Tobacco Industry Employment:

A Review of The Price Waterhouse Economic Impact Report and Tobacco Institute Estimates of "Economic Losses from Increasing the Federal Excise Tax"

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I. INTRODUCTION

Arthur Andersen Economic Consulting has reviewed the 1992 Price Waterhouse report entitled "The Economic Impact of the Tobacco Industry in the United States" (PW Report, the Report) and a series of follow-on documents, prepared by the Tobacco Institute entitled "Economic Losses From Increasing the Federal Excise Tax" (TI Estimates). The TI Estimates are a series of related documents, corresponding to individual states and different levels of tax increase.

Price Waterhouse purports to measure the economic effect of the tobacco industry on the U.S. economy. The Tobacco Institute documents purport to measure the effect of a tobacco tax increase on jobs in the U.S. economy. Price Waterhouse does not calculate the economic impact of increasing the federal excise tax or the impact of the tax on jobs in the U.S. economy. The estimates of the impact of increasing the federal excise tax on jobs are the work of the Tobacco Institute.

The PW Report concludes that 2.3 million Americans owe their jobs to the tobacco industry; the TI Estimates assert that a $2-per-pack tax increase would cause a total of 776,000 Americans to lose their jobs.[1] The Tobacco Institute argument seems to be that tobacco tax increases and other actions that would discourage tobacco use should be avoided to protect tobacco industry-related employment.

Our analysis concludes that both the employment and job loss figures are grossly inflated.

II. MAJOR FINDINGS

There are serious methodological problems and errors of omission (one-sided analyses likely to lead to misinterpretation) in both the PW Report and the TI Estimates. These problems lead to exaggerated estimates of both the number of jobs dependent on the tobacco industry and of the impact on jobs of increasing the federal excise tax. In the end, the methodological errors and omissions of the PW Report and the TI Estimates undermine the reliability of their conclusions.

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[1] Warner (1987) has pointed out that the Chase/Price Waterhouse/Tobacco Institute employment and job loss estimates erroneously neglect employment generated in the mortuary sector and in various medical specialties, e.g. oncology, cardiology and inhalation therapy. Tobacco is estimated by the federal government to cause 419,000 premature deaths per year by an average of 15 years, and to cost tens of billions per year in direct health care costs alone. Under the methodology of the PW Report and TI Estimates, costs associated with the death and disease caused by tobacco should be counted as economic "benefits" attributable to the tobacco industry.

A. THE PW REPORT'S ESTIMATES OF THE NUMBER OF JOBS DEPENDENT ON TOBACCO, ON WHICH THE TI ESTIMATES RELY, ARE FLAWED AND SIGNIFICANTLY OVERSTATE THE TOBACCO INDUSTRY'S ECONOMIC IMPORTANCE

1. The PW Report relies on methods and assumptions that create false and misleading results

The methods and assumptions used to produce the numerical estimates in the PW Report borrow heavily from accountants' techniques for cost allocations. The accounting profession is aware of the limitations of such methods. While the use of these techniques is necessary in certain situations, they cannot be used to estimate accurately the number of jobs dependent upon tobacco.

Analysis of the PW Report reveals that only 259,616 jobs are actually claimed to exist in the tobacco growing, tobacco manufacturing, tobacco auction warehousing and tobacco wholesaling businesses. That is only 11 percent of the widely publicized total of 2.3 million jobs. The rest of the jobs claimed to be dependent on tobacco fall into two categories:

(a) **Retail and supplier jobs.** PW's attributes a total of 431,635 jobs from the retail (166,791) and supplier (254,944) sectors to the tobacco industry. When these jobs are added to the 259,616 jobs which PW says exist in the tobacco growing, tobacco manufacturing, tobacco warehousing and tobacco wholesaling sector, the total is 681,351.

However, not all of the retail and supplier jobs are dependent on tobacco. Retail jobs consist primarily of sales clerks and other employees of retail outlets that sell tobacco products; supplier jobs consist of employees of companies that provide any supplies to any component of the tobacco industry. Relatively few of these jobs are devoted to tobacco on a full-time basis. Price Waterhouse has used the principles of cost accounting to "attribute" jobs in this category on the assumption that if, for example, 100 workers each derive 1 percent of their income from the tobacco industry, that is the equivalent of 1 full-time job "attributable" to the industry.

