80% of all lung cancer cases are attributed to smoking. In 2014 in England & Wales, there were 529,655 deaths registered of which 147,757 were cancer-related. Of the cancer-related deaths, 30,520, or one in five, were lung cancer.

Over time the incidence of lung cancer has been in decline in men, as shown in Chart 1 below, which also shows the decline over time in the prevalence of male smoking.

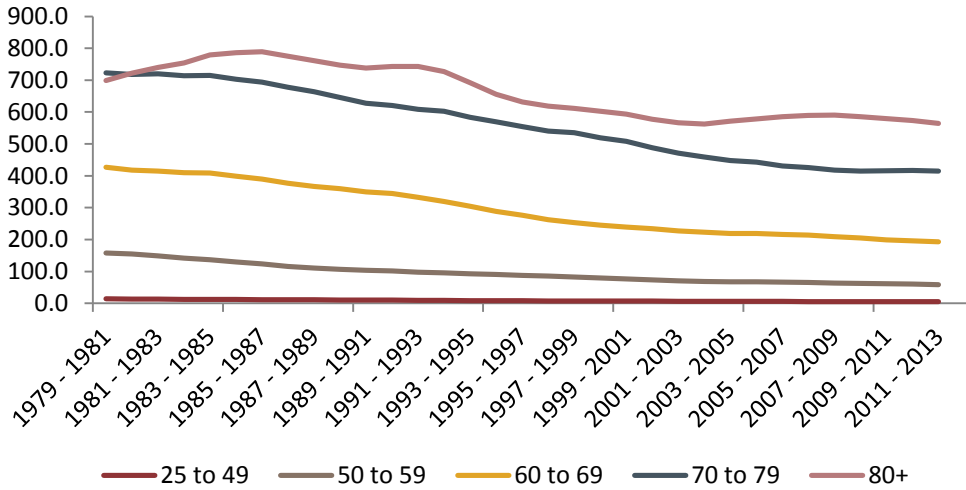
Chart 1: Rates of male lung cancer incidence and smoking prevalence, UK



Source: cruk.org/cancerstats

The lag between the decline in male smoking prevalence and the incidence of lung cancer is normally ascribed to a number of important factors, the most relevant of which is perhaps the age at diagnosis.

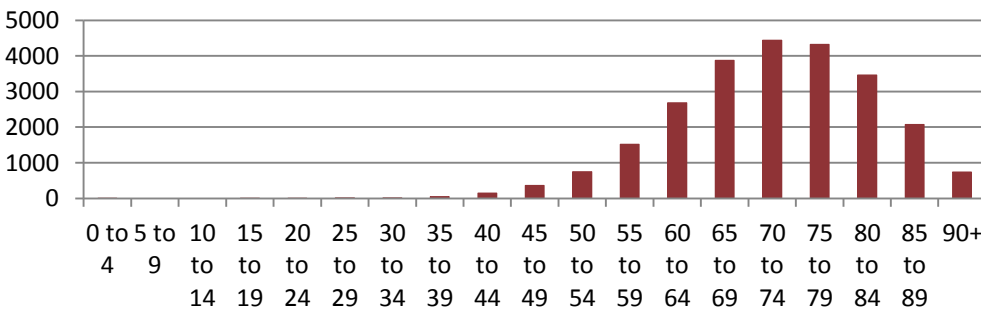
Chart 2: Lung Cancer (C33-C34), European Age-Standardised Incidence Rates, by Age, Males, Great Britain, 1979-2013



Source: cruk.org/cancerstats

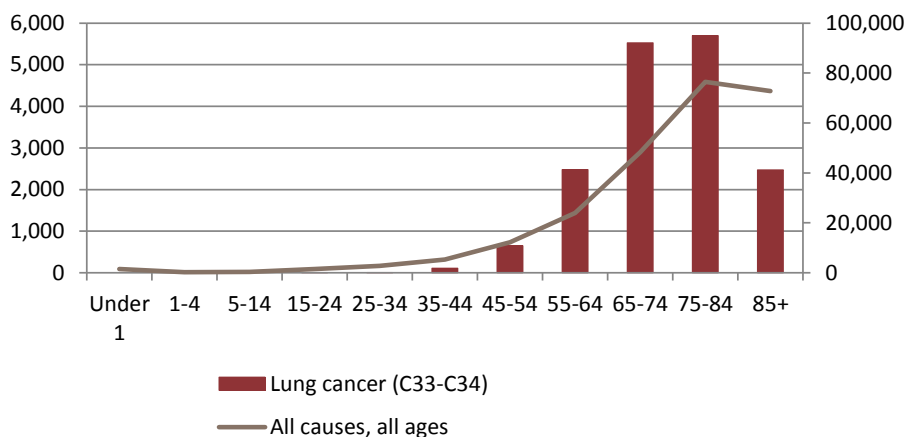
As can be seen clearly, lung cancer is typically a disease of old age. Data from 2011-2013 show that of the 24,483 cases of lung cancer diagnosed on average each year in men in the UK, only 2% of cases were in men under 50 and 12% in men under 60. 61% of cases were diagnosed in men over 70 and more than one in four cases were in men over 80. The average age at diagnosis on a weighted basis was 72 and a half.

Chart 3: Lung Cancer (C33-C34), Average number of new cases per year, males, UK, 2011-2013



Source: cruk.org/cancerstats

Survival ratios for lung cancer are typically low albeit that they have risen over time. One year male survival rates are ~30%, but five year survival is less than 10% and 10 year survival less than 5%. This is reflected in the following chart which shows age at death for men in England & Wales in 2014.

Chart 4: Mortality from lung cancer (C33-C34) and all deaths, males, England and Wales, 2014

Source: cruk.org/cancerstats

The average age of death from lung cancer from these statistics was 73.8 years which compares with an average age of all deaths of 75.4 years, a difference of 19 months. Lung cancer accounted for 7% of all male deaths, and 7% of all male deaths over 65. Looking at the equivalent data for Scotland, the average age of death from lung cancer was 73 for men, compared with an average age of death of 73 and a half. Lung cancer accounted for 8% of all deaths.

It is interesting, in our view, that the average age of death from lung cancer should be quite so close to the average age of all male deaths, both in England & Wales and Scotland. It is certainly not clear from the data that, as per ASH's much repeated statement, "On average, cigarette smokers die 10 years younger than non-smokers". We will return to this in due course.

Relative risks, absolute risks

In Doll and Hill's original research they concluded that the **relative** risk of lung cancer for smokers over 45, and smoking 25 or more cigarettes a day, was possibly as much as 50 times higher than it was for non-smokers. The Center for Disease Control in the US puts the relative risk at 25x for US males. This is, of course a material increase relative to the chances of contracting lung cancer as a non-smoker but then the chances of contracting lung cancer as a non-smoker are remote. Even a very large multiple of a very small number remains a very small number.

By way of demonstration of this point, we can look at the [Statistics on Smoking, England](#) for 2016 as published by the NHS. These data shows that of the 459,087 deaths recorded in England in 2014, 77,800 were ascribed as "attributable to smoking". It is worth noting that this is an estimate and not an actual figure, and is based on estimates for each of the possible illnesses identified as being related to smoking. Of all the deaths recorded, 28,826 were lung cancer deaths and 23,100 were ascribed to smoking. Lung cancer therefore accounted for 30% of all deaths ascribed to smoking, but just 5% of all deaths. Given the earlier discussion of the age at which lung cancer is typically diagnosed (over 70) and the age at which mortality occurs (just short of 74), we need to look back to smoking prevalence some 50 years prior to judge the risks of subsequently developing and dying of lung cancer. According to the Cancer Research data presented earlier, the prevalence of male smoking in the UK in the early 1960s was typically around 54%. *Prima facie* this would suggest that lung cancer has occurred in around one in ten smokers.

A similar outcome was observed by P.D. Finch in his analysis of [Australian smokers](#), where he also argued that “Each year ever-smokers of both sexes and all ages are more likely to die of causes other than smoking than they are to die because of their smoking, and until they reach 40 years of age considerably more likely to do so”. In Table 1 below we show Finch’s estimates of the annual relative risks by age and sex that an ever smoker has of dying from a tobacco-related condition and from causes other than smoking rather than because of their smoking.

Table 1: Annual relative risks by age and sex, Australia, 1992, that an ever smoker has of dying from a tobacco-related condition and causes other than smoking

Age group (yrs)	Males		Females	
	Tobacco-related	Other than smoking	Tobacco-related	Other than smoking
20-24	2.3	42.2	2.3	16.4
25-29	2.3	35.0	2.1	13.4
30-34	2.3	14.7	2.2	8.8
35-39	2.3	7.3	2.2	6.6
40-44	2.4	3.7	2.4	4.2
45-49	2.5	2.5	2.4	3.5
50-54	2.7	1.8	2.9	2.3
55-59	2.6	1.6	2.7	1.9
60-64	2.6	1.4	2.8	1.5
65-69	1.9	2.1	2.0	2.1
70-74	1.8	2.3	1.9	2.2
75-79	1.7	2.6	1.7	2.4
80 plus	1.5	3.0	1.4	3.5

Source: P.D.Finch

As can be seen, for men the risk of dying from something other than smoking is considerably higher when young, similar by the late 40s, lower until 65 and then higher again in old age. To put these relative risks into some context we also show annual death rates shown as percentages rather than the odds presented in the original work.

Table 2: Annual death rates: In tobacco-related conditions both for causes other than smoking, among smokers and non-smokers alike, and those among ever-smokers because of their smoking, together with those for all conditions, other than smoking, among smokers and non-smokers alike, by age and sex, Australia, 1992

Age group (years)	Males			Females		
	Tobacco-related conditions Causes other than smoking among smokers and non-smokers	Caused by smoking among ever smokers	All conditions Causes other than smoking among smokers and non-smokers	Tobacco-related conditions Causes other than smoking among smokers and non-smokers	Caused by smoking among ever smokers	All conditions Causes other than smoking among smokers and non-smokers
20-24	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
25-29	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
30-34	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
35-39	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
40-44	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%
45-49	0.1%	0.1%	0.2%	0.0%	0.0%	0.2%
50-54	0.1%	0.2%	0.4%	0.1%	0.1%	0.3%
55-59	0.2%	0.4%	0.6%	0.1%	0.2%	0.4%
60-64	0.4%	0.7%	1.0%	0.2%	0.4%	0.6%
65-69	1.0%	0.9%	1.9%	0.5%	0.5%	1.1%
70-74	1.7%	1.3%	3.0%	1.0%	0.8%	1.9%
75-79	3.1%	2.0%	5.3%	2.0%	1.4%	3.4%
80 plus	6.7%	3.6%	11.1%	6.7%	2.8%	10.0%

Source: P.D.Finch

Putting the relative risks against the absolute risks it can be seen that even for men of 50-54 when the relative risks of dying of a tobacco-related illness are at their highest (2.7x) the absolute risk of dying of a tobacco-related illness was just 0.2% or, expressed as odds, one in 487.

The important thing to stress is that smoking is risky, without doubt, but the absolute level of that risk is easily overstated by a focus on relative risks. The warning "Smoking Kills" can be true, but in a minority rather than majority of smokers.

The Japanese Paradox

Given the argument that "smoking causes lung cancer" it would be expected to logically follow that the incidence of lung cancer should mirror smoking prevalence. This is not, however, the case and has led to much discussion of "The Japanese Paradox".

In Table 3 below we show for a selection of countries male smoking prevalence in 1960, 1970 and 1980 and 2008 data for the incidence of lung cancer among the total population, ie allowing a considerable period of time for the "incubation" of smoking-related harm. The contrast in lung cancer incidence in Japan despite much higher prevalence is marked.

Table 3: Male smoking prevalence (%), lung cancer incidence per 100,000

	Male smoking prevalence (%)			Lung cancer incidence
	1960	1970	1980	
USA	61	55	38	42.1
UK	52	44	42	31.3
Japan	81	78	70	24.6

Source: WHO

There have been a number of academic attempts to justify this marked difference, with one [study](#) suggesting lower alcohol consumption by Japanese males; lower fat intake by Japanese males; higher efficiency of filters on Japanese cigarettes; lower levels of carcinogenic ingredients in Japanese cigarettes; and lung-cancer-resistant hereditary factors among Japanese males.

Each of these possible explanations may have merit, but it also suggests that there is a question of factors other than smoking which may have an influence on general health as well as incidence of cancers of any type. As the 2010 [Marmot Review](#) commented "A wide body of epidemiological and sociological evidence suggests that health inequalities are likely to persist between socioeconomic groups, even if lifestyle factors (such as smoking) are equalised". Put more brusquely you are likely to live longer if you are well educated, live in a "nicer" area, have a good job, eat well and take exercise, with these latter factors almost inevitably linked to the previous ones. It is also the case, according to [Cancer Research UK](#), that on a diagnosis of cancer those on higher incomes, with better jobs, etc, have a higher survival rate. Smoking is a major influence on health, but as each of these two reviews points out, it is not the only factor by any means.

Premature death

The threat of smoking, as employed by the anti-smoking industry, is that of “premature death”. As discussed above, there is evidence that lung cancer sufferers do die modestly sooner than the general population of the UK, but “premature” in this case is measured in months rather than years. We have also pointed out that “smoking-related illnesses” tend to be illnesses of old age.

The question does, therefore, arise of what exactly constitutes a “premature death”. And surprisingly, there is no strict definition. “Premature” requires some sense of “appropriate” and that will differ between us all. It also takes no account of “quality” of life, only of “quantum”. My maternal grandmother smoked her first cigarette at the age of six (according to family legend) and was chased all around Tooting Broadway by “the policeman” for doing so. She died a week before her 89th birthday smoking to the end albeit that others had to light the cigarettes for her by that point. She may have lived longer had she not smoked, and so her death would be classed as both “smoking-related” and “premature” despite the fact that her life expectancy at birth would have been considerably less than the age she achieved. My father died of stomach cancer at the age of 70. His death felt premature at the time, and still does. He drank rarely after his 21st birthday and certainly never to excess to my knowledge. He never smoked. He did, however, live longer than the life [expectancy](#) at birth of man born in 1935.

Do we all want to live longer? Perhaps. Do we all want to live longer but have those sunset years beset by the ailments of old age resulting in years of lost independence? Perhaps not. There is, as we will discuss further, an apparently avid pursuit of longevity in “Public Health” and longevity without consideration of any (subjective) quality measure. The concept of a “premature” death should be seen in this light.

Summary

There can be no debate that smokers face elevated health risks compared with non-smokers in a majority of cases. The relative risks of lung cancer are typically put at over 20x and sometimes as high as 50x those of a non-smoker. The absolute risk of a non-smoker contracting lung cancer is, however, extraordinarily low and so even a very large multiple of a negligible risk remains quite small. In general the chances of contracting lung cancer as a smoker might be as low as one in ten, or alternatively nine out of ten smokers will not contract lung cancer. While mortality rates suggest a higher proportion of smokers will die in late middle age than non-smoking peers, the chances of dying in late middle age are relatively modest. In general, smoking related illnesses are illnesses of old age.

Addiction

"For many smokers, a genuine desire to quit and, if necessary, persistent and repeated attempts to quit may be all that is necessary."

Everett Koop, Surgeon General, May 1998

Nicotine is named after Jean Nicot, the French ambassador to Portugal from 1559 to 1561. He is credited with bringing tobacco plants and seeds back to France, and for introducing snuff to the French royal court. It was extracted from tobacco in the early 1800s, and the chemical formula of the substance (C₁₀H₁₄N₂) was determined by the 1840s. It is an alkaloid that is found in the nightshade family of plants, mainly in tobacco. It is also present in low quantities in tomatoes, potatoes, cauliflower, aubergines and green peppers.

Nicotine can be poisonous in its pure form. Reports dating back to the sixteenth century suggest nicotine poisoning from the "therapeutic" use of tobacco-infused enemas. It is not, however, lethal in the doses typically found in cigarettes.

In the first Surgeon General's Report on Smoking and Health in [1964](#) deemed the tobacco habit to be "an **habituatio**n rather than an **addictio**n, in conformity with accepted World Health Organisation definitions, since once established there is little tendency to increase the dose; psychic but not physical dependence is developed; and the detrimental effects are primarily on the individual rather than society." (p354, emphasis in the original).

It was not until [1988](#), when Everett Koop was Surgeon General, that nicotine was deemed "addictive" and, moreover, that "the processes that determine tobacco addiction are similar to those that determine addiction to drugs such as heroin and cocaine". This has subsequently often been repeated as "nicotine is as addictive as heroin" although that is not what was actually stated.

The World Health Organisation's definition of "[addiction](#)" is as follows:

Repeated use of a psychoactive substance or substances, to the extent that the user (referred to as an addict) is periodically or chronically intoxicated, shows a compulsion to take the preferred substance (or substances), has great difficulty in voluntarily ceasing or modifying substance use, and exhibits determination to obtain psychoactive substances by almost any means. Typically, tolerance is prominent and a withdrawal syndrome frequently occurs when substance use is interrupted. The life of the addict may be dominated by substance use to the virtual exclusion of all other activities and responsibilities. The term addiction also conveys the sense that such substance use has a detrimental effect on society, as well as on the individual; when applied to the use of alcohol, it is equivalent to alcoholism. Addiction is a term of long-standing and variable usage. It is regarded by many as a discrete disease entity, a debilitating disorder rooted in the pharmacological effects of the drug, which is remorselessly progressive. From the 1920s to the 1960s attempts were made to differentiate between addiction; and "habituatio", a less severe form of psychological adaptation. In the 1960s the World Health Organization recommended that both terms be abandoned in favour of dependence, which can exist in various degrees of severity. Addiction is not a diagnostic term in ICD-10, but continues to be very widely employed by professionals and the general public alike.

The description of addiction from WHO is interesting in a number of respects: addiction is not a diagnostic term but one of common parlance; addiction conveys the sense of a detrimental effect on society; addicts may be dominated to a point of virtual exclusion of all other activities; there is great difficulty in modifying use; the user is “intoxicated”; tolerance is “prominent” meaning that a higher dosage is required to achieve the same level of response.

Returning to the 1964 Surgeon General’s report (p350) there is a useful characterisation of what was meant at the time as the similarities and important differences between addiction and habituation.

Table 4: Drug addiction and drug habituation

Drug Addiction	Drug Habituation
Drug addiction is a state of periodic or chronic intoxication produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include:	Drug habituation (habit) is a condition resulting from the repeated consumption of a drug. Its characteristics include:
<ul style="list-style-type: none"> ■ An overpowering desire or need (compulsion) to continue taking the drug and to obtain it by any means; ■ A tendency to increase the dose; ■ A psychic (psychological) and generally a physical dependence on the effects of the drug; ■ Detrimental effect on the individual and on society. 	<ul style="list-style-type: none"> ■ A desire (but not a compulsion) to continue taking the drug for the sense of improved well-being which it engenders; ■ Little or no tendency to increase the dose; ■ Some degree of psychic dependence on the effect of the drug, but absence of physical dependence and hence of an abstinence syndrome; ■ Detrimental effects, if any, primarily on the individual.

Source: Surgeon General, 1964

Even a non-smoker can readily see that tobacco is unlikely to meet the hurdle for “addiction” as described above. It is readily accepted that quitting smoking can be difficult, but there are as many ex-smokers in the UK and the US as current smokers, suggesting that many have met the challenge. It is not clear that smokers display “tolerance” as average daily consumption has been declining for many decades. “Social smokers” demonstrate that use can be modified according to circumstances, whether that is abstinence in the early part of a week or increased consumption in a social setting. The question of the “societal” cost of smoking is dealt with in more detail below.

The Surgeon General commented in 1964 (p352) “In contrast to drugs of addiction, withdrawal from tobacco never constitutes a threat to life”. As the opening quotation from Everett Koop suggests, despite his comparison of nicotine to cocaine, his own view was closer to that of the 1964 report. It appears that “the message” that smokers should quit was more important than the science, once again.

Of course the classification of smokers as “addicts” is important in other ways. By classifying smokers as addicts, it removes from them the liability of personal choice. It is no longer the smoker’s fault that they are a smoker it is the fault of the tobacco companies (“Big Tobacco”). It also means that regulation and taxation of their habit can be undertaken “for their own good” because they are clearly in the grip of a force greater than their own free will and cannot be trusted to make their own decisions with regard to their health.

The costs of smoking

“The government believe it is right that tobacco manufacturers and importers make a greater contribution to the societal costs of smoking”

HM Treasury Tobacco Levy consultation document, December 2014

One of the major arguments used against the tobacco industry and smokers is the “true cost” of smoking to society. [According to ASH](#) this cost in England is “approximately £13.9bn a year” and comprises:

- The cost to the NHS of treating smoking related illnesses (approximately £2bn).
- Loss in productivity due to premature deaths (£4bn).
- Cost to business of smoking breaks (£5.8bn).
- Smoking-related sick days (£979m).
- Social care costs of older smokers (£1.1bn).
- Costs of fires caused by smokers’ materials (£259m).

In 2013-2014 the Treasury received £9.5bn in revenue from tobacco duties and a further £2.8bn in VAT, a total income of £12.3bn. Given that these figures are for the whole of the UK and the £13.9bn was a cost to England alone, the case looks settled.

Looking at the “costs to society” more closely, however, shows that the vast majority of the costs identified are neither real nor “societal” costs at all, but a variety of estimates and extrapolations of imputed “opportunity costs” and, more importantly, private costs.

The cost of lost productivity is moot on a number of bases. Firstly it seems to assume that we are all here to serve society through our productivity and that, in some Orwellian way, it is our duty to do everything to ensure that we maximise our productive years for the benefit of society. It is also the case that, as we have discussed above, the basis of assumption that “smokers die young” is questionable. In fact smoking related illnesses are generally those of old age and hence the “productivity” of a smoker will largely have been delivered to society if that is the belief set that is held.

The cost to business of smoking breaks is quite clearly a made up number, and most definitely not a social cost. Should colleagues of yours or mine be spending excessive time on smoking breaks that is a problem for our employers and for them, and not society, to address. It also assumes that non-smokers do not waste time at work, which is palpably untrue. If the cost of smoking breaks is £5.8bn, I shudder to think of the “social cost” of the sidebar of shame on a well-known, and improbably well frequented, website of a national newspaper. Those without sin are welcome to cast the first rocks.

The cost of smoking-related sick days is another estimate and, again, absenteeism for any reason is a cost to employers not society. It might be fair to impute some element of costs for public sector workers, but that opens a much bigger box of questions on the efficiency or otherwise of the public over the private sector.

The social care cost of older smokers is somewhat ironic given that we are meant to be allowing for the lost productivity of smokers dying younger. It also seems to assume that if these people had not smoked they would not firstly need to be looked after in old age and secondly not need to be looked after for longer than they would as smokers who are, once again, apparently going to die younger.

The rather specific cost of fires caused by smokers' materials (£259m) is not referenced and so its derivation is unclear. As with the other costs, how this is a "societal" rather than private cost is unclear. Provision of the fire service comes from government funds and there is no "call out" charge. Should a house be damaged by fire presumably the cost of repair would be covered by insurance (from premiums paid by the individual) or not, and if there is no insurance the costs will be borne by the householder. Presumably there will be a subset of costs for fires in social housing, but at that point the numbers are presumably rather small.

Given, therefore, that the only identifiable financial costs are those of the NHS, then the £12bn in tax from smokers very easily covers the direct costs of any smoking-related illnesses.

It has been argued in the past, in litigation in the US and in the Czech Republic, that the analysis should be extended to look at the total cost of smokers by also allowing for reduced pension payments. Such an approach can easily be regarded as deeply cynical, and indeed it has been treated exactly that way over the years. But the point remains any cost:benefit analysis must fully account for all genuine costs and all genuine benefits. Either smokers die younger than non-smokers (which statistically they do) in which case there is a genuine reduction in expected future payments, or they do not in which case the suggestion that "smokers die young" is invalidated. It cannot be both.

The crusaders

Have you not reason then to bee ashamed, and to forbear this filthie noveltie, so basely grounded, so foolishly received and so grossely mistaken in the right use thereof? In your abuse thereof sinning against God, harming your selves both in persons and goods, and raking also thereby the markes and notes of vanitie upon you: by the custome thereof making your selves to be wondered at by all forraine civil Nations, and by all strangers that come among you, to be scorned and contemned. A custome lothsome to the eye, hatefull to the Nose, harmefull to the braine, dangerous to the Lungs, and in the blacke stinking fume thereof, nearest resembling the horrible Stigian smoke of the pit that is bottomelesse.

James I, A counterblaste to Tobacco, 1604

Tobacco control campaigners have seen themselves as crusaders, their triple goal to end the death and disease caused by tobacco, to end nicotine addiction and to destroy the tobacco industry.

Deborah Arnott, 2012

James clearly had a way with words. Interestingly his approach also shows that very little has changed in over 400 years with respect to the arguments against smoking and smokers: you should be ashamed to be a smoker; you are stupid to be a smoker; you should be scorned and held in contempt by others; you are harming yourself; and you smell. The only thing missing from today's repertoire is the alleged risk to others. Of course James I's position was a personal attitude rather than a scientifically arrived at judgement. In this he has gained much support over the years.

Although his "Counterblaste" was delivered in 1604 James was by no means the first to take against tobacco. The first two recorded European smokers were Rodrigo de Jerez and Luis de Torres who sailed with Columbus in 1492. On returning to Spain de Jerez was jailed by the Inquisition for seven years. In 1588 Lima was the location for the first recorded restriction on tobacco usage, when Catholic priests were banned from taking snuff or from smoking before administering mass.

Over time smokers have been taxed (frequently, heavily, everywhere); maimed (Russia); permitted to smoke only once a day (Connecticut); and banned entirely (New Amsterdam in history, Bhutan today). With the exception of Bhutan, no generally recognised government currently prohibits the sale of tobacco products, with government's generally preferring to warn against the use of tobacco (to varying degrees) but to enjoy also the benefits of taxing the consumption of tobacco.

The aims of tobacco control campaigners, who see themselves as "crusaders" are threefold:

- To end the death and disease caused by tobacco.
- To end nicotine addiction.
- To destroy the tobacco industry.

We should highlight immediately that these are not our interpretations of how tobacco control campaigners see themselves and their aims [they are the words of the current head of ASH in the UK, Deborah Arnott](#) writing in 2012.

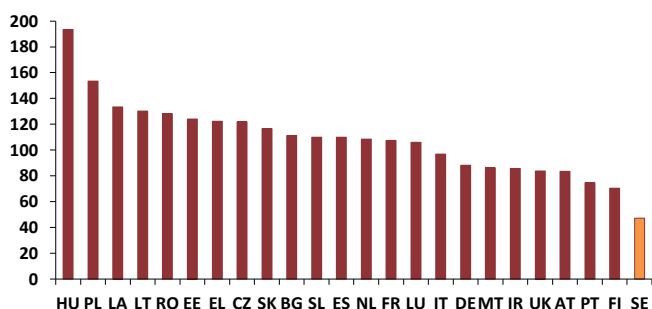
Of these three objectives the last two are immediately questionable. As we have discussed, nicotine *per se* is not harmful and for many brings benefits. Addiction is moot and whether it should matter more broadly that someone seeks to use nicotine is questionable. Remember that ASH promotes the use of nicotine replacement therapy (NRT) and so cannot be “anti-nicotine” but is, quite clearly, anti-smoking and anti-smoker.

Seeking to “destroy” an industry which produces a product which is legal, very heavily regulated and very heavily taxed has to be brought into question by shareholders in any industry where any individual or group may choose to consider the product “controversial”. Moreover it seems scandalous that this should be the stated aim of an organisation which is [funded in large part by taxpayers](#).

Returning to the first there is the issue of conflating “tobacco” with “cigarettes”, a common “oversight” made by tobacco controllers but rarely corrected. It has long been established that there is a continuum of risk in tobacco, with the highest risks being associated with combustion, ie with cigarettes.

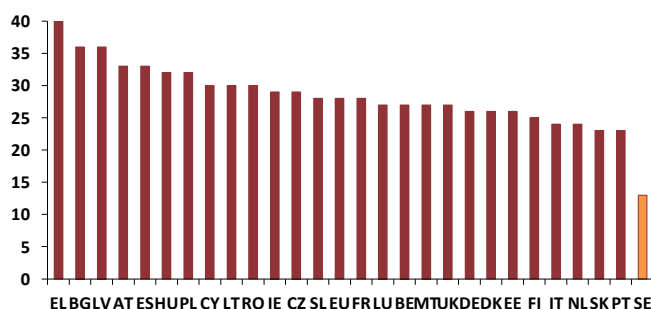
There are other ways of using tobacco without combustion and have been for many centuries. Snuff was the predominant form of usage when tobacco was first introduced into mainland Europe, and snus is the dominant form of tobacco usage in Sweden and Norway. Sweden has the [lowest rate of cigarette consumption and the lowest incidence of lung cancer in the EU](#). There is no evidence of any greater risk of mouth cancers or dental problems. Indeed [one commentator](#) has pointed out that, statistically, the risk of dying from smokeless tobacco use is about the same as the risk of dying in a car accident.

Chart 5: Lung cancer mortality, deaths per 100,000, males



Source: IARC

Chart 6: Smoking prevalence (%)



Source: Eurobarometer

Despite this snus remains banned in the EU, except for in Sweden and under the EU Tobacco Products Directive snus in Sweden now needs to carry a health warning that (translated) says “This tobacco product damages your health and is addictive”, ie the same warning as on cigarettes. The [original ban](#) on snus was orchestrated by ASH in the UK and WHO, who in June 1987 has called for “a pre-emptive ban” on snus and all forms of smokeless tobacco to prevent a new public health epidemic. Concerns were expressed regarding alleged carcinogenic impacts, dual use and the possible “gateway impact on children”. Despite the accumulating and very clear evidence of “harm reduction” over the years, the ban on snus in Europe remains firmly in place while the introduction of new warnings in Sweden demonstrates that there is no interest from tobacco control in offering a safer way of using tobacco apart from in the form of NRT supplied by the pharmaceutical industry. It appears that the desire to “destroy the

tobacco industry” is held to be more important that to “end the death and disease from [cigarettes]”.

As “crusaders” for a cause, it appears that those seeking to control the use of tobacco by others are not averse to being “economical with the actualite”. The American Lung Association, for example, carries a list of “a few of the chemicals in tobacco smoke and other places they are found” including “Tar – material for paving roads”. The tar used for paving roads is short for “Tarmacadam”. “Tar” as it refers to tobacco is an acronym of “Tobacco Aerosol Residue” and is the weight of particles collected on a filter pad after smoking a defined number of cigarettes under precise puffing and atmospheric conditions and to a certain length, and with the amount of water and nicotine collected on the filter pad away from the weight. It is not used to surface roads, although it appears that this distinction has also been lost on the Center for Disease Control.

Figure 5: Just “no”



Source: [CDC twitter feed](#), 27 July 2016

Perhaps the most alarming recent example of how much the Tobacco Control movement is seen as a crusade we can consider the 1 June 2016 comments of [Ms Elizabeth Hoff](#), a WHO representative. Speaking at a World No Tobacco Day event which “featured presentation of poems, essays, and cartoon drawing by youths and school children to reflect the harmful effect of tobacco consumption” she urged “health authorities at all levels to collaborate with WHO and implement the ‘plain packaging approach’”. She “stressed the urgency for controlling tobacco and shisha consumption among the population – especially among youths, women and teenage school children”. The event was held in Syria.

It’s not about you, it’s about me

The right of smokers to smoke ends where their behaviour affects the health and well-being of others.

C. Everett Koop, Surgeon General, 1982-1989

The discussion above has looked at the risk of smoking to smokers but arguably the greatest success that the anti-tobacco industry has secured has been in making the risk of smoking at least as important to non-smokers as it is to smokers. The point at which this happened is perhaps easiest to link to the third “World Conference on Tobacco and Health”, held in New York in 1975 where among the [conclusions of the conference](#)
www.cenkos.com

was one which stated “Passive smokers should be investigated in a large scale study to determine if excess morbidity and/or mortality occur”.

The first paper to suggest an increased risk to non-smokers from smokers was published in 1981, Hirayama’s [“Non-smoking wives of heavy smokers have a higher risk of lung cancer: a study from Japan”](#). The research suggested that wives of heavy smokers had a higher risk of developing lung cancer, and that the risk was dose-responsive. The relative risk of lung cancer was 1.61 for wives whose husbands were ex-smokers or smoked less than 20 cigarettes a day and 2.1 where husbands smoked more than 20 a day. Although there was statistical significance to the result, it is also the case that the spouses were self-certified as non-smokers. Given the societal views of female smoking in Japan, this was not necessarily the case.

Further papers followed over the years and by 1986 the Surgeon General’s specific [report on the risks of passive smoking](#) stated that

1. Involuntary smoking is a cause of disease, including lung cancer, in healthy non-smokers.
2. The children of parents who smoke compared with the children of non-smoking parents have an increased frequency of respiratory infections, increased respiratory symptoms, and slightly smaller rates in increase in lung function as the lung matures.
3. The simple separation of smokers and nonsmokers within the same air space may reduce, but does not eliminate, the exposure of nonsmokers to environmental tobacco smoke.

The risks of second hand smoke increased greatly over the following 20 years as by the [2006 report](#) the Surgeon General included as a major conclusion “There is no risk-free level of exposure to secondhand smoke”.

In the intervening period WHO had conducted a [study](#) of Environmental Tobacco Smoke and lung cancer in Europe. It was a case control study with a large sample size (650 patients with lung cancer and 1,542 controls) conducted over 12 centres in seven European countries over a period of seven years. The study was one of the largest ever undertaken and, unlike many before and since, well designed. Unfortunately for the anti-smoking campaign it concluded that

- ETS exposure during childhood was not associated with an increased risk of lung cancer (odds ratio for ever exposure 0.78; 95% confidence interval 0.64-0.96).
- The odds ratio for spousal exposure to ETS was 1.16, with a 95% confidence interval of 0.93-1.44. There was no clear dose-response relationship for cumulative exposure.
- The odds ratio for workplace ETS was 1.17, with a 95% confidence interval of 0.94-1.45, with weak evidence of increasing risk for increasing duration of exposure but no detectable risk after cessation of exposure.