Jobs may be tied to the tobacco industry in this way only in a narrow and technical sense. It cannot accurately be concluded that a job in which only a small percentage of time is devoted to tobacco, and from which only a small percentage of income is derived from tobacco, is actually dependent upon the industry for existence in any real sense.

(b) **The "multiplier" or "expenditure induced" sector.** PW's use of a "multiplier" to estimate the "ripple effects" of tobacco industry spending on other sectors of the economy lies at the heart of the PW report, for it explains in large measure how such massive and unrealistic estimates were produced. Even if all of PW's other calculations were accurate, as was noted above, there would be a total of only 681,351 jobs dependent on tobacco. PW then applies a "multiplier" of 2.35 to the 681,351 number to attribute to the tobacco industry an additional 1.6 million jobs that are not in the tobacco industry, do not supply or serve the tobacco industry, and do not relate to tobacco in any other way. The "multiplier" attributed jobs are based on a formula which assumes that the money each person who works in the tobacco industry will generate 2.35 additional jobs elsewhere in the economy.

Such a multiplier may be useful for estimating the effect that any economic activity has in stimulating additional economic activity, but not for estimating the number of jobs which are dependent on continued tobacco spending. Jobs "attributed" to the tobacco industry by use of this multiplier -- more than two-thirds of the entire 2.3 million claimed -- should not be confused with jobs actually determined to be dependent on the tobacco industry for existence. In particular, these estimates provide no basis by themselves for predicting how many jobs would be lost by a reduction in tobacco spending.

The full extent to which these attribution methods inflate employment estimates is illustrated by the fact that the PW Report attributes to the tobacco industry a total number of manufacturing sector employees from non-tobacco sectors of the economy (508,901) that is 10 times greater than the 50,527 employees the same report shows to be actually engaged in manufacturing tobacco products. This number of employees exceeds 75 percent of all production workers in the motor vehicles and related equipment sector (SIC 371), and is roughly equal to all iron, steel and nonferrous metals production workers (SIC 33) in the United States.

Similarly, not only does the PW Report attribute to the tobacco industry a number of mining and construction jobs, it attributes 161,601 mining and construction jobs to the tobacco industry. This is approximately equal to the entire employment of the coal mining industry.

Jobs attributed to the tobacco industry by use of these techniques are not necessarily dependent on tobacco for a variety of reasons. Fundamentally, a wide variety of offsetting adjustments are likely to take place in the economy that are ignored by the PW Report. Money now being spent on tobacco would not disappear if demand for tobacco were to fall, as the PW Report implicitly assumes. It would be redirected to other goods and services, generating comparable employment, much of which would be in the supplier, retail and "multiplier" sectors. (This point is discussed in greater detail in Section B below.) A wide variety of other adjustments are possible, including the adjustment of profit margins and product mixes by manufacturers, wholesalers and retailers, reliance on attrition rather than layoffs to reduce labor forces in some tobacco-related businesses, etc.

The cumulative effect of PW's methods of attributing jobs to the tobacco industry is to produce patently unreliable results. Numbers produced by PW in this way are more likely to mislead an untrained reader into drawing false conclusions about the magnitude of the tobacco industry's contribution to the economy than to provide useful information to policymakers or the media.

2. The PW Report fails to take into account the negative economic impacts of the tobacco industry

The PW Report and TI Estimates ignore the severe hardships tobacco use imposes on the economy. Failure to acknowledge this or to make any attempt to balance the costs and benefits of reducing tobacco use adds to the bias and unreliability of the PW Report and TI Estimates.

While an independent assessment of the cost of smoking is beyond the scope of this analysis, the most recent U.S. government estimate places the health care and lost productivity costs of smoking for 1990 at $68 billion, or $2.59 per pack of cigarettes sold.[2] This suggests that reducing tobacco use would be likely to bring about significant economic and health benefits.