Even a basic knowledge of statistics (or vague memories of undergraduate degrees) will allow the reader to understand that a confidence interval which includes 1.0, as the spousal and workplace exposures did, suggests no statistically significant increase in risk. Moreover the generally accepted measure of relative risk being established starts at 2.0x (and often 3.0x). Despite this ASH [still cites this study](#) as evidence that passive smoking is a risk to non-smokers. And of course we should stress again that

these are relative risks, i.e. an increase over the very, very small (but not zero) risk that a non-smoker faces of ever developing lung cancer in the first place.

As an aside, on Desert Island Discs in 2001 Richard Doll, otherwise the doyen of the anti-smoking movement, raised the ire of his supporters by [stating](#) "The effects of other people smoking in my presence is so small it doesn't worry me". Given he had dedicated much of his research career to the study of risks associated with smoking, that seems a fairly clear message.

The widespread introduction of restrictions on smoking in "public places" has been based on the argument that second-hand smoke was a risk to non-smokers, and in particular to workers in the hospitality industry. ASH has written at length about how it sought to "[lever political action by Government](#)" when the Government was committed to an alternative approach. In its own words the review of the levering by ASH highlights:

- That its key message was "everyone has a right to a smokefree workplace".
- It designed its public polling to show public support for the answer it was seeking.
- It sought to circumvent Government opposition to its proposal.
- Once draft legislation was introduced which would have provided an exemption for wet-led pubs and private members' clubs it sought to undermine the Government's proposals and then provided detailed briefing to the media on disagreements between ministers.
- It lauds the fact that the debate was "won" through use of "evidence" which proved that the argument that making pubs and bars smokefree "would damage the hospitality trade economically" was false.
- Its key lesson for others in Tobacco Control is the need "to create the impression of inevitable success".

It is a remarkable document to behold. It has also been proven woeful in its suggestion that there would be no impact on the hospitality industry. [Pub closures](#) accelerated sharply post 2007's introduction of smoke-free legislation, before the impact of recession started to be felt. [Bingo halls](#) were devastated. The idea that there were hordes of people not using pubs because of smoking who would suddenly start using pubs has been shown to be a straw man.

Of course there is also the issue of what a ban on smoking in "public places" actually means in practice. Pubs, clubs and restaurants are not "public places" they are private enterprises which can (and do) set their own restrictions on entry. They do not employ forced labour, and employees have always had the choice not to work in the hospitality trade. This was, therefore, not about public places but private property.

Once this Rubicon has been crossed, then the next logical step is to seek to control smoking in other private places, for example in cars and then homes. [Stated objectives of ASH](#) include a desire to see smoking banned in all cars whether children are present or not; to require any film or programme which includes smoking to be preceded by an anti-smoking film whether in a cinema, on TV or on pay-to-view internet; that theatrical performances should no longer have an exemption for actors smoking in character; and to have your smoking history recorded on your death certificate. ASH explicitly states "the ban on smoking in cars carrying children provides a platform for

considering a wider ban on smoking in all motor vehicles” (p44). This piecemeal approach to ever tightening regulation is invidious while the idea that to watch Casablanca I would need to sit through a state-sponsored anti-smoking message is positively Orwellian.

One final word on the role of second-hand smoke should go to Stanton Glantz, who [summed up](#) his view at the 1990 Seventh World Conference on Tobacco and Health: *“the main thing the science has done on the issue of ETS, in addition to help people like me pay mortgages, is it has **legitimised the concerns that people have, that they don’t like cigarette smoke**. And that needs to be harnessed and used ... we are all on a roll and the bastards are on the run and I urge you to keep chasing them”*.

The past, the present, the future

“It’s the only issue I know of where there aren’t two sides – two intelligent sides. I have a comic-book mentality – I grew up with comic books – and I see this as good versus evil.”

Joseph Cherner, former bond trader and head of Smoke-free Educational Services,
[1993](#)

“... that’s the question that I have applied to my research relating to tobacco: If this comes out the way I think, will it make a difference [toward achieving the goal]. And if the answer is yes, then we do it, and if the answer is I don’t know, then we don’t bother. Okay? And that’s the criteria.”

Stanton Glantz, Conference transcript, 1992

Introduction

Litigation in the US against the tobacco industry started in the 1950s as the health risks of smoking became higher profile. The industry reacted in various ways to the implications of the growing evidence that smoking was related to various illnesses, and analysis of the multitude of “[secret](#)” documents has highlighted a long campaign questioning the veracity of the analysis undertaken. It is clear that the various companies’ private views were at odds with public views through until the late 1990s. It is said that the industry maintained its stance towards health risks while “[knowing the truth](#)” but denying it in public.

To damn the companies for their behaviour during the period of the 1950s through to the end of the 1990s is easy enough for many and to even debate the issue could be seen as futile. It does, however, require us to consider yesterday’s behaviour by the standards of today’s knowledge and attitudes. It also assumes that the only information available to consumers was that provided by the tobacco companies and that information from them bore more weight than all other information available. We must also look at the behaviour of those (still) calling the tobacco companies to account, at the time and subsequently.

Who knew?

The science of tobacco, tobacco smoke and the exact process by which something or things in tobacco smoke causes, in some cases, illness remains unresolved even today. Tobacco smoke is an incredibly complicated compound. The number of constituents in tobacco smoke was initially estimated to be around 300 by the Royal College of Physicians in 1962, was put at [5,000](#) in 2011 and [7,000](#) according to the American Lung Association now. Obviously scientific methods have developed enormously over the last half century, hence the ability to record more compounds but this highlights that the “newer” compounds discovered must be in very small quantities indeed. As highlighted in [2000 in New Zealand](#) (and based on an estimate of 4,000 chemical constituents) “400 have been measured” and “of the 400, a significant amount of toxicology data exist for less than 100”.

How the combinations of factors in smoke interact, over considerable periods of time, remains unproven in science and has proven incredibly difficult to replicate in the laboratory. Originally the aim of scientists, within and out with the tobacco industry,

was to isolate “the element” which was possibly, or probably, carcinogenic to humans and to remove it. Unfortunately it has been unclear how to achieve this and, as one scientist in the sector once put it to me, removing just one element may not change the outcome. He chose as an example the removal of one ball from a snooker table. When the pack is hit without that one ball there will be movement still, just that the impact will be different. As we cannot, still, isolate the crucial element removing one interaction could simply create different ones. As the seminal 1962 Royal College of Physicians report [“Smoking and health”](#) stated (para 100) *“It should be realised that since we cannot identify the substances in tobacco smoke that may be injurious to health, no firm claims for the safety of modified cigarette tobaccos or filters can be made. It would, of course, be many years before it would be possible to detect any effector upon death rates resulting from the use of cigarettes with filter tips, or of modified tobaccos”*.

The suggestion is normally made that the industry hid its own research but the tobacco companies in the UK worked with the Government and public health groups, setting up a Standing Committee in 1956 with the mission “To assist research into smoking and health questions, to keep in touch with scientists and other working on this subject in the UK and abroad, and to make information available to scientific workers and the public”. In 1968 America’s National Cancer Institute set up “The Less Hazardous Cigarette Working Group” to investigate the possibility that the health risks of smoking could be reduced. Scientists from the tobacco industry were invited to join, with the only influence exerted by the industry being in the change of name to “The Tobacco Working Group”. The aim at the time was very clearly one of harm reduction.

It is fair to say that various tobacco industry executives called into question the veracity of the suggested links between smoking and ill-health. But they were not alone. The statistical approach adopted by Doll and Hill was challenged by R. A. Fisher with some merit, although he believed cigarettes to be harmless which bears little scrutiny with the passing of time. Dr Charles Mayo, the son of the founder of the Mayo Clinic, said “I just don’t believe smoking causes lung cancer”. In [1957](#) the Surgeon General of the time, Dr Leroy Burney, was asked “Do you think people should quit smoking?” to which he replied “No, sir, I do not believe they should quit smoking”. Perhaps this was related to his answer to a question in a different interview in which he was asked “What do you mean exactly by ‘excessive and prolonged’? Do you mean a pack of cigarettes a day, two packs, a period of 20 years, or what do you mean by that?” to which he offered the answer *“We mean at least two packs a day, or more, and over a period of 20 to 30 years. Now that’s a long while”*.

The advice of the RCP in 1962 was that the harmful effect of smoking might be reduced through *“efficient filters, by using modified tobaccos, by leaving longer cigarette stubs or by changing from cigarette to pipe or cigar smoking”*. So the efforts of the industry to seek modified versions of tobacco, to reduce tar and to explore filtration were not necessarily part of a vast conspiracy but rather consistent reactions to the advice of external experts.

The pursuit of a safer cigarette

The “low tar” controversy is another stick used to beat the industry, conflating a number of issues. It is said that tobacco companies wilfully manipulated tar levels to give the impression of safety while knowing that there was no differential risk. It is because of the perception that lower tar equates to lower risk that “descriptors” (eg Light, Mild) have subsequently been banned.

In 1953 a US magazine, Consumer Reports, listed tar yields for the most popular cigarette brands as measured by an independent laboratory. The league table became a biannual feature and in 1955 the FTC issued guidelines to manufacturers about the claims which could be made about tar yields. In 1957 Readers Digest reported that filtration did not necessarily reduce tar yields with unfiltered Camel cigarettes delivering less tar than filtered Winston. In 1958 the FTC held a two day conference aimed at producing a single test for measuring tar, but also requiring a voluntary agreement that forbade the companies from making any health claim related to tar yields.

Although things developed more slowly in the UK, where there was scepticism about the value of tar yields to the health debate, by 1971 the RCP recommended "the tar and nicotine content of all marketed brands of cigarettes should be published and a public statement made on the possible effects of smoking them". In addition the RCP recommended an upper limit on tar and nicotine levels, while those whom continued to smoke should be encouraged to smoke fewer cigarettes; to inhale less; to smoke less of each cigarette; to take the cigarette out of the mouth between puffs; and to **smoke brands with low nicotine and tar content**. The Government not only ultimately adopted the low tar approach, running adverts as late as 1981 recommending smokers move to lower tar product, but through the 1970s entered voluntary agreements aimed at reducing tar levels across the product range. As we know now, smokers compensate for the lower nicotine delivery of "lighter" cigarettes by inhaling more deeply, and therefore there is no differential risk.

Lower tar was not the only approach to modifying risk pursued. Many recognisable brands were initially introduced to "deal with the health issue". Liggett & Myers saw early success with its "Lark" brand because of its cellulose filters while "L&M" was launched with the slogan "THIS IS IT. L&M filters are just what the doctor ordered"; what happened to the "Epic" product which L&M developed using palladium in the filter is unclear; Lorillard's "Kent" brand was launched in the US with a "micronite" filter which unfortunately used asbestos; "Winston" was RJR's first ever filtered cigarette, but to counter concerns that the filter would deaden the taste of the product, the tar and nicotine content was increased; Brown & Williamson introduced "Fact" which had several compounds removed; RJR raised the bar with "Premier", the first heat-not-burn product; B&W countered with "Eclipse" which had "All of the taste ... Less of the toxins".

In general the products claiming to be "safer" were commercial failures (Winston being the notable exception, its failure would come subsequently when filtered cigarettes were eclipsed by "lighter" cigarettes). In part this was because of that change in perspective from the "public health" lobby which had decided that there was simply no safe level of smoking. In the US, the journal Cancer Research would not carry an article on L&M's Epic for fear that it would encourage smoking and when RJR was trying to introduce its improved Premier product, Eclipse, in 2000 the American Cancer Society was at the forefront of demands that the product be removed from the market.

From harm reduction to "quit or die"

The hardening in attitude among the anti-smoking lobby away from harm reduction and towards abstinence had been seen as early as the 1970s. Dr Gio Gori was Deputy Director, Division of Cancer Cause and Prevention and Director, Smoking and Health Programme at the [National Cancer Institute](#). He published a paper in The Journal of the

American Medical Association in [1976](#) discussing the need to protect individuals who continue to smoke despite all warnings. He compared the strength in tar and nicotine yields of cigarettes on the market in the 1970s with their counterparts in the 1960s, and discussed the idea of a “[tolerable level](#)” of risk. He went out of his way to say “We don’t want to call them safe. We don’t think there is such a thing”. Despite the very clear warning he made that in his opinion the only safe cigarette was an unlit one, there were immediate calls that [Gori should be sacked](#). He left the NCI in 1980 and subsequently worked for the tobacco industry, mainly it seems because he could not find work in “public health”. All of his prior work in harm reduction, of which there was much, has been overshadowed by his subsequent work with the tobacco industry although as his 1976 paper makes clear “*Antismoking education campaigns in our society have met with only partial success*”.

It is around this time, in our view, that the lines of what constitutes “the truth” about tobacco become most blurred and as much as the companies continued to withstand admitting the potential risks of smoking, so those risks – to smokers directly and to non-smokers via the stance taken on the risks of second hand smoke – were amplified by the anti-tobacco movement.

We have discussed above the hardening of stance taken at the 1975 World Conference on Smoking and Health and the clear intent to “denormalise” smoking but there was also a more aggressive stance being taken towards those that did not subscribe to the official mantra. As well as the treatment of Gio Gori other examples exist, perhaps most tellingly in the case of [Dr Michael Siegel](#), Professor in the Department of Community Health Sciences, Boston University School of Public Health, who describes [his history](#) thus:

“If you take part in secondhand smoke policy training in the tobacco control movement, chances are that you will be taught that all opposition to smoking bans is orchestrated by the tobacco industry, that anyone who challenges the science connecting secondhand smoke exposure and severe health effects is a paid lackey of Big Tobacco, and that any group which disseminates information challenging these health effects is a tobacco industry front group. Consequently, the chief strategy of tobacco control is to smear the opposition by accusing them of being tobacco industry moles. And in no situation should one say anything positive about an opponent, even if true.”

How do I know this?

Because for many years, I was one of the main trainers of tobacco control advocates in the United States. And this is what I taught, because this was what I was led to believe. I attended many conferences and trainings and this is precisely what I was taught. I accepted it for the truth, and passed it along to others.”

The e-cigarette debate in an historical context

We tend to become like the worst in those we oppose.

Frank Herbert

As discussed above, the issue with cigarettes turns on combustion not on nicotine. If it were possible, therefore, to deliver nicotine without combustion there should be a benefit to an individual's health and therefore to "public" health. This is genesis of the concept of the electronic cigarette, the first version of which was patented in the 1960s.

The debate about the e-cigarette market has been played out in scientific circles, the media and in the investment industry. There are very many, strongly held views on all sides regarding safety, regulation, usage, targeting, product design, the role of the existing tobacco industry and the potential costs and benefits to users and society more generally.

The UK has been seen as one of the most progressive nations with respect to e-cigarettes with both endorsement from [Public Health England](#) and a [licencing programme](#) for Nicotine Containing Products as Medicines. By contrast e-cigarettes are banned in Australia, Argentina, Hong Kong, Mexico and Singapore, for example. How can it be that there are such divergent views?

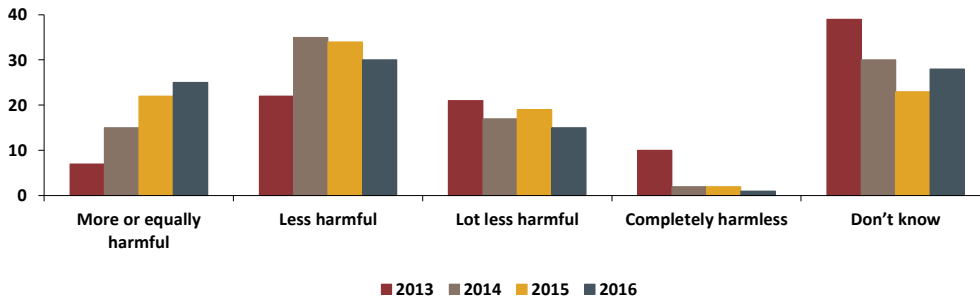
The argument in favour of e-cigarettes is fairly straightforward: e-cigarettes do not contain tobacco and do not involve combustion; there are typically only four components to the aerosol inhaled by consumers namely propylene glycol (glycerine), water, flavourings and usually - but by no means always - nicotine; they do not produce smoke.

There is a weight of [scientific evidence](#) that e-cigarettes do not expose users to the risks of combustible cigarettes. The veracity of the claim that e-cigarettes are "95% safer" than cigarettes is a different matter, but to be able to say that for those that wish to continue using nicotine but do not want the risks of smoking that e-cigarettes are "a good thing" seems justifiable, and sensible.

Countering this there are various strands of arguments used against e-cigarettes; that it is too early to tell if harm is genuinely reduced; that there are potential risks from e-cigarettes either from "fine particles" or from certain chemicals contained in vapour; that they "renormalise" smoking; and that they will act as a "gateway" product initiating youth into nicotine addiction which will inevitably lead to cigarette smoking.

The headlines regarding the [potential risks](#) of e-cigarettes have received [much coverage](#) and have resulted in a situation where survey data suggests that uncertainty regarding the relative safety of e-cigarettes has been increasing rapidly.

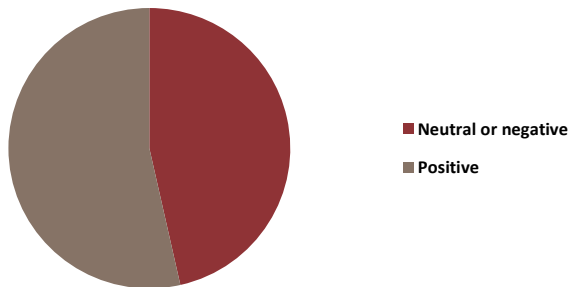
Chart 7: Adult population perception of harm from e-cigarettes relative to smoking (2013-2016)



Source: ASH. Unweighted base: All GB adults who have heard of e-cigarettes. 2013 n=8936; 2014 n=11,307; 2015n = 11340; 2016 n=11489

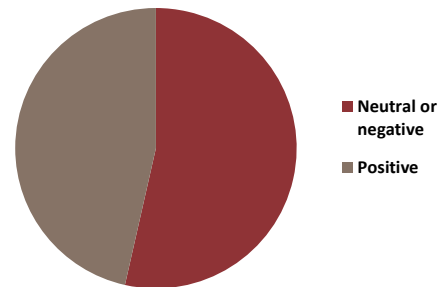
Simplifying the answers into just two views of “Neutral or negative” and “Positive” shows that over the last four years uncertainty has increased to the point where the majority view is now that e-cigarettes are not necessarily safer.

Chart 8: Positive v Neutral or negative, 2013 (%)



Source: ASH

Chart 9: Positive v Neutral or negative, 2016 (%)



Source: ASH

This level of uncertainty is important for a number of reasons. Firstly for smokers considering vaping as an alternative to smoking, if there is uncertainty of any health benefit the decision to cease smoking may not be made which seems entirely counter to the objective of “public health”. Secondly the survey is not of e-cigarette users but of the general population. If the general public is not convinced that vaping is safer than smoking then the same approach of regulating vaping in “public places” can be pushed through by playing on the same, engineered, perception of “second hand” risk.

Perhaps one of the major stumbling blocks in the growth of the vaping trend has been that the original claims made by many manufacturers that “you can vape anywhere” have been undone by increasing levels of regulation which precludes vaping in the same places that smoking is already restricted. Vaping bans are already common on airlines, public transport, pubs and at least one major global financial institution which once employed me. In the latter case the arguments against the use of e-cigarettes on company premises included that the FDA had not ruled on them; the American Cancer Society had not ruled on them; they were “a bit smelly”; and that they may present a visual distraction for those trying to quit smoking. On this latter point, those on a diet were not prevented from entering the canteen despite the visual distraction that food might have presented.

In November of 2016 WHO will hold the 7th “[Conference of the Parties](#)” to the Framework Convention on Tobacco Control. It has released the documents for the five

day conference, including one on "[Electronic Nicotine Delivery Systems and Electronic Non-Nicotine Delivery Systems](#)". The document raises a number of issues pertinent to the debate about e-cigarettes, but also to the debate about tobacco control more generally.

The document is equivocal on the potential health benefits of vaping relative to smoking and quotes the risks a number of claims which have been roundly dismissed elsewhere but does state that **"it is very likely that ENDS/ENNDS are less toxic than cigarette smoke"**. It also states that it is **"reasonable to assume that the increased concentration of toxicants from second hand aerosol (SHA) over background levels poses an increased risk for the health of all bystanders"**. It argues that **"given the scarcity and low quality of scientific evidence, it cannot be determined whether ENDS may help most smokers to quit or prevent them from doing so"**. It is uncertain that ENDS/ENNDS use in youth is a precursor to smoking (ie "the gateway effect") but states that **"ENDS/ENNDS use by minors who have never smoked at least doubles their chance of starting to smoke"**. It also finds that **"A growing concern is the extent to which research on the topic has links to commercial and other vested interests of the ENDS/ENNDS industry, including the tobacco industry, and its allies. In a review of 105 studies analysing the composition of liquids and emissions, 30% had authors that had received funding from ENDS/ENNDS interests - including the tobacco industry"**.

The paper concludes with four objectives:

- prevent the initiation of ENDS/ENNDS by non-smokers and youth with special attention to vulnerable groups.
- minimize as far as possible potential health risks to ENDS/ENNDS users and protect non-users from exposure to their emissions.
- prevention of unproven health claims being made about ENDS/ENNDS.
- protect tobacco control activities from all commercial and other vested interests related to ENDS/ENNDS, including interests of the tobacco industry.

To achieve these objectives 28 recommendations are made including:

- Banning or restricting advertising, promotion and sponsorship of ENDS/ENNDS.
- Taxing ENDS/ENNDS at a level that makes the devices and e-liquids unaffordable to minors in order to deter its use in this age group.
- combustible tobacco products should be taxed at a higher level than ENDS/ENNDS to deter initiation and reduce regression to smoking.
- Banning or restricting the use of flavours that appeal to minors.
- Regulating places, density and channels of sales.
- Taking measures to combat illicit trade in ENDS/ENNDS.
- Regulating electrical and fire safety standards of ENDS/ENNDS devices.
- Prohibiting by law the use of ENDS/ENNDS in indoor spaces or at least where smoking is not permitted.
- Requiring health warnings about potential health risks deriving from their use.
- Prohibiting implicit or explicit claims about the comparative safety or addictiveness of ENDS/ENNDS with respect to any product unless these have been approved by a specialized governmental agency.

- Rejecting partnerships with the industry.
- Banning activities described as “socially responsible” by the industry, including but not limited to activities described as “corporate social responsibility”.

There is a somewhat inevitable collection of ban-tax-regulate in the list of recommendations despite the somewhat limited evidence of success from similar strategies in combustible cigarettes. There is also an interesting juxtaposition of a desire to see higher prices for ENDS/ENNDS and an acknowledgement that higher prices (and other regulation) may well see an increase in illicit trade. The regulation of electrical and fire safety standards is also illuminating given the [recent experience](#) of Samsung with another battery-powered, habit-forming product which is definitely aimed at youth.

There is very little in the objectives or recommendations for action which suggests that WHO will be taking an encouraging stance towards e-cigarettes in our view, in marked contrast to the much more liberal view taken in the UK. There is certainly no suggestion that those countries which currently have bans on e-cigarettes should consider revoking them. It appears that WHO is being somewhat selective in its choice of research to consider, and is willing to put more credence to reports which highlight risks than those which suggest lessened or negligible risks. The claim is made in the document that in “one review of 105 studies analysing the composition of liquids and emissions, 30% had authors that had received funding from ENDS/ENNDS interests - including the tobacco industry” (para 27). The report itself has been [thoroughly debunked](#) by [Clive Bates](#) who points out that “*many researchers in this field have undisclosed conflicts relating to funders, regulators, employers' prior policy positions, and their long-held beliefs*”. In this respect while it is usual to flag conflicts that arise from association, even vague, with the tobacco industry it is not usually regarded as a conflict if funding has been provided by the pharmaceutical industry, even when those companies may be directly in competition in the provision of nicotine via [Nicotine Replacement Therapies](#).

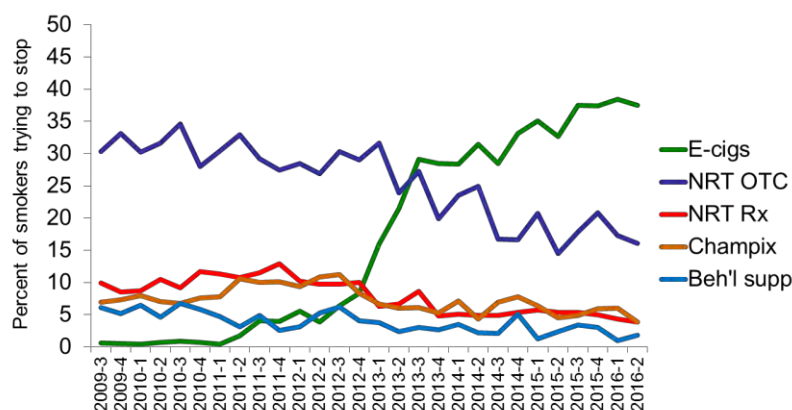
The hostility of certain parts of Public Health looks set to bring about a number of outcomes which are directly opposed to what we would generally assume to be the objectives of Public Health, and certainly counter to the objectives of ASH described above. In particular the introduction of material regulation of product required by the FDA, for example, will involve material barriers to entry for smaller companies. During 2012 there was much focus from investors with regard to the potential of e-cigarettes, and of the anti-tobacco commentary which was demanding increased regulation, was based on the fear of “Big Tobacco” dominating the industry. In actual fact the tobacco companies were somewhat late to the subsector, but as regulation has increased their financial firepower and long history with being regulated actually cement their position at the expense of the innovative smaller companies which originally built the sector.

The fear about “gateway” products based on fruit flavours which “only appeal to youth” ignores the clear testimony of many former smokers who have moved to vaping and then moved quickly away from tobacco-flavoured (and nicotine containing) e-liquids. As data from the UK shows, one third of current vapers use tobacco flavours but half use non-tobacco flavours including fruit (22%), mint (22%), vanilla (3%), chocolate/desserts/sweets (3%), coffee (2%) or alcoholic or energy/soft drink flavours (2%). While WHO decries the lack of scientific evidence in support of reduced-harm claims, there is even less support for the idea of e-cigarettes acting as a gateway to smoking especially given on-going declines in youth smoking rates according to, for

example, [US data](#). Put simply while there appears to be growing use of e-cigarettes among US youth, the rate of decline in smoking has accelerated and that alone seems to call into question any validity to the argument that vaping is a gateway to smoking.

It begs the question as to why should WHO and some elements of Public Health be so against vaping? It appears that as much as e-cigarettes have the potential to be disruptive to the combustible cigarette market, so they have been disruptive to the approach employed for so long by the anti-tobacco movement. The message has therefore morphed from "quitting smoking" to "quitting nicotine" but also beyond that as the WHO's discussion paper makes clear by also now considering not only nicotine-containing electronic products but also those that do not. Mission creep is quite clear. Perhaps this is due to the (anecdotal, it would be said by critics) evidence that quit attempts increasingly use e-cigarettes and not the commonly advised combination of pharmaceutical nicotine products and Government-sponsored professional advice. Of course it is also worth noting that e-cigarettes are a free market solution, not one that has been inspired by or funded by Public Health.

Figure 6: Aids used in most recent quit attempt, UK



Source: www.smokingengland.info/latest-statistics. N=11695 adults who smoke and tried to stop or who stopped in the last year; method is coded as any (not exclusive) use

We started this section with the observation that “We tend to become like the worst in those we oppose”. It appears that this is certainly the case with some of the most vocal opponents of e-cigarettes from within Public Health, and the arguments between opponents and proponents becoming particularly vitriolic.

In the [Lancet](#), in an unattributed editorial, the position of [Public Health England](#) was dismissed as “*the opinions of a small group of individuals with no prespecified expertise in tobacco control*” which seems a harsh judgement on a group which included:

- the head of the Nicotine Research Group at the Institute of Psychiatry, Psychology & Neuroscience, King’s College London,
- two Lecturers and a research assistant in Addictions in the Nicotine Research Group, KCL, and
- the director of Health and Lifestyle Research Unit at Wolfson Institute of Preventive Medicine, Queen Mary University of London.

The Lancet editorial further complained of conflicts of interest of two authors of one of the papers considered in the PHE document. This prompted a response from one of those authors, [Riccardo Polosa](#), in which he covers his “*temporary involvement with a*

small-size e-cigarette company that went out of business” and repeats earlier disclosures of grants from Pfizer and personal fees from Novartis and GlaxSmithKline.

Interestingly the Lancet editorial has been sourced to [one opponent of e-cigarettes](#) who has subsequently written of his views the [EU Referendum campaign](#). While stating that *“It is, of course, important that all sides of an argument are heard. It is also important that the values of those who might be considered an educated elite are challenged”* he goes on to bemoan that *“where those involved had ever received funding ... this was qualified by accusing them of being hopelessly tainted by having done so”*.

It appears that some in Public Health have adopted an approach which dismisses science which is unhelpful to them and will attack opponents as being paid stooges. It begs the question as to whether this is a new approach, or actually one that is now simply out in the open.

Back to the future in harm reduction

“One of the most important public health debates in recent decades: To redefine the place of nicotine in society and in the law, and make room for recreational nicotine products”

[Professor Jean-Francois Etter](#)

There are many strands to the debate about the future of tobacco and we do not think it is as simple as suggesting that the combustible market [disappears](#) or that [everything moves to electronic delivery](#), two theories which have received attention over the past few years. Returning to the fundamental fallacy of demonic possession, there are very, very many cigarette smokers who are entirely happy with the choice that they have made and feel no compulsion to change. Because of this we believe that combustible cigarettes will remain an important, and probably the most important, part of the tobacco industry for very many years to come.

In the realms of harm reduction, however, it is now a number of the leading tobacco companies which are making the running on both the scientific front but also in taking that science into products for consumers. The critics of the industry will, no doubt, argue that this is simply the latest part of the “grand conspiracy” but the fact is that as far as the science of tobacco goes it is the tobacco companies which have the funds and the inclination to carry on the scientific research required. As we have discussed above, the science of tobacco smoke has not become any easier over the years while the financial incentive to research it has waned with the “all smoking is simply bad” message. As such a blanket view that any science that emanates from the industry must be “tainted” is churlish, we believe, and ignores the fact that outside of the tobacco industry little new research is being undertaken.

While it is certainly the case that there was a lull in industry efforts to pursue harm reduction, that claim simply holds no water today in our view. Since the late 1990s the tobacco companies, in our view not completely wisely, have made clear statements that smoking entails risk and can cause disease. Each of the tobacco majors has sought to develop products which aim at harm reduction in its various possible forms be it smokeless, heat-not-burn or electronic.

The motives for the industry to embrace harm reduction are, inevitably, questioned. We would perhaps question instead the motive for the industry not embracing harm reduction. According to the tobacco control lobby this is the same industry that lied in the past. Quite clearly it is not as if no tobacco company today suggests that smoking does not carry risk. It is also the case that the current generation of senior management across the industry were born when the controversy regarding the potential health impacts of smoking rose to prominence in the 1950s or after. By the time any of them joined the industry, health warnings were already prevalent, the Readers Digest had long since published "Cancer in a Carton" and the Surgeon General had published 14 reports on the health consequences of smoking.

Table 5: Year of birth and year of joining tobacco industry

Name	Company and position	Year of birth	Year of joining industry
Martin Barrington	Altria, Chairman & CEO	1953	1993
Nicandro Durante	BAT, CEO	1956	1981
Alison Cooper	Imperial Brands, CEO	1966	1999
Mitsuomi Koizumi	Japan Tobacco, CEO	1957	1981
Andre Calantzopoulos	PMI, CEO	1958	1985
Susan Cameron	RAI, CEO	1958	1981

Source: Company data

Perhaps the determination to see no change in the tobacco industry really stems from the need for Tobacco Controllers for consumers to continue to choose to smoke. To finish with a quote from Nietzsche "*Whoever lives for the sake of combating an enemy has an interest in the enemy's staying alive*".

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Recommendation History

Date	Company	Share price	Recommendation
13.07.16	British American Tobacco	4840p	BUY
28.07.16	British American Tobacco	4747p	BUY

Source: Cenkos Securities

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CalPERS Stakeholder Relations

From: Maham Akbar <MAkbar@truthinitiative.org>
Sent: Thursday, November 10, 2016 9:04 AM
To: CalPERS Stakeholder Relations
Cc: David Dobbins
Subject: Letter from Truth Initiative re: Tobacco Divestment Policy
Attachments: Letter from Truth Initiative.pdf

Hello,

Please find the attached comment being submitted by Truth Initiative for the December 19 discussion at the board meeting on reconsidering the tobacco divestment policy. You will also receive a hard copy via FedEx tomorrow. Please feel free to be in touch with me if you have any questions.

Best,
Maham

By speaking, seeking and spreading the truth about tobacco, Truth Initiative has helped bring teen cigarette use to a record low of 7 percent!

Maham Akbar
Manager, Public Policy

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Tallahassee, FL

Robin Koval, Ex-Officio

CEO and President
Truth Initiative

November 11, 2016

CalPERS
c/o Office of Stakeholder Relations
400 Q Street
Sacramento, CA 95811

To Whom It May Concern:

Truth Initiative welcomes the opportunity to submit stakeholder feedback to CalPERS regarding its review of restrictions on tobacco investment. We strongly urge CalPERS to continue its directive to divest from tobacco-related securities.

Truth Initiative is committed to creating a generation of Americans for whom tobacco use is a thing of the past. We believe each individual has the right to live in a world free from tobacco dependence, tobacco-related death and disease, and the devastating dollar cost to individuals and society. Truth Initiative's proven-effective and nationally recognized public education programs include truth®, the national youth smoking prevention campaign that has been cited as contributing to significant declines in youth smoking; EX®, an innovative smoking cessation program; and research initiatives exploring the causes, consequences and approaches to reducing tobacco use. Truth Initiative also develops programs to address the health effects of tobacco use –with a focus on priority populations disproportionately affected by the toll of tobacco –through alliances, youth activism, training and technical assistance. Located in Washington, D.C., the organization was created as a result of the November 1998 Master Settlement Agreement (MSA) between attorneys general from 46 states, five U.S. territories and the tobacco industry.