B. THE TOBACCO INSTITUTE'S ESTIMATES OF TAX-INDUCED JOB LOSS ARE UNSOUND AND EXAGGERATED

By beginning with the Price Waterhouse estimates of the economic impact of the tobacco industry on employment, the TI Estimates inherit the serious flaws in the PW Report and then compound them by making additional unwarranted assumptions. The resulting estimates are remarkable both for the magnitude of the predicted job and revenue losses and for the willingness of the Tobacco Institute to promulgate such numbers unsupported by any discussion of the methods used to produce them. The TI estimates are grossly exaggerated, and cannot be supported by any generally accepted economic methods.

1. The TI job loss Estimates are flawed because they falsely assume that money spent on taxes and/or not spent on cigarettes will disappear from the economy

One of the ways that the TI Estimates exaggerate the impact of a tobacco tax increase on jobs is by assuming that money consumers now spend on cigarettes will disappear from the economy, along with jobs and taxes, if smoking rates decline.

[2] Herdman, R.H., Hewitt, M and Laschober, M., "Smoking Related Deaths and Financial Costs: Office of Technology Assessment Estimates for 1990," Office of Technology Assessment, Washington, D.C., 1993.

This assumption is false: money not spent on tobacco will not disappear; it will be redirected to other sectors of the economy. Money spent on tobacco taxes also will not disappear; it will be returned to the economy through public sector spending on health care and other designated uses. This methodological flaw alone undermines the reliability of the Tobacco Institute's estimates.

The tobacco industry is aware of this point. The industry's own analysts, in the 1985 Chase Econometrics report, on which the PW Report and TI Estimates are based, noted that, in the event of a reduction on spending in tobacco, consumer spending would be reallocated to other sectors of the economy, and that "this reallocated spending would generate additional business opportunities in other sectors of the economy along with the associated employment and incomes." Therefore, Chase Econometrics indicated that even if tobacco spending decreased, "except for transitional problems and differential industry levels of productivity, the aggregate economic results would be substantially the same."[3]

If the Tobacco Institute had taken this basic economic reality into consideration in its estimates, it would have shown that the economy would respond to lower domestic consumption in several ways.

* Consumer spending on tobacco products would not disappear, but would be redirected to non-tobacco goods and services, creating employment and tax benefits in non-tobacco sectors. No evidence has been presented that the net effect on jobs nationwide would be negative.

* Under current proposals, additional tax revenue from higher tobacco taxes also would not disappear from the economy, but would be redirected into the health care system and to other uses directed by Congress, creating employment and other benefits in those sectors.

* Non-tobacco industry employees whose jobs PW "attributes" to tobacco as the result of the application of a "multiplier" may not find their jobs affected at all as long as overall economic spending does not decrease. The same may be true for many in PW's retail and supplier sectors.

* Affected tobacco industry workers would not remain permanently unemployed, but would obtain alternate employment in other fields. This is already happening in previously

[3] An examination of this phenomenon, the report noted, was "constrained from taking place within this analysis." Chase Econometrics, The Impact of the Tobacco Industry on the United States Economy in 1983. Bala-Cynwood, PA, Chase Econometrics, 1985.

tobacco-dependent counties in which there has been major job expansion in the manufacturing and service sectors.

Another way of looking at the redirection of consumer spending and the resulting economic adjustments is to note that there are alternatives to tobacco for both consumers and workers. If tobacco becomes more expensive, some consumers will redirect their spending to non-tobacco products and services, and farmers, manufacturers, retailers, etc., will adjust to the change by choosing the "next best alternative" to growing, manufacturing or retailing tobacco. The choice for them is not between tobacco and nothing, as the TI Estimates assume, but between tobacco and the next best alternative in a dynamic economic environment.

The major "cost" of reducing tobacco use is the transition costs for those actually dependent on tobacco for their livelihood. The effect of this transition should be neither minimized nor exaggerated. The transition could be aided by state, federal and private programs, possibly funded through the tobacco tax itself, to help affected communities adjust to what appears to be an inevitable shift toward an economy less dependent on tobacco.