While it is estimated that investing in tobacco companies in the past 15 years since CalPERS banned tobacco company investments could have added \$2-3 billion in investment returns, California has lost much more money and lives in that time due to tobacco use. In California, the health care costs directly caused by smoking amount to \$13.29 billion annually and Medicaid costs caused by smoking amount to \$3.58 billion each year. Additionally, California loses \$10.35 billion in productivity each



year due to smoking.¹ This amounts to an estimated \$200 billion spent in the state on tobacco-related health care and \$155 billion in lost productivity that businesses in the state have endured due to smoking in the time since CalPERS banned tobacco company investments. The economics make it clear that tobacco is a bad investment for California.

Again, we strongly urge CalPERS to not reverse its ban on investing in tobacco companies. The best approach for California and its residents, and especially the more than 3,000 employers and 1.8 million members participating in the CalPERS system, is to remain divested from tobacco. If you have questions or need further information, please contact Dave Dobbins, COO at Truth Initiative, at ddobbins@truthinitiative.org, or 202-4455555.

Sincerely,

David Dobbins
Chief Operating Officer

¹ Campaign for Tobacco-Free Kids. The Toll of Tobacco in California. 2016; https://www.tobaccofreekids.org/facts_issues/toll_us/california. Accessed November 8, 2016.

CalPERS Stakeholder Relations

From: Ari Rubenstein <arubenstein@stopcorporateabuse.org>
Sent: Friday, November 11, 2016 1:40 PM
To: CalPERS Stakeholder Relations
Subject: Public comment regarding CalPERS' tobacco investments
Attachments: CalPERSsubmission_CorporateAccountabilityInternational_11.11.16.pdf

Hello,

Please find attached public comment from Corporate Accountability International regarding CalPERS' pending decision on tobacco reinvestment. Thank you for your time and consideration. We look forward to further conversation.

Sincerely,

Ari

--

Ari Rubenstein
Executive Assistant to the Deputy Director, Campaigns & Research
Corporate Accountability International
10 Milk Street, Suite 610
Boston, MA 02108
617.695.2525
www.stopcorporateabuse.org
arubenstein@stopcorporateabuse.org
@AriRubenstein

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November 11, 2016

Office of Stakeholder Relations
California Public Employees' Retirement System
400 Q Street
Sacramento, CA 95811

To the Board of Administration of CalPERS:

I write to you today on behalf of tens of thousands of Corporate Accountability International members and supporters worldwide—including thousands in California—to urge you to remain divested from stocks in tobacco corporations.

Corporate Accountability International is a nonprofit grassroots watchdog organization with a nearly 40-year history of protecting people and the planet from corporate abuse. Our longest-running program is the campaign to Challenge Big Tobacco, launched in 1994. After more than 20 years of researching, monitoring, exposing, and challenging the tobacco industry, we deeply understand that these corporations are driving an epidemic of tobacco-related death and disease globally that kills around 6 million people each year.

Globally, tobacco-related death and disease is on the rise. Following decades of hard-fought victories against industry abuses in the United States and other Global North countries—including through waves of major institutional divestment—the industry is expanding this epidemic in the Global South. This expansion fuels financial performance for tobacco transnationals, making industry stocks an attractive investment based on potential return. A profitable tobacco industry, however, means more deaths, with a disproportionate burden on the Global South, women, and low-income communities.

The tobacco industry achieves this expansion through aggressive, predatory marketing tactics that were common in the U.S. in 1994 but would be unthinkable here today: tactics like youth-oriented pro-smoking campaigns and cigarette giveaways. Moreover, it secures its expansion through well-documented criminal activity: British American Tobacco has engaged in cash bribery of government officials in countries across West Africa, and Philip Morris International has been implicated in illicit trade in Nigeria. Institutional reinvestment in tobacco bolsters this industry's ability to expand—and undermines decades of global progress on tobacco control.



Regardless of the tobacco industry's current financial footing, one need only look to the meetings of the Framework Convention on Tobacco Control (FCTC) currently underway in Delhi, India, to see that the world is united to end tobacco death and disease. At these meetings of the FCTC (also known as the global tobacco treaty), high-level government delegates from nearly every country in the world have advanced international legal mechanisms to challenge the industry's political power and reduce its global death toll. Indeed, just *today*, these officials adopted a liability regime for the tobacco industry—formally enshrining in international law a regime to hold the industry civilly and criminally liable for its abuses. Implementation of these mechanisms over the next decade is sure to save millions of lives—and deal a significant blow to the tobacco industry's profitability.

For all of these reasons, we strongly urge you to maintain your leadership position on this critical issue by upholding your policy of divestment in tobacco. We would welcome the opportunity to discuss our unique perspective and experience regarding tobacco industry abuses with you further. Please let us know if we could set up a phone call with your board members to speak directly, or otherwise offer our support in helping you maintain your divestment policy. Feel free to follow up with me via phone at 617.695.2525 or email at jstewart@stopcorporateabuse.org. And thank you for your historic leadership on this issue, and for your consideration and time.

Sincerely,

A handwritten signature in black ink, appearing to read 'John Stewart', with a long horizontal flourish extending to the right.

John Stewart
Deputy Campaigns Director, Challenge Big Tobacco
Corporate Accountability International



STATE CAPITOL
ROOM 4070
SACRAMENTO, CA 95814
TEL (916) 651-4006
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DISTRICT OFFICE
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California State Senate

SENATOR
DR. RICHARD PAN
SIXTH SENATE DISTRICT



CHAIR
PUBLIC EMPLOYMENT &
RETIREMENT

COMMITTEES
AGRICULTURE

BUDGET & FISCAL
REVIEW

EDUCATION

HEALTH

SUBCOMMITTEE
BUDGET SUBCOMMITTEE 4

November 7, 2016

Rob Feckner, President
Board of Administration
CalPERS
Lincoln Plaza
400 Q Street, Sacramento, CA 95811

Re: CalPERS Tobacco Divestment Policy – Comment Letter

Dear President Feckner:

In response to the call for stakeholder comments requested by CalPERS' October 18, 2016, webinar on the issue of CalPERS' tobacco divestment policy, I urge the Board of Administration to reject any change to the current policy. CalPERS should continue its longstanding commitment to protect the public's health and taxpayers' money. Investing in tobacco is a huge step backward in these efforts.

Re-investing in tobacco would pit CalPERS' portfolio against the financial and physical well-being of its members and the State of California. Big Tobacco inflicts more than \$23 billion of health care and lost productivity costs on Californians on an annual basis – including \$3.5 billion of direct costs to California taxpayers to pay for treating tobacco-related diseases afflicting Medi-Cal patients.

Changing the current policy to permit re-investment in tobacco companies sends a message that California supports an industry that richly profits by selling a product that often results in disease and death when used as directed. Half of smokers can expect to die from their addiction. Smoking is the single leading cause of preventable death in this nation and in this state, robbing 40,000 Californians of their lives annually.

The latest data shows teen e-cigarette users are three times as likely as non-vapers to smoke traditional cigarettes a year after they become accustomed to nicotine via an e-cigarette as all three major tobacco companies are investing in electronic cigarette brands that offer over 7,700 flavors including Captain Crunch, gummy bear, cotton candy, Atomic Fireball and Fruit Loops. With flavors like these, it is clear the target is our youth, and it's no surprise that the teen popularity of these products tripled from 2013 to 2014.



Shortening people's lives for financial gain is not what Californians want. California must align its investments with its values. CalPERS should not send California money to the same tobacco companies that harm Californians, including CalPERS members and their families. This is a detriment to public health; and it is inconsistent with our values as a state.

California ended its romance with tobacco 16 years ago. There is no reason to revisit the issue today.

Sincerely,



Dr. Richard Pan
Chair Senate Public Employment and Retirement Committee

SEIU California



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www.seiucal.org

November 9, 2016

Jj Jelincic
Member, CalPERS Board
P.O. Box 942701
Sacramento, CA 94229-2701

Dear Mr. Jelincic:

SEIU represents over 700,000 California workers and we are stunned that CalPERS is even considering the possibility of reversing its tobacco investment policies. We urge you not to make a short-sighted and narrow-viewed decision that could permanently scar California's health, economy and global leadership position.

The leading cause of preventable death in our state, smoking kills over 40,000 Californians each year. Cancer and other tobacco-related diseases kill more people than car accidents, guns, alcohol, illegal drugs, and AIDS combined.

The wind is against tobacco on so many fronts. California has one of the nation's lowest adult smoking rates. Gov. Jerry Brown signed into law bipartisan-supported tobacco restrictions including raising the age to buy tobacco in California to 21 and extending tobacco laws to e-cigarettes. The FDA also has imposed new regulations on e-cigarettes, which are climbing in popularity among youth.

A historic coalition including dozens of California Chambers of Commerce from every major metropolitan area of California - who have traditionally opposed cigarette taxes - have mounted an unprecedented campaign to reduce smoking by raising the state's tobacco tax.

It would be unconscionable, and utterly senseless, to move our state backward at a time of such momentum forward.

Yet even despite this trajectory for positive change and decades of hard-fought progress against an industry that peddle deadly addiction for profits, nearly 17,000 California kids start smoking every year. One-third of them will eventually die from tobacco-related disease.

Tobacco companies spend \$9 billion annually to market their deadly, addictive products. Now tobacco companies are targeting kids for a lifetime of addiction with candy-flavored electronic cigarettes containing nicotine. Teen use of e-cigarettes tripled between 2013 and 2014. Teens who use e-cigarettes are twice as likely to start smoking traditional cigarettes. Scores of scientific studies from independent academic institutions are funding mounting evidence of the dangers of these products.

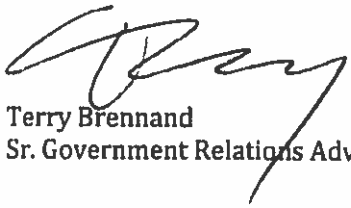
Because of smoking, California taxpayers spend \$3.5 billion dollars each year on treating cancer and other tobacco-related diseases through Medi-Cal. Tobacco has a profound negative impact on California's entire economy to the tune of \$20 billion in lost productivity, premature mortality and increased healthcare costs.

November 9, 2016
Page 2

CalPERS has been an international model of acting with a conscience while being fiscally prudent. It would be a tragedy to reverse this, and send a dangerous message to the global investment community that Californians' health is secondary to the earnings margins of the largest U.S. Public Pension Fund.

We strenuously urge you to reject any further consideration of this losing investment for California.

Sincerely,



Terry Brennand
Sr. Government Relations Advocate



TOBACCO FREE
Portfolios

7 April 2016

CalPERS
400 Q Street
Sacramento
CA 95811, USA

Dear Chairperson and Directors of the Board,

As a medical specialist and founder of Tobacco Free Portfolios I am writing to express my **deep concern** in relation to possible changes to CalPERS tobacco-free investment mandate.

My work with Tobacco Free Portfolios has seen over 35 Australian Pension Funds divest tobacco stocks in just the last four years, creating what is considered a 'new norm' in the Australian pension fund community. Due to this momentum and interest in tobacco-free investment the Union for International Cancer Control (UICC), established the Global Task Force for Tobacco Free Portfolios in 2015, with a clear mandate to encourage and assist sovereign wealth funds and large pension funds implement tobacco-free investment mandates.

At this precise moment, there is **unprecedented good will and positive collaboration** between the finance sector and the health sector, regarding the issue of tobacco. There is growing acceptance and acknowledgement of the fact that no decent individual or organization actively associates itself with the tobacco industry.

Individuals and organizations that invest money in a company have a vested interest that company. Investors want to see that company grow and thrive. They want the company to sell more of its product. They want the company to attract new customers. We must ask ourselves as a global community – is that we want for the tobacco industry? This world is on track for an estimated one billion tobacco related deaths this century. A problem of that scale simply cannot be ignored by any sector of society.

It would be incongruous for the pension funds of Californians, a State with one of the lowest smoking rates in the world, a State that is globally lauded for its exemplary leadership in tobacco control, to reverse or re-consider tobacco investment. The principles that underpinned progressive and innovative decisions made in 2000, are still just as relevant today, perhaps even more so.

I would like to draw your attention to the following important considerations:

- **Regulatory Risk:** In recognition of the global tobacco epidemic, in 2005 the World Health Organization established the Framework Convention on Tobacco Control (WHO FCTC), the world's first legally binding health treaty. There are 180 Parties, which makes it one of the most widely embraced treaties in United Nations' history. Parties have committed to implementing a broad range of tobacco control measures; therefore the long-term risks of tobacco investment are even more pressing and evident than in 2000 when CalPERS first implemented a tobacco-free investment mandate.



TOBACCO FREE
Portfolios

- **Litigation Risk:** Major class actions against tobacco companies continue to pose considerable financial risk. Of particular note just last year, the Canadian court ordered three big tobacco firms to pay \$16.1 billion USD to smokers in Quebec Province.
- **Engagement is futile:** Whilst engagement is a common investment practice employed to mitigate risks associated with investment in a company, this strategy is not applicable to tobacco companies. Positive influence of the industry through professional engagement is futile, as the only acceptable outcome would be for tobacco companies to cease their primary business.

This position is supported by the World Health Organization (WHO): “The tobacco industry is not and cannot be a partner in effective tobacco control”.¹

According to WHO, “A large body of evidence demonstrates that tobacco companies use a wide range of tactics to interfere with tobacco control. Such strategies include direct and indirect political lobbying and campaign contributions, financing of research, attempting to affect the course of regulatory and policy machinery and engaging in social responsibility initiatives as part of public relations campaigns.”²

- **Tobacco Stands Alone:** There is no safe level of exposure to tobacco. When used as intended, tobacco will have contributed to the early death of two out of three smokers³. The scale of negative impact of tobacco is profound, causing an estimated six million deaths per year globally.⁴
- **Human Rights Abuse:** A very influential issue of concern when considering tobacco investment has been the fact that almost no cigarette can be guaranteed to be free from child labour.⁵ It is estimated that 33 million people are engaged in tobacco farming worldwide.⁶ In 2006 the International Labor Organization estimated that children constituted up to 60-percent of this workforce.⁷ With many financial organizations adopting Human Rights Policies, investment in tobacco stands in clear breach of human rights principles.

I hope you might consider the issues outlined above in relation to this important matter. I would be most pleased to meet with or present to your Board or investment team as I have much experience and expertise in this area, and of course first-hand experience as a practicing radiation oncologist of the devastating impact of tobacco on individuals and families.

¹ <http://www.who.int/tobacco/resources/publications/Tobacco%20Industry%20Interference-FINAL.pdf> Pg. 22.

² <http://www.who.int/tobacco/resources/publications/Tobacco%20Industry%20Interference-FINAL.pdf> Pg. V

³ Banks et al, Tobacco smoking and all-cause mortality in a large Australian cohort study: findings from a mature epidemic with current low smoking prevalence. *BMC Medicine* (2015) 13:38 <<http://www.biomedcentral.com/content/pdf/s12916-015-0281-z.pdf>>
⁴ Oberg M, Jaakkola MS, Woodward A, et al, *Worldwide burden of disease from exposure to second-hand smoke: a retrospective analysis of data from 192 countries*, (*Lancet*, 2011) 2011:377 (9760), 139-46.

⁵ Graen, L. (2015, January 27). *BMJ Group blogs*. Retrieved August 30, 2015, from http://blogs.bmj.com/tc/2015/01/27/tobacco-industry-confronted-with-child-labour/?q=w_tc_blog_sidetab

⁶ Jha, P., & Chaloupka, F. (1999). *Curbing the epidemic Governments and the economics of tobacco control*. (p. 68). Washington, DC: World Bank.

⁷ Amon, J., Buchanan, J., Cohen, J., & Kippenberg, J. (2012). Child Labor and Environmental Health: Government Obligations and Human Rights. *International Journal of Pediatrics*, 2012(938306), 1-8. doi:10.1155/2012/938306



TOBACCO FREE
Portfolios

I look forward to hearing from you and engaging further on this matter.

Kind Regards,

A handwritten signature in black ink on a light brown background. The signature is stylized and appears to read 'B. King'.

Dr Bronwyn King, MBBS, FRANZCR
Founder and CEO Tobacco Free Portfolios
Radiation Oncologist, Peter MacCallum Cancer Centre & Epworth Healthcare
Cancer Council Australia Tobacco Control Ambassador
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TOBACCO FREE
Portfolios

10 November 2016

CalPERS Board and Management
C/o Office of Stakeholder Relations
400 Q Street
Sacramento, CA 95811
CalPERS_Stakeholder_Relations@calpers.ca.gov

Dear Sir/Madam,

Re: CalPERS and tobacco-free investment

Further to my letter dated 7 April 2016 (attached), I thank you for the opportunity to contribute further to the discussion regarding the issue of CalPERS and investment in the tobacco industry.

Mission Vision Beliefs

CalPERS' stated Mission, Vision and Beliefs consistently refer to the themes of ethics, innovation, a forward-thinking approach and sustainability. In 2016, a tobacco-free investment position strongly aligns with these concepts and stands as an excellent example of an organization actively living its values.

Healthcare Interest

Given that Health Programs constitute a significant part of CalPERS' activities, affiliations with the tobacco industry, including holding tobacco stock, would present an obvious conflict. As you are no doubt aware, tobacco causes the deaths of an estimated 40,000 Californians per year and remains the leading cause of preventable death within the state and country, as well as around the world.