Of special note, most states should anticipate economic gains from lower tobacco use, even without considering health benefits and potential health care cost savings. This is because consumer spending now flowing from those states to tobacco-producing states would be redirected to a higher proportion of locally produced goods and services. Tobacco states also could experience a net economic gain if a sufficient portion of federal tax revenue is directed toward easing the transition in those states toward a more diversified economy.

2. <u>The TI Estimates fail to take into account preexisting employment trends in the tobacco industry</u>

The TI Estimates project job losses in the future using a snapshot of 1990 industry employment estimates. This fails to take into account employment changes that have taken place since 1990, and other changes projected for the future even if no tobacco tax increase is enacted. This wrongly assumes that tobacco industry employment is in a steady state. For example, failure to take into account the steady decline in manufacturing sector employment in the industry inflates any job loss estimates. In the absence of these adjustments, the TI Estimates would unfairly attribute to the tobacco tax increase job losses that will occur in any event.[4]

[4] Allen (1993) has neatly captured the economic intuition that a policy should be assessed based on the difference it would make: "An action that will happen anyway is not a threat -- it is an inevitability."

Tobacco manufacturing jobs are now in a state of decline brought about primarily by decisions of major manufacturers to use advanced technology that eliminates manufacturing jobs. Manufacturing jobs fell from 68,700 to 49,100, or by about 29 percent between 1982 and 1992 according to Bureau of Labor Statistics figures, despite the fact that U.S. cigarette output actually increased during that period due to increased exports. Similarly, domestic sale of U.S. leaf tobacco has fallen over the past several years despite the increase in U.S. cigarette production. This decline in demand, and the corresponding drop in tobacco farm employment, is due primarily to increasing reliance by major manufacturers on imported tobacco.

This inverse relationship between jobs and cigarette production over the past decade also serves to illustrate the fallacy of assuming, as the TI Estimates do, that future tobacco industry employment will be directly proportional to cigarette sales in the United States.

3. The TI Estimates implicitly assume an implausible relationship between the price and demand for tobacco products that significantly inflates job loss estimates in response to large price increases

One of the assumptions implicit in the TI Estimates is that there is a linear relationship between tobacco product prices and consumption (i.e., an approximately linear demand curve).

All TI job loss estimates are directly proportional to the projected decline in consumption,[5] and thus are extremely sensitive to the undisclosed price elasticity of demand assumptions made by the Tobacco Institute. The assumption of an approximately linear demand curve assumes a significant escalation in the price elasticity of demand as price increases and produces unrealistically large job loss estimates for large tax increases.

While the most accurate price elasticity of demand across the range of tax increases under consideration is an empirical question beyond the scope of this review, experience in Canada, where tobacco taxes have been increased to approximately US$3 per pack, and in other industrialized nations, do not support the assumption of a linear relationship between price and demand.[6] This undisclosed assumption in the TI Estimates may compound the other serious

[5] The relationship is not quite linear. If it were, a 24 cent tax increase would be associated with a 4 percent employment loss, rather than the 5 percent assumed by the Tobacco Institute. In practical terms, however, and in light of the fact that all other data presented by the TI are consistent with a linear relationship, it can be assumed that a linear relationship has been assumed.

[6] See, e.g., Allen, R.C., "The False Dilemma: The Impact of Tobacco Control Policies on Employment in Canada," Department of Economics, University of British Columbia, Vancouver 1993, p. 36,

flaws already discussed, further exaggerating job loss estimates, particularly for large tax increases.

4. <u>The TI Estimates further exaggerate job loss by failing to take into account other significant factors, such as rising tobacco exports and the major price reductions in premium brands</u>

The TI Estimates further exaggerate potential job loss by ignoring two fundamental trends in the tobacco and tobacco products marketplace:

(a) **Exports.** According to U.S. Department of Agriculture figures, more than 34 percent of leaf tobacco grown in the United States this year is being exported.[7] Much of what is not exported directly is exported indirectly in the form of cigarettes. In fact, about 30 percent of all cigarettes manufactured in the U.S. are now bound for export markets.[8] These exports will not be affected by any proposed tobacco tax increase. Yet the Tobacco Institute Estimates wrongly assume that demand for these exports will fall by the same percentage as domestically consumed tobacco. This significantly exaggerates job loss estimates for the tobacco farming, warehousing and manufacturing sectors, which in turn exaggerates predicted job losses in the supplier and "multiplier" sectors.