It is important to note that reduced smoking rates translate to reduced health costs. For example, between 1989 and 2008 the Californian tobacco control program resulted in savings to the community of an estimated \$7 Billion per year, thus benefiting CalPERS Health Program, amongst other organizations that incur the costs of the profound health burden of tobacco.

Consistency with state policy

California is globally lauded for its exemplary leadership on tobacco control policy, which has resulted in the State of California having one of the lowest smoking rates in the world. In the united battle that is required to address the global tobacco epidemic, it is imperative that Governments and their related institutions, including pension funds, remain aligned and committed to de-normalization of associations with the tobacco industry.

Engagement futile

We acknowledge that 'engagement' is a preferred practice with regard to responsible investment, however tobacco presents an exception. According to the World Health Organization Directive, "*The tobacco industry is not and cannot be a partner in effective tobacco control.*"



Leadership

CalPERS is admired as a leader, particularly in relation to responsible investment. As a Founding Signatory of the UN PRI, one of the first to sign the Montreal Pledge and having admirably ambitious targets with regard to the Sustainable Development Goals (SDGs), it would be incongruent to re-invest in an industry responsible for 6 million deaths per year.

It is important to note that achievement of fourteen of the seventeen SDGs will require significant progress on tobacco control. Addressing financial support of and investment in tobacco is critical to comprehensive and cross-sector tobacco control efforts.

The Movement

Although some have questioned the impact of CalPERS divestment of tobacco stocks in 2001, many believe this created significant momentum in the sustainable investment movement. CalPERS leadership on this important issue is referenced constantly in the discussions of our Tobacco Free Portfolios team, resulting in 35 Australian pension funds, representing 40% of the Australian pension fund sector (combined total assets of approximately \$550Billion AUD) implementing tobacco-free investment mandates in the past five years. More will soon follow.

The tobacco-free investment conversation has expanded to include insurers (notably AXA implemented a tobacco-free investment policy in May 2016), banks (notably ANZ New Zealand implemented a tobacco-free investment policy in October 2016), city councils (notably Copenhagen city council implemented a tobacco-free investment policy in October 2016) and Sovereign Wealth Funds (notably Sweden's AP4 implemented a tobacco-free investment policy in November 2016). In response, fund managers are now coming to market with an increasing numbers of financial products with tobacco-free mandates. In addition, some fund managers have implemented completely tobacco-free policies across all offerings.

Tobacco Free Portfolios is now working with over 100 financial organizations. Whilst all are at varying points in the consideration of this issue, the trend is overwhelmingly towards tobacco-free investment.

With regard to the possible steps that CalPERS could take following consideration of this issue, Tobacco Free Portfolios strongly encourages extension of tobacco divestment to externally managed portfolios. Many large global fund managers now have tobacco-free products, responding to increasing demand.

I have attached an electronic copy of the Tobacco Free Portfolios Toolkit, which outlines key aspects of tobacco-free investment considerations. You are welcome to forward this to your Board and Executive Team. As discussed, I would also be delighted to present to the CalPERS board on December 19.

Yours Sincerely,

Bronwyn

Dr. Bronwyn King, MBBS, FRANZCR
CEO Tobacco Free Portfolios
Radiation Oncologist
Cancer Council Australia Tobacco Control Ambassador
bk@tobaccofreeportfolios.org
+61 412098525



TOBACCO FREE
Portfolios

The toolkit.

OCTOBER 2016

Encouraging tobacco free investment.



Globally, the health sector collaborates to develop increasingly sophisticated cancer treatments. In recognition of the profound death and disease caused by tobacco, there are 180 parties to the UN Tobacco Treaty – the World Health Organisation Framework Convention on Tobacco Control, vowing to implement robust tobacco control regulation. In contrast - the global finance industry still invests in, and profits from, tobacco. But this is changing. Finance leaders are listening, acting and pleased to contribute to the comprehensive commitment from all sectors to end the global tobacco epidemic.



— Dr. Bronwyn King, MBBS, FRANZCR

Founder and CEO, Tobacco Free Portfolios
Radiation Oncologist, Peter MacCallum Cancer Centre and Epworth Healthcare
Cancer Council Australia Tobacco Control Ambassador

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Tobacco Free Portfolios Overview

Addressing financial support of and investment in tobacco is a crucial, and to date, elusive piece in global efforts to control tobacco. Tobacco Free Portfolios professionally engages with the finance sector to encourage tobacco-free investment, playing a unique role in ensuring the finance sector aligns with governments, the health sector and non-government community.



Right: Clare Payne, COO, Tobacco Free Portfolios, Dr. Brownyn King, CEO, Tobacco Free Portfolios and Dr. Rachel Melsom, UK Director, Tobacco Free Portfolios at the UN World Health Organisation 2016 World Health Assembly.

Through pension schemes, sovereign wealth funds and other investments, many are unknowingly contributing to the global tobacco epidemic. Financial support of the tobacco industry stands in sharp contrast to global tobacco control efforts, increased community awareness of the dangers of smoking and the ongoing decline of tobacco smoking in developed economies.

Whilst there is general acknowledgement that global collaboration is needed, Tobacco Free Portfolios is the only organisation focused solely on tobacco-free investment and the vital role of the finance sector in tobacco control.

Who we are and how we work

Tobacco Free Portfolios is a not-for-profit organisation with a mission to inform, prioritise and advance tobacco-free investment by eliminating tobacco from investment portfolios across the globe.

Our Strategy is to engage with key leaders and influencers across the finance sector. We educate finance leaders about global tobacco control initiatives and the risks of tobacco investment and we encourage tobacco-free investment mandates.

The approach of Tobacco Free Portfolios is an advocacy and educative role. We pride ourselves on discretion and do not seek to accuse or shame trustees, investors or the finance industry. Instead we work collaboratively and professionally, so that the industry and its investors can make well-informed decisions.



Left: Dr. Bronwyn King, CEO, Tobacco Free Portfolios (left), pictured with Her Royal Highness Princess Dina Mired of Jordan (right), the Honorary Chair of Tobacco Free Portfolios, at a Union for International Cancer Control event in Geneva.

PHOTO COURTESY OF UICC COMMUNICATIONS

Tobacco Free Portfolios is led by Dr. Bronwyn King, a practicing Radiation Oncologist. Dr. King led much of the initial work of Tobacco Free Portfolios and has gained public international recognition for her leadership and advocacy. Ms. Clare Payne, the Chief Operating Officer of Tobacco Free Portfolios, has a background in law and business ethics and is World Economic Forum Young Global Leader. Dr. Rachel Melsom, contributes her combined corporate and clinical skills to the role of UK Director for Tobacco Free Portfolios.

2017 will see the continued expansion of the Tobacco Free Portfolios team with a colleague to join based in Geneva and potentially new colleagues based in other regions.

Progress and impact

Tobacco Free Portfolios has played an integral role in the decisions of over 35 pension funds in Australia to implement tobacco-free investment mandates. In 2016, Tobacco Free Portfolios was delighted to work with AXA, one of the world's largest insurers, and welcomed their decision to divest tobacco industry assets valued at 1.8 billion Euros, putting the issue firmly on the mainstream agenda.

Tobacco Free Portfolios is now engaging with large retail and investment institutions across the global finance sector and regularly presents at industry conferences and events.

Support and goodwill

The launch of the Global Task Force for Tobacco Free Portfolios, by the Union for International Cancer Control in 2015, provided the global platform to extend the reach and impact of Tobacco Free Portfolios. In 2016, Cancer Research UK kindly supported the UK Director role and other health organisations are considering similar support.

The personal support and endorsement of eminent ambassadors serves to create trust and profile for the initiative:

- Honorary Chair - Her Royal Highness Princess Dina Mired of Jordan; and
- Special Advisor - The Honourable Nicola Roxon, Former Attorney-General of Australia.

Tobacco Free Portfolios has received recognition and support from international health organisations, sovereign wealth funds and inspired business leaders creating much goodwill for both Tobacco Free Portfolios and tobacco-free investment.

Extending our impact

With much of the finance sector still invested in tobacco there is still great progress to be made, however, the support and goodwill for Tobacco Free Portfolios is a positive indication of what can be achieved.

In order to strategically harness the support and good will for tobacco-free investment, Tobacco Free Portfolios is now leading a Global Tobacco-Free Pledge in partnership with the UN backed Principles for Responsible Investment, the UN backed Principles for Sustainable Insurance and AXA, with the active contribution of the UICC.

We believe this initiative, to be launched in 2017, will bring global attention to financial investment in tobacco and encourage action. The Pledge will also draw attention to the Sustainable Development Goals, the World Health Organisation Framework Convention on Tobacco Control, and contribute to efforts to denormalise the tobacco industry.

In addition, Tobacco Free Portfolios is working with regulatory bodies to create an approved 'Tobacco-Free Portfolios Seal', which will be used by funds and investment institutions to publicly declare their tobacco-free position. The Tobacco-Free Portfolio Seal will also act as a guarantee to consumers and fund members seeking tobacco-free financial products.



Tobacco Free Investment Framework

PRODUCT/
INDUSTRY

Tobacco

CONSIDERATIONS

<p>Can the product be used safely?</p>	<p>Is there a UN Treaty applying to this product/ industry?</p>	<p>Can engagement be effective?</p>
<ul style="list-style-type: none"> • There is no safe level of consumption. • When used as intended, tobacco will have contributed to the early death of two out of three smokers.¹ 	<ul style="list-style-type: none"> • In recognition of the global ‘tobacco epidemic’ (6 million deaths worldwide each year² and an estimated 1 billion deaths this century³), the United Nations Tobacco Treaty was established —The World Health Organisation Framework Convention on Tobacco Control—The world’s first global legally binding public health treaty. • 180 Countries are Parties to the Treaty, representing 89.4% of the world’s population⁴, which makes it one of the most widely embraced treaties in United Nations’ history. 	<ul style="list-style-type: none"> • The World Health Organisation has declared, “The tobacco industry is not and cannot be a partner in effective tobacco control”.⁵ • Positive influence of the industry through professional engagement is futile, as the only acceptable outcome would be for tobacco companies to cease their primary business.



Above: This is an epic battle between the protection of public health and the pursuit of corporate wealth. (...) Public health has the evidence and the right values on its side. The tobacco industry has vast financial resources, lawyers, lobbyists, and no values whatsoever beyond the profit motive."

Dr. Margaret Chan, opening speech, COP4, Punta del Este, Uruguay, November 2010.



The Sustainable Development Goals and Tobacco

The Sustainable Development Goals (SDGs) represent a global consensus on how to achieve a sustainable future.

- The SDGs contain a set of seventeen Global Goals with targets.
- The UN General Assembly formally adopted the SDGs in September 2015 and they officially came into force on 1 January 2016.
- All countries are expected to consider the SDGs when preparing plans and policies for the next 15 years.
- The international community, including the United Nations, the World Bank and regional development banks, as well as public and private donors, are expected to assist governments to reach the SDGs.

Tobacco use is the world's number one cause of preventable death. Tobacco use affects health and also impacts many other dimensions of development, including poverty and education, which are all essential to development.

1. **No Poverty** Money spent on tobacco is money not spent on other household needs. In Thailand, low-income families spent 13.6% of their annual income on tobacco products (five times more than high income families), money that could be used for food, clothing and education⁶. In India, an additional 15 million people fall below the poverty line, once effects of tobacco within families are taken into account⁷.
2. **Zero Hunger** In 2005, Indonesian households with smokers spent 11.5% of their income on tobacco products, compared to 11% on fish, meat, eggs and milk combined⁸. In Kenya and Bangladesh, tobacco cultivation has replaced food crops and has led to local food insecurity⁹.
3. **Good Health and Well-Being** Tobacco use kills more than six million people every year, the majority in their most productive years. In this century, tobacco use will kill one billion people unless trends change¹⁰.
4. **Quality Education** In Malawi, at least 78,000 children are forced to work in tobacco fields, preventing most of them from attending school.¹¹ In 2005, Indonesian households with smokers spent 11.5% of their household income on tobacco products, compared to just 3.2% on education¹².
5. **Gender Equality** In China, 53% of women of reproductive age were exposed to second-hand smoke at work, which raises the risk of complications in pregnancy¹³. In Uruguay, comprehensive tobacco control policies improved the health of newborns by encouraging pregnant women who smoke to quit.¹⁴
8. **Decent Work and Economic Growth** In highly populated, developing countries like Pakistan, lost economic opportunities are severe with up to half of all tobacco-related deaths occurring during the population's prime productive years.¹⁵ In 2006 the International Labour Organization estimated that children constituted up to 60% of the workforce on tobacco farms across the globe¹⁶.
10. **Reduced Inequalities** More than 80% of the world's smokers live in low and middle-income countries, which have fewer resources to devote to the health and other costs of tobacco.¹⁷



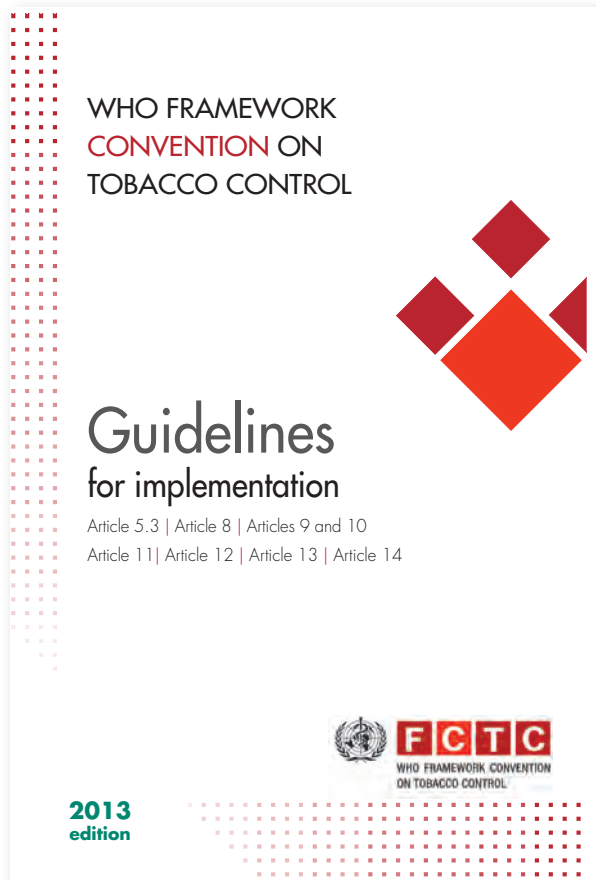
11. **Sustainable Cities and Communities** Breathing in second-hand smoke is deadly. In Thailand, 68% of youth (age 13–15) are exposed to second-hand smoke in public places and 49% in their homes¹⁸.
13. **Climate Action** Tobacco cultivation accounts for 1% of the world’s agricultural land use, yet it is responsible for 2-4% of global deforestation.¹⁹
14. **Life Below Water** Cigarette butts are the number one littered item worldwide. They foul waterways, are toxic to the environment and are not biodegradable²⁰.
15. **Life on Land** Tobacco growing is responsible for biodiversity losses, land pollution through the use of pesticides, as well as soil degradation, deforestation and water pollution²¹. Tobacco manufacturing is related to 30% of deforestation in Bangladesh²².
16. **Peace, Justice and Strong Institutions** In 2000, the European Community brought a case against tobacco companies Phillip Morris and RJ Reynolds for smuggling cigarettes, obstructing governments’ tobacco control, bribing foreign public officials and illicit trade with terrorist groups²³.
17. **Partnerships for the Goals** The UN General Assembly has endorsed the policies to increase tobacco taxes. Price and tax measures on tobacco are effective and an important means to reduce tobacco consumption and healthcare costs, and, in many countries, to raise revenue to finance development programmes²⁴

For more information, please see:

- Framework Convention Alliance Advocacy Toolkit: www.ftc.org/images/stories/SDGs_ToolkitFINAL.pdf
- www.unfairtobacco.org (resources)



UN Tobacco Treaty



In 2005, the World Health Organization established the Framework Convention on Tobacco Control (WHO FCTC), the world's first legally binding health treaty. There are 180 Parties (Countries), which makes it one of the most widely embraced treaties in United Nations' history. Under the Treaty the Parties have committed to implementing a broad range of tobacco control measures.

The Guidelines of the WHO FCTC include a provision that stipulates Governments are required to not invest in the tobacco industry. This includes Sovereign Wealth Funds and Government pension funds.

Currently only three countries have implemented this part of the Treaty. They are: Australia, New Zealand and Norway. There is the opportunity for other nations to stand beside these nations and be profiled on the world stage as protecting their population and joining global cancer control efforts.

Guidelines for implementation: Article 5.3

ARTICLE 5.3

- 4.6 Parties should require government officials to declare and divest themselves of direct interests in the tobacco industry.
- 4.7 Government institutions and their bodies should not have any financial interest in the tobacco industry, unless they are responsible for managing a Party's ownership interest in a State-owned tobacco industry.
- 4.8 Parties should not allow any person employed by the tobacco industry or any entity working to further its interests to be a

Without prejudice to their sovereign right to determine and establish their economic, financial and taxation policies, Parties should respect their commitments for tobacco control.