(b) **Price discounting.** The tobacco industry has recently announced 40 cent-per-pack decreases in the prices of premium cigarette brands. Discount cigarettes also have been reduced in price. The Tobacco Institute's job loss projections fail to take this trend into account. This significantly overstates the amount by which tobacco consumption would decline from the current level in response to a tax increase. Because the Tobacco Institute assumes that employment falls in direct proportion to tobacco consumption, this also significantly overstates the economic impact of an excise tax increase on jobs.

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[7] U.S. Department of Agriculture, <u>Tobacco Situation and Outlook Report</u>, Economic Research Service, September 1993.

[8] Id.

III. CONCLUSION

Our conclusions include the following:

1. The number of jobs said to be dependent on tobacco is far fewer than the 2.3 million claimed on the basis of the Price Waterhouse Report. Of the 2.3 million jobs widely claimed to be dependent on tobacco, only 259,616, or 11 percent, are actually involved in growing, warehousing, manufacturing or wholesaling tobacco products.

2. The PW Report attributes 1.6 million jobs, more than two-thirds of the total 2.3 million claimed to be dependent on tobacco, from sectors of the economy that have no relation at all to tobacco by a technique that cannot be used to determine whether a job is dependent on tobacco.

3. The Tobacco Institute's Estimates of the number of jobs which would be lost if tobacco taxes were increased are grossly inflated and unreliable. The actual number of jobs affected would be a small fraction of the number cited by the Tobacco Institute.

4. Money diverted from spending on tobacco products due to a tobacco tax increase will not disappear from the economy, but will be redirected into other goods and services, creating employment and business opportunities comparable to those in the tobacco industry. Therefore, the 1.6 million jobs from outside the tobacco industry that Price Waterhouse "attributes" to tobacco-related spending are unlikely to be lost as the result of a tobacco tax increase. The same can be said for many of the 431,635 jobs Price Waterhouse states are in the retail and supplier segments of the tobacco economy.

5. Jobs in tobacco growing, tobacco manufacturing, tobacco warehousing and tobacco wholesaling which are affected by any decrease in tobacco consumption will result in a shift from one sector to other sectors of the economy, but will not necessarily result in fewer jobs being available as long as money not spent on tobacco is redirected into other sectors of the economy.

6. Most states would experience economic gains from reduced tobacco consumption, as spending in non-tobacco states that is now directed toward tobacco products is re-directed to other goods and services.

7. The PW Report and TI Estimates fail to acknowledge the significant economic benefits of reduced tobacco consumption, which include reducing lost productivity and health care costs caused by tobacco.

8. The job loss estimates attempt to project job losses on the basis of a snapshot of industry employment in 1990, ignoring the decline in tobacco industry employment that has occurred, and is projected to continue to occur, whether or not the tobacco excise tax is increased. Therefore, many jobs which the Tobacco Institute says would be lost as the result of a tax increase will be lost even without a tax increase.

9. Tobacco production probably will not decrease to the extent predicted by the Tobacco Institute. The Tobacco Institute uses a formula for measuring the impact of a price increase on tobacco consumption that is inconsistent with generally accepted research and experience in the U.S. and abroad. The actual decrease is likely to be smaller.

10. The Tobacco Institute calculations fail to take into account that a significant percentage of American tobacco production is for export. Tobacco products produced for export will not be affected by a tobacco tax increase. The Tobacco Institute also fails to take into account the fact that cigarette manufacturers have reduced prices significantly within the past several months, which would offset in large measure the effect of a price increase brought about by a tobacco tax increase. This causes the Tobacco Institute to significantly overestimate the impact of a tax increase on jobs.

These and other serious flaws in the Price Waterhouse Report and the Tobacco Institute Estimates build upon one-another in a cumulative fashion to present grossly exaggerated and misleading estimates of job loss from an increase in the federal excise tax on tobacco products.

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