Recommendations

- 7.1 Parties should not grant incentives, privileges or benefits to the tobacco industry to establish or run their businesses.
- 7.2 Parties that do not have a State-owned tobacco industry should not invest in the tobacco industry and related ventures. Parties with a State-owned tobacco industry should ensure that any investment in the tobacco industry does not prevent them from fully implementing the WHO Framework Convention on Tobacco Control.

Excerpt from the Guidelines for implementation of Article 5.3 of the WHO FCTC:

There are two provisions relevant to the issue of tobacco-free investment, they are:

- 4.7 - 'Government institutions and their bodies should not have any financial interest in the tobacco industry, unless they are responsible for managing a Party's ownership interest in State-owned tobacco industry.'
- 7.2 - 'Parties that do not have a State-owned tobacco industry should not invest in the tobacco industry and related ventures.'

For more information, please see:

- The World Health Organisation Framework Convention on Tobacco Control: http://www.who.int/fctc/WHO_FCTC_summary_January2015_EN.pdf?ua=1
- The Guidelines: http://www.who.int/fctc/guidelines/adopted/guidel_2011/en/



Human Rights and Tobacco

Almost no cigarette can be guaranteed to be free from child labour.²⁵

Scale of the issue

It is estimated that 33 million people are engaged in tobacco farming worldwide.²⁶ In 2006 the International Labour Organization estimated that children constituted up to 60% of this workforce.²⁷

Countries involved

The US department of Labor lists fifteen countries that use child labour to produce tobacco, spanning South America, Central America, Asia, Africa and the Middle East.²⁸

A recent report, *Tobacco's Hidden Children - Hazardous Child Labour in the United States Tobacco Farming* by the Human Rights Watch, highlights the presence of child labour on American tobacco farms.²⁹

Green Tobacco Sickness

The report also cited that of 141 child tobacco workers (aged seven to seventeen years) from four separate US states, nearly three-quarters of the children interviewed reported symptoms of 'green tobacco sickness'.³⁰

'Green tobacco sickness' includes serious symptoms such as nausea, vomiting, headaches, dizziness and breathing difficulties. Longer-term health effects related to pesticide exposure include: cancer, reproductive health issues and problems with learning and cognition.³¹

Unacceptable work conditions

Alongside these significant health effects, exist numerous other risks associated with unacceptable working conditions. These include unreasonable work hours, insufficient water, sanitation and shade, the forced use of dangerous tools and machinery with inadequate safety training and a lack of personal protective equipment.³²

Child tobacco workers are also subject to other forms of exploitation, such as forced or bonded labour. For example, of an estimated 325,000 children employed in tobacco production in the state of Tamil Nadu, India, it is estimated that 50 % are bonded labourers.³³

A recent article, *Child farmworkers banned from handling pesticides, but not tobacco*, emphasises the role that a lack of legal protections for collective organising plays in exacerbating the situation. 'Child labor won't end until farmworkers themselves have a safe and effective way to speak out when abuses happen, without fearing retaliation from their employer.'³⁴

Ineffective initiatives

In October 2000, the Eliminating Child Labour in Tobacco Growing Foundation was established. In 2001, partners from the tobacco corporate sector joined this international initiative.³⁵ Despite this, little has changed in the past sixteen years, demonstrating 'the contradiction between what the tobacco industry says and what it does.'³⁶

Impact on Education

Child tobacco labour also has educational implications. Reports on the plight of children forced to work in Malawi's tobacco industry³⁷ describe that some children are forced to drop out of school to work as tobacco farmers.³⁸



Engagement

“Where there has been engagement, it has invariably been counterproductive.”

- Professor Mike Daube AO, Professor of Health Policy at Curtin University where he is Director of the Public Health Advocacy Institute and the McCusker Centre for Action on Alcohol and Youth.

Professor Daube has extensive national and international experience in public health. His current roles include President of the Australian Council on Smoking and Health and Co-Chair of the National Alliance for Action on Alcohol. He was Chair of the Australian Government’s Expert Committee that recommended tobacco plain packaging. He has been a consultant for WHO, international health organisations and governments in more than thirty countries, and has received numerous awards for his work including the American Cancer Society’s Luther Terry Distinguished Career Award.

World Health Organisation directive

“The tobacco industry is not and cannot be a partner in effective tobacco control”- World Health Organisation (WHO).³⁹

According to WHO, “A large body of evidence demonstrates that tobacco companies use a wide range of tactics to interfere with tobacco control. Such strategies include direct and indirect political lobbying and campaign contributions, financing of research, attempting to affect the course of regulatory and policy machinery and engaging in social responsibility initiatives as part of public relations campaigns.”⁴⁰

Public relations and attempts to influence policy

According to the 2012 Surgeon General’s Report: “The industry uses these efforts to convey to the public, policymakers, judges, and the members of juries that it is doing something substantial about

the issue of youth's tobacco use. In this way, the programs serve to promote positive attitudes about the tobacco industry. Such positive attitudes could help to limit the industry's legal liability and make it easier for its views to be heard on legislative issues."⁴¹

The Paper, 'Eliminating child labour in Malawi: a British American Tobacco corporate responsibility project to sidestep tobacco labour exploitation' concluded that in Malawi, transnational tobacco companies are using child labour projects to enhance corporate reputations and distract public attention from how they profit from low wages and cheap tobacco.⁴²

As stated in the World Health Organisation Report, Tobacco Industry Interference with Tobacco Control, "Reports from Corporate Accountability International summarize the range of strategies used by the tobacco industry to thwart legislation. They include subverting it and exploiting legislative loopholes, demanding a seat at government negotiating tables, promoting voluntary regulation instead of legislation, drafting and distributing sample legislation that is favourable to the tobacco industry, challenging and stretching government timetables for implementing laws, attempting to bribe legislators, gaining favour by financing government initiatives on other health issues and defending trade benefits at the expense of health."⁴³

Marketing, advertising and promotion continues

In 2012 tobacco companies spent \$9.6 billion USD – more than \$26 million USD a day – on advertising and promotional expenditures for cigarettes and smokeless tobacco.⁴⁴

According to the U.S. Federal Trade Commission, in 2012, cigarette companies spent 4,300 times more on product marketing and promotions than on youth prevention advertisements (\$9.6 billion USD vs. \$2.2 million USD).⁴⁵

Ineffective campaigns and programs

In an exhaustive review of relevant studies, a comprehensive report released in June 2008 by the U.S. Department of Health and Human Services - National Cancer Institute, titled The Role of the Media in Promoting and Reducing Tobacco Use, confirmed that tobacco industry-sponsored youth smoking prevention programs are "generally ineffective" at reducing youth smoking and may have caused some youth to start smoking.⁴⁶

Avoidance of most powerful anti-tobacco themes

A systematic review of mass media campaigns on youth smoking published in 2008 found that tobacco industry-funded youth prevention campaigns had minimal impact on youth smoking because they avoided the most powerful anti-tobacco themes of health effects and industry manipulation.⁴⁷



Prospective Investment Risks

Regulation: 'Unprecedented global cooperation to reduce tobacco use'

Legally Binding Public Health Treaty:

- In recognition of the global 'tobacco epidemic' in 2005 the UN Tobacco Treaty was established, the World Health Organisation Framework Convention on Tobacco Control (WHO FCTC), the world's first global legally binding public health treaty. There are now 180 Parties, representing 89.4% of the world's population,⁴⁸ including the European Community, which makes it one of the most widely embraced treaties in United Nations' history. Parties have committed to implementing a broad range of tobacco control measures to address the devastating worldwide health, social, economic and environmental consequences of tobacco consumption and exposure to tobacco smoke.

Assistance to developing nations:

- Multiple international health organisations (including the World Health Organisation and Bloomberg Philanthropies) are actively working with governments of the developing world to enhance tobacco control regulation and reduce tobacco consumption.

Regulatory developments - May 2016 alone:

- France and the United Kingdom of Great Britain and Northern Ireland each began implementation of plain packaging.⁴⁹
- The US Food and Drug Administration (FDA) finalised a rule deeming tobacco products to be subject to the Federal Food, Drug and Cosmetic Act, which extends the FDA's authority to include the regulation of electronic nicotine delivery systems (such as e-cigarettes and vape pens).⁵⁰
- The European Court of Justice upheld new tobacco control regulations regarding packaging, e-cigarettes and a ban on cigarette flavourings.⁵¹
- The Australian Government announced four annual 12.5% increases in tobacco excise.⁵²

Implementation of the WHO FCTC, as evidenced above, will serve to reduce tobacco consumption worldwide and thus challenge the sales and business of the tobacco industry.

Litigation: 'Class-actions challenge the business model of externalising costs'

Major class actions against tobacco companies continue to pose considerable financial risk to the tobacco industry and challenge the business model, for example:

- In June 2015, a Canadian court ordered three tobacco companies to pay C\$15.5 billion (\$11.7 billion USD) - the largest award for damages in the country's history. The plaintiffs were Quebec smokers who argued that the companies did not properly warn their customers and failed in their general duty "not to cause injury to another person"⁵³.



Right: An example of plain brand packaging for cigarettes.

- In May 2016, the family of Hall of Fame baseball player Tony Gwynn filed a wrongful death lawsuit against the tobacco industry. The lawsuit seeks to hold Altria Group, Inc., formerly known as Philip Morris, and other parties accountable for Gwynn's death.⁵⁴
- According to the British American Tobacco (BAT) Annual Report of 2014 the total number of US product liability cases pending was approximately 6,057. They state, 'since many of these pending cases seek unspecified damages, it is not possible to quantify the total amounts being claimed, but the aggregate amounts involved in such litigation are significant, possibly totalling billions of US dollars.' In addition, they warn, 'the consolidated results of operations, cash flows and financial position could be materially affected, in a particular fiscal quarter or fiscal year, by an unfavourable outcome or settlement of certain pending or future litigation.'⁵⁵

The cost of tobacco is estimated at 2.1 trillion Euros per year, equalling the combined expenses of war and terrorism.⁵⁶ This is a cost that the tobacco industry could not afford to pay.

Human Rights: 'Tobacco industry use of child labour under the spotlight as supply chains analysed'

A very influential issue of concern when considering tobacco investment has been the use of child labour, particularly the following facts:

- Almost no cigarette can be guaranteed to be free from child labour.⁵⁷
- It is estimated that 33 million people are engaged in tobacco farming worldwide.⁵⁸ In 2006 the International Labour Organization estimated that children constituted up to 60% of this workforce.⁵⁹

With many organizations adopting Human Rights Policies, investment in tobacco stands in clear breach of human rights principles.

This issue was recently highlighted in international media, including the *New York Times*,⁶⁰ due to a 119-page report released by Human Rights Watch titled, *The Harvest is in My Blood: Hazardous Child Labor in Tobacco Farming in Indonesia*. The Report detailed that thousands of children in Indonesia, some just eight years old, are working in hazardous conditions on tobacco farms. They declared that Indonesian and multinational tobacco companies buy tobacco grown in Indonesia and none do enough to ensure that children are not doing hazardous work on farms in their supply chains.⁶¹

Reputation: ‘The tobacco-free investment movement calls for others to follow’

Investment in tobacco companies implies endorsement of the product itself and of the industry as a whole. There is a growing tobacco-free investment movement. Of significance, in May 2016 the AXA Group announced its decision to divest tobacco industry assets, valued at approximately 1.8 billion Euros.

Thomas Buberl, Deputy CEO and incoming CEO of AXA stated:

“We strongly believe in the positive role insurance can play in society, and that insurers are part of the solution when it comes to health prevention to protect our clients. Hence, it makes no sense for us to continue our investments within the tobacco industry. With this divestment from tobacco, we are doing our share to support the efforts of governments around the world. This decision has a cost for us, but the case for divestment is clear: the human cost of tobacco is tragic; its economic cost is huge. As a major investor and a leading health insurer, the AXA Group wants to be part of the solution, and our hope is that others in our industry will do the same.”⁶²

This announcement followed the decisions of over 35 Australian Pension Funds to divest tobacco stocks worth over \$1.8 billion AUD in just four years, creating what is developing as a ‘new normal’ in the Australian pension fund community.

Opposite: The Fiduciary Duty Report states that “Fiduciary duty is not an obstacle to action on environmental, social and governance factors.”

FIDUCIARY DUTY IN THE 21ST CENTURY





Common Questions Answered

Investment in tobacco and performance of the stock

Why have tobacco stocks been so profitable?

The tobacco industry significantly relies on child labour in the production of tobacco and has a business model that externalises an estimated 2 trillion Euros of costs each year,⁶³ while internalising profits. The targeting of developing nations with large youth populations, poorer education levels, less awareness about the dangers of smoking and weaker regulations, including low taxes, has led to a large number of new customers in the past decade. An estimated 80,000-100,000 children start smoking every day, mostly in the developing world.⁶⁴

Shouldn't financial institutions be trying to get the best returns for investment clients rather than allowing ethical considerations to drive investment philosophy?

Despite the apparent profitability of returns in the short-term, there is a clear business case for divestment from tobacco that includes the following prospective risks:

- *Regulation:* Unprecedented global cooperation to reduce tobacco use through the UN Tobacco Treaty: the World Health Organisation Framework Convention on Tobacco Control.
- *Litigation:* Class actions and litigation are challenging the tobacco industry business model of externalising costs.
- *Human Rights:* Tobacco industry use of child labour is under the spotlight as supply chains are increasingly scrutinised.
- *Reputation:* Investment in tobacco companies implies endorsement of the product itself and of the industry as a whole. Businesses across the globe are reconsidering this association.

We encourage investors and leaders of the finance sector to consider the investment from a long-term view, as the risks are most apparent from this perspective.

Research showed recently that CalPERS had foregone \$3 billion USD in returns because of its decision to divest from tobacco. Doesn't that prove it's not a good decision?

Considering the profound health impacts of tobacco on our population, and the prospective risks associated with investment, we believe tobacco-free investment is a good decision that aligns with the UN Tobacco Treaty and the efforts of the health and government sectors in attempting to combat the tobacco epidemic.

It should be noted that following the CalPERS controversy, several other large investors subsequently reaffirmed their commitment to remain tobacco-free. In addition, AXA, one of world's largest insurers, announced their decision to implement a tobacco-free investment mandate in May 2016.

Divestment

What can divestment of tobacco hope to achieve?

Divestment can signal disapproval of the tobacco industry and serve to stigmatise tobacco companies. This plays an important role in de-normalising the industry and untangling the association between the 'average worker' and the tobacco industry.

In addition, generating stigma and de-normalisation can lead to greater popular and political support for the introduction of more robust tobacco control policies.

Will divestment of tobacco make the industry go bankrupt?

There is no suggestion that divestment of tobacco will lead to bankruptcy.

Will divestment of tobacco reduce the share price?

Divestment can send a strong signal from investors and may affect share prices. In addition, divestment can draw the attention of analysts who will incorporate factors, including the reasons for divestment, into their analyses and recommendations.

Will divestment of tobacco lead to others profiting?

We are not aware of instances of profits increasing as a result of divestment. In the case of tobacco with many control measures happening simultaneously (regulation restricting point of sale, smoking outdoors, plain packaging, etc.) divestment will be just one factor affecting the industry and stock values.

**Could there be a backlash from countries dependent on tobacco revenue, for example in Asia?
Can divestment cost jobs and livelihoods in low-income countries like Zimbabwe or Malawi?**

We are not aware of instances of backlash from countries involved in tobacco production. It should be noted that 180 Countries are signatories to the UN Tobacco Treaty.

A tobacco-free decision aligns with the efforts of the health and government sectors. Tobacco use is a growing problem for emerging economies, in particular Asia and Africa, with all the health and economic problems that go with it.

Will divestment from tobacco drive illicit tobacco trade further underground? E.g. Indonesia, Malaysia, Vietnam, China, Thailand?

We are not aware of any link between divestment of tobacco stocks and increase in illicit tobacco trade.

Other Undesirable Industries

How is the tobacco industry different from other undesirable industries?

1. *No Safe Use*: There is no safe level of consumption. When used as intended, tobacco will have contributed to the early death of two out of three smokers.⁶⁵
2. *UN Treaty*: In recognition of the global ‘tobacco epidemic’ (six million deaths worldwide each year⁶⁶ and a projected estimate of one billion deaths this century⁶⁷), the United Nations Tobacco Treaty - the World Health Organisation Framework Convention on Tobacco Control - was established. This was the world’s first global legally binding public health treaty. 180 Countries are Parties to the Treaty, representing 89.4% of the world’s population,⁶⁸ which makes it one of the most widely embraced treaties in United Nations’ history.
3. *Engagement is futile*: The World Health Organisation has declared, “The tobacco industry is not and cannot be a partner in effective tobacco control”.⁶⁹ Positive influence of the industry through professional engagement is futile, as the only acceptable outcome would be for tobacco companies to cease their primary business.

Is tobacco really that bad? My grandfather smokes and he’s 92.

When used as intended, tobacco will have contributed to the early death of two out of three smokers.⁷⁰ While some smokers will live long lives, they are far more likely than non-smokers to have a myriad of serious health problems and a reduced quality of life. In addition, their family members are more likely to suffer the consequences of passive smoking.

Will going tobacco-free ‘open the flood gates’ to other requests?

The case for tobacco divestment is unique. Our understanding is that making the decision to implement a tobacco-free investment mandate has not led to an increase in requests to divest from other industries or products.

Practical considerations

Is it difficult or costly to implement a tobacco-free investment policy?

As a result of increasing demand for tobacco-free products, fund managers have responded by creating tobacco-free collective investment vehicles. Increasingly these are available to smaller investors in the market (not just the largest institutional investors) and at low cost. In Australia, there are more than a dozen fund managers (some with extensive global operations) that offer tobacco-free mutual funds.

Tobacco Control

Will divestment of tobacco result in fewer smokers?

Tobacco-free investment is a component, and to date, elusive piece, in effective tobacco control. Other tobacco control measures include banning sale of tobacco to children, restricting smoking in venues and plain packaging. All the measures contained in the UN Treaty for tobacco control, which include tobacco-free investment for Governments, are proven to be effective and best practice to protect populations.

What are the world trends in tobacco control?

There are 180 Countries signed to the UN Treaty, representing 89.4% of the world's population, which commits them to implementing a broad range of tobacco control measures.

In addition, multiple international health organisations (including the World Health Organisation and Bloomberg Philanthropies) are actively working with governments of the developing world to enhance tobacco control regulation and reduce tobacco consumption.

In May 2016 alone, we saw the following regulatory developments:

- France and the United Kingdom of Great Britain and Northern Ireland each began implementation of plain packaging.⁷¹
- The US Food and Drug Administration (FDA) finalised a rule deeming tobacco products to be subject to the Federal Food, Drug and Cosmetic Act, which extends the FDA's authority to include the regulation of electronic nicotine delivery systems (such as e-cigarettes and vape pens)⁷².
- The European Court of Justice upheld new tobacco control regulations regarding packaging, e-cigarettes and a ban on cigarette flavourings.⁷³
- The Australian Government announced four annual 12.5% increases in tobacco excise.⁷⁴

Are there ideas to end the tobacco epidemic?

There are proposals for a ‘Tobacco Free Generation’ where a point in time will be decided with those born after the date unable to purchase cigarettes.

Link for more information: <http://www.tobaccofreeegen.com>

A ‘Smoker’s Licence’ has also been proposed which would operate like prescription drugs with additional assistance to quit.

For more information, please see: <http://theconversation.com/making-smoking-history-the-case-for-a-smokers-licence-42362>

Other options: Environmental Social Governance (ESG) and Socially Responsible Investments (SRI)

Can’t we just offer an ESG or SRI option?

Socially Responsible Investments (SRIs) and sustainable investment options are subject to broad and varied interpretations across the industry. They do not represent a defined and enforceable standard that can be trusted by investors and may include tobacco unless an exclusion policy is clearly specified.

In addition, many investors, particularly members of pension funds, are not engaged with their investments and tend to be in default or mainstream options. Many investors, especially members of compulsory pension funds, are not adequately financially literate to make informed decisions.

Why do tobacco companies perform well on ESG ratings?

Many ESG and ‘sustainable’ ratings are not tools to screen out particular industries or companies, rather a ‘best of sector’ approach is taken, which sees tobacco companies being rated only against each other. Many rating agencies use a system that awards top marks for at least one company in each sector, which sees tobacco companies with the least negative scores being given A’s or five star ratings. In addition, the core purpose and impact of the business is not necessarily considered amongst the ESG/sustainability factors (for example, the fact that tobacco companies sell products that kill two out of three of their best customers⁷⁵ may not be considered). Other factors, such as flexible work practices, diversity on boards and employee compensation are rated, which sees several tobacco companies scoring high marks for ‘Governance’.

Tobacco Free Portfolios is working with global data providers and rating agencies to revise this methodology.

Engagement

Why can't we use the approach of engagement with tobacco companies, rather than divestment?

The World Health Organisation (WHO) has issued a directive stating that the "The tobacco industry is not and cannot be a partner in effective tobacco control."

According to WHO, "A large body of evidence demonstrates that tobacco companies use a wide range of tactics to interfere with tobacco control. Such strategies include direct and indirect political lobbying and campaign contributions, financing of research, attempting to affect the course of regulatory and policy machinery and engaging in social responsibility initiatives as part of public relations campaigns."

The World Health Organisation has also released a report detailing tobacco industry interference: <http://www.who.int/tobacco/resources/publications/Tobacco%20Industry%20Interference-FINAL.pdf>

Legality and Personal Choice

Tobacco is a legal product so why shouldn't we invest in it?

Tobacco is legal because of an historical mistake. It is highly unlikely that tobacco would have been made legal had governments at the time known of the extraordinary harm caused by the product.

Tobacco is one of the most highly regulated legal products that exists, as governments across the world implement stricter tobacco controls in an effort to arrest the tobacco epidemic.

Legality is not always an indication of what is right – for example, slavery and Apartheid were both legal at different points in history.

Why don't we just make tobacco illegal?

Many smokers are regretful smokers who continue to smoke because they are addicted to the nicotine in cigarettes (over the years, it has been noted that the amount of nicotine in cigarettes has been increased).⁷⁶ In Australia, approximately 40% of smokers try to quit each year.⁷⁷ Health experts are focused on helping smokers to quit, not labelling them as criminals.

What about freedom of choice? Don't people have the right to smoke?

Yes – of course they do. We are simply encouraging tobacco-free investment. Tobacco is a children's issue with most smokers starting when they are young (in Pakistan, 40% of the population start smoking before the age of ten years),⁷⁸ well before they are able to fully understand the future, life-long risks they will face.

Country Taxes

Do countries really want to see the decline of tobacco when they collect so much from tobacco through tax?

The health treatment costs of smoking far outweigh government revenues from tobacco taxes. In other words, the tobacco industry is a net cost to society, and it may be the only industry in this position.

The additional healthcare costs as a result of smoking outweigh income from tobacco taxes with the total global economic impact from smoking estimated at 2 trillion Euros per year, the same as the cost of armed violence, war and terrorism and more than obesity, alcoholism or climate change.⁷⁹

Fiduciary Duty

We are legally obliged to consider returns so are we even allowed to consider a tobacco-free investment mandate?

Decisions and guidance indicate that fiduciary duty can be maintained whilst implementing tobacco-free investment mandates. This is evidenced by the decisions of over 35 pension funds in Australia, comprising over 300 trustees and directors, implementing completely tobacco-free investment mandates.

Will the concept of fiduciary duty be changing?

According to the Report, *Fiduciary Duty in the 21st Century* by the Principles for Responsible Investment (PRI) with The United Nations Environment Programme Finance Initiative (UNEP FI), UNEP Inquiry and UN Global Compact, "Fiduciary duty is not an obstacle to action on environmental, social and governance factors."

According to Fiona Reynolds, Managing Director, Principles for Responsible Investment, "Recent studies have broadened the interpretation of fiduciary duty away from the narrow confines of past definitions, and have emphasised that there is no conflict between fiduciary duty and ESG considerations – there is a growing recognition that ESG issues are in fact financially material to a portfolio. Using the status quo as a reason for not integrating ESG is no longer acceptable." (http://www.unepfi.org/fileadmin/documents/fiduciary_duty_21st_century.pdf)

Implementation

Which companies do you classify as tobacco companies?

Tobacco manufacturers only – not retailers or companies associated with packaging, machinery or transport.

How long will it take to implement a tobacco-free investment mandate?

Depending on the complexity of investments, divesting can be as simple as making the request to a fund manager, for others it may involve the selling of stocks, and non-renewal of investments over time.

Why divest from the tobacco industry now?

The expectations of the finance sector are evolving with finance leaders increasingly being called upon to play their part in global priorities.

With more and more people dying of long-term, non-communicable diseases (like cancer, heart disease and respiratory illnesses) and with tobacco the primary risk factor for these diseases, tobacco control is considered a global priority, as articulated in the Sustainable Development Goals.

In addition, many fund members and investors are looking to ensure their own values are aligned with their investments.

Could this be a bad news story when people see how much exposure we had?

To date the decision to go tobacco-free has been largely positively received by members and the investment community. Some organisations have seen the implementation of the decision as an opportunity to highlight the decision and to encourage others to follow. Others have made and implemented the decision without any public announcement.

The Movement**Which other financial institutions have made this decision?**

Over 35 pension funds in Australia (combined total assets > \$520 billion AUD) now have tobacco-free investment mandates.

The sovereign wealth funds of Australia, New Zealand and Norway are also tobacco-free.

Among mainstream investors, the Dutch pension fund PFZW, CalPERS, CalSTRS and several university endowments in the USA have tobacco-free investment mandates.

In May 2016, AXA announced their decision to divest tobacco industry assets valued at approximately 1.8 billion Euros.



Our Team and Contacts

Tobacco Free Portfolios Team



Dr. Bronwyn King MBBS, FRANZCR, Founder and Chief Executive Officer, Tobacco Free Portfolios, Radiation Oncologist, Peter MacCallum Cancer Centre and Epworth HealthCare

Dr. Bronwyn King is a practicing Radiation Oncologist and Founder and CEO of Tobacco Free Portfolios. Through her collaborative work with the finance industry Bronwyn has played an integral role in the decision of over 30 Australian Superannuation Funds to divest tobacco stocks worth approximately \$1.8 billion.

Her work inspired the Global Task Force for Tobacco Free Portfolios, an initiative of the Union for International Cancer Control.

Bronwyn is the Tobacco Control Ambassador for Cancer Council Australia. She represented Australia in swimming and was Team Doctor for the Australian Swimming Team. Bronwyn is an Australia Day Ambassador, an Ambassador for Big Brothers Big Sisters Australia, and in 2014 she was named an Australian Financial Review / Westpac 100 Women of Influence. In 2015 Bronwyn was awarded the VicHealth Award for Preventing Tobacco Use.

You can contact Dr. Bronwyn King at bk@tobaccofreeportfolios.org



**Clare Payne, Chief Operating Officer, Tobacco Free Portfolios,
Founder and Board Member, The Banking and Finance Oath**

Clare Payne is Chief Operating Officer of Tobacco Free Portfolios and Founder and Board Member of The Banking and Finance Oath. Initially practicing as an employment lawyer, Clare then managed the Integrity Office of a Global Investment Bank and was awarded the Inaugural Robin Cosgrove Prize for Ethics in Finance by the Observatoire de la Finance, Geneva for her paper titled, 'Ethics or Bust.' Clare also holds the position of Fellow for Ethics in Banking and Finance with The Ethics Centre and teaches business ethics at Macquarie University and The University of Melbourne, Australia. Clare was recognised as a World Economic Forum Young Global Leader in 2014 and was named an Australian Financial Review / Westpac 100 Women of Influence in 2016.

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Dr. Rachel Melsom, UK Director, Tobacco Free Portfolios

Dr. Rachel Melsom is a practicing clinician in Worthing, UK, in the Department of Elderly Care. Rachel started her career in media and finance in the 1980's, culminating in setting up and running her own media consultancy business. She subsequently trained as a doctor in 2008, with a desire to bring together the health and financial issues impacting on sustainable healthcare. Rachel also has a degree in Genetics, is a Business Leader with Founders 4 Schools, and has an active interest in developing technology to aid healthcare and training.

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CalPERS Stakeholder Relations

From: James Currie <JCurrie@coausphs.org>
Sent: Monday, November 07, 2016 12:36 PM
To: CalPERS Stakeholder Relations
Subject: Tobacco Stock Divestment
Attachments: doc00533320161107153547.pdf

Please see the attached letter. Thanks.

James T. (Jim) Currie, Ph.D
Colonel, USA (Ret.)
Executive Director
Commissioned Officers Association of the U.S. Public Health Service and
PHS Commissioned Officers Foundation for the Advancement of Public Health
8201 Corporate Drive, Suite 1170
Landover, MD 20785
(301) 731-9080

Commissioned Officers Association
of the U.S. Public Health Service



November 8, 2016

Office of Stakeholder Relations
CalPERS
400 Q Street
Sacramento, CA 95811

Dear CalPERS:

I recently attended the annual meeting of the American Public Health Association, and while there I heard that CalPERS is thinking about ending its ban on investments in tobacco and tobacco-related corporations. I hope that you will not do this for two reasons: (1) you will not gain investment income by providing financial support to entities that are killing hundreds of thousands of people a year with their products, and (2) you have such a presence in the world of investment that your decision might well trigger a stampede in that direction.

I address the first of these by saying that I direct a non-profit which divested itself just over 30 months ago of all tobacco and tobacco-related and e-cigarette-related stocks and bonds. Since that time we have found that our portfolio has performed as well as it did before the divestiture and has done as well as the stock indices that we follow.

Second, you all are the 500 pound gorilla in the room, and what you do greatly influences other institutional investors. If you abandon your principled stand against tobacco, then others may well follow your lead. That would be a disaster, because tobacco is still the worst public health problem in our country. It is a killer that costs billions of dollars and hundreds of thousands of lives. I doubt that there are many families that have not been touched by this plague.

I therefore urge you to back off from any thought of ending your anti-tobacco policy. You don't need to do it for investment reasons, and you should not do it for public health reasons.

Sincerely,

Col. James T. Currie, USA (ret.)
Executive Director

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SANTA BARBARA • SANTA CRUZ

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May 14, 2016

Henry James
 Chair, CalPERS Investment Committee
 400 Q Street
 Sacramento, CA 95811

Dear Mr. James,

I am writing to urge CalPERS, in the strongest possible terms, maintain its current policy of not investing in tobacco stocks. Such an investment will undermine California's longstanding tobacco control program, which will increase the amount of disease and death in California and would be in direct opposition of longstanding public policy in California to reduce tobacco use.

Denormalization of the tobacco industry has been a central strategy of the successful California tobacco control program since the very beginning of it after the voters stood up to Big Tobacco when they passed Proposition 99 in 1988. This theme remains a key element of the program to this day, as outlined in the current Master Plan for the California Tobacco Control Program.¹

Continuing to support California's public policy of reducing tobacco use makes economic sense. Between FY 1989 and 2008 the California Tobacco Program led to cumulative savings in medical costs expenditure of \$134 billion,² including money saved for CalPERS. Indeed, the fact that California's smoking rate is below the national average was associated with it spending \$15.3 billion less on medical costs in 2009 alone.³

In addition to these obvious issues, CalPERS needs to carefully address possible undisclosed conflicts of interest for your investment advisors, Wilshire Associates, who have also worked for Philip Morris in the past, including helping them muster arguments against divestment in the late 1990s.⁴ This is particularly concerning because the tobacco companies have a history of using seemingly "independent"

¹ State of California Tobacco Education and Research Oversight Committee. *Changing Landscape, Countering New Threats 2015 -2017*. http://www.cdph.ca.gov/programs/tobacco/Documents/TEROC/Master%20Plan/MasterPlan_15-17.pdf

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⁴ <https://www.industrydocumentslibrary.ucsf.edu/tobacco/docs/#id=injn0071> and <https://www.industrydocumentslibrary.ucsf.edu/tobacco/docs/#id=mnjn0071>

investment advisors to provide testimony that supports industry interests to policy makers, as we described in our 2004 paper "[The tobacco industry's use of Wall Street analysts in shaping policy](#)."⁵

Another reason is that the tobacco companies are established racketeers under the federal Racketeer Influenced and Corrupt Organizations Act, and still under the supervision of Federal Judge Gladys Kessler.

The *Sacramento Bee* summed up the situation appropriately when it wrote:

In 2008, when the California State Teachers' Retirement System contemplated reinvesting in tobacco, then-Treasurer Bill Lockyer issued a statement that summed up why it shouldn't:

"In this country, the tobacco industry has a history of fraud and disregard for public health. That culture of deception has been exported to Europe, Asia and other parts of the globe, where the industry's marketing targets children."

Lockyer won then. His successor, Treasurer John Chiang, is taking the same stand, as is controller and fellow CalPERS board member Betty Yee.

"No public pension fund should associate itself with an industry that is a magnet for costly litigation, reputational disdain, and government regulators around the globe," Chiang said in a statement. The rest of the CalPERS board ought to follow Chiang and Yee's lead.⁶

At the very least CalPERS needs to do a thorough investigation of conflicts of interest for Wilshire (it took me less than 5 minutes to find the two cite documents in the UCSF Truth Tobacco Documents Library (<http://industrydocuments.library.ucsf.edu/tobacco>) as well as conduct a comprehensive analysis of the impacts that such a decision would have on all of CalPERS' responsibilities, including its impact on the State of California as a whole.

At a time that the Legislature has ended years of domination by tobacco interests⁷ and passed a package of five strong tobacco control bills, it is, frankly, astonishing, that CalPERS is even considering this retrograde policy.

Sincerely yours,



Stanton A. Glantz, PhD
Professor of Medicine
Truth Initiative Distinguished Professor in Tobacco Control
Director, Center for Tobacco Control Research and Education

⁵ Alamar BC1, Glantz SA. The tobacco industry's use of Wall Street analysts in shaping policy. *Tob Control*. 2004 Sep;13(3):223-7. Available at <http://www.ncbi.nlm.nih.gov/pubmed/15333876>.

⁶ Editorial Board. CalPERS should not take up the tobacco habit again. *Sacramento Bee*. April 6, 2016. Available at <http://www.sacbee.com/opinion/editorials/article70340952.html>

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