

AN ANALYSIS OF INCOME AND CONSUMPTION- BASED TAXATION

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ABSTRACT

An issue in state finance is always how to raise sufficient revenues to cover all the expenditures government is called on to make. This article utilizes a few simple analytical tools of economic analysis to aid in the choice of taxes to impose on citizens.

INTRODUCTION

Several states have recently raised their income tax rate while some have increased their taxes on such goods as alcoholic beverages and tobacco. It is almost certain that taxes will not go away. An issue in state finance is always how to raise sufficient revenues to cover all the expenditures government is called upon to make. It is hoped that the use of a few simple analytical tools of economic analysis can aid in an objective assessment of the question as to which taxes should be used to collect the revenue from the people.

It is the contention of this paper that indifference analysis can be used in a simple understandable way to show on very objective grounds that the income tax is preferable to excise taxes for collecting any given amount of revenue from a citizen of state. Indifference analysis involves taking different combinations of any two products which would provide the same level of satisfaction or utility. This is illustrated in Exhibit 1 in which a consumer's taste for cigarettes is displayed relative to personal disposable income. What is shown on any particular indifference curve are combinations of physical amount of one product and amounts of income that will be spent on all other alternative products (or saved), with every point along the curve showing one level of utility. Any combinations on a higher difference curve is preferable to any of those on a lower curve. Indifference means sliding back and fourth on any curve, and preference means moving northeast to higher levels of utility.

While the indifference curve shows the taste or choice preference of a person, a budget line shows the range of choice which a given budget permits a

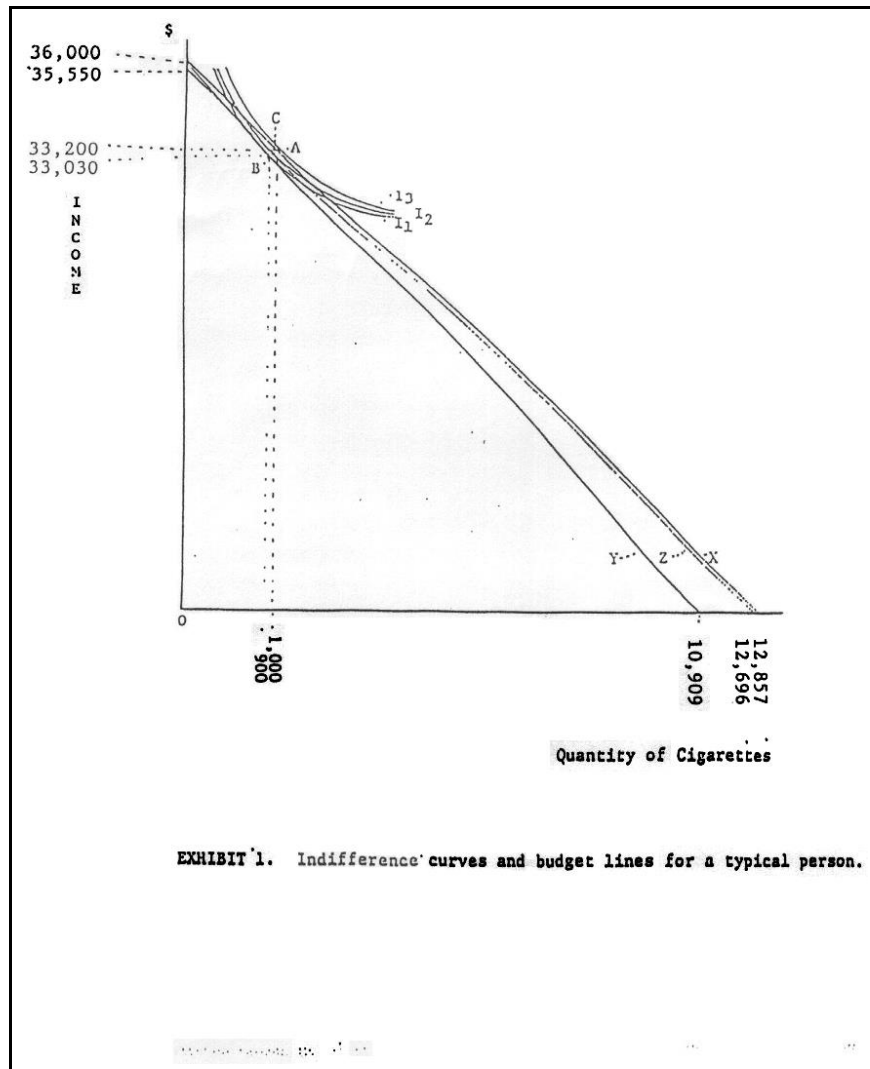
person to afford, given a market price for the products purchased. This is also illustrated in Exhibit 1. If a person has \$36,000 in personal disposable income, the choice of spending can range from spending the entire amount on a product to spending nothing on it. In reality it will be something like point A where 1,000 units are purchased at a per unit price of \$2.80 for a total expenditure of \$2,800, leaving \$33,200 to be spent on other things or saved. Point A is, in effect, a consumer equilibrium for the product given income, price of product, and tastes.

With the above as background regarding our tool of analysis, this paper is now ready to come to grips with the question as to the effect of different types of taxes on a person's choice of products and level of want satisfaction that can be achieved with a given income level. The following assumptions are made: The pattern of indifference curves reflects the preferences of some typical person; this person has an annual personal disposable income of \$36,000; the price of the product, cigarettes, is \$2.80 cents per package; and just to avoid confusion, the assumption is made that there are no taxes initially on either income or cigarettes.

Our typical person can purchase anywhere along budget line X; and since his preferences are reflected by the indifference curve, he chooses point A where \$2,800 is spent on cigarettes and \$33,200 is spent on alternative things. Point A is the highest level of utility he can achieve given this income and price for cigarettes. If the government now imposes a 50 cents per package excise tax on cigarettes, this will shift the budget line to Y and the now \$3.30 price will permit maximum possible purchase of 10,909 packages. The person is lowered in his consumer equilibrium to B where 900 packages are purchased at \$3.30 each for a total expenditure of \$2,970. This leaves \$33,030 for other spending. Out of this \$2,970, the tax portion is \$450 (900 x 50 cents). If the person had purchased 900 packages prior to the imposition of the tax, the total expenditure would have been \$2,520.

The question arises, what if the same amount of taxes, \$450 were collected from his person as an income tax, leaving the price of cigarettes unchanged. This would mean \$36,000 less \$450, or \$35,550 of after-tax income. This amount, along with the unchanged price of cigarettes, means that the budget line would be Z in Exhibit 1. Budget line Z enables the typical person to achieve consumer equilibrium at some point C, which represents more utility than B but less than A. The effect of either type tax is to lower a person's utility from what it could be, but the excise tax lowers it more than does the income tax. This is because the income tax is a reduction of "general purchasing power," and the consumer can cut spending where he wants to. On the other hand, the excise tax

raises the price of one product relative to others and thereby distorts the pattern of spending by the consumer. Another way of saying this is that with the income tax there is only an income effect as it lowers our spendable income, but with the excise tax, there is this income effect as well as a substitution effect as we change our spending pattern.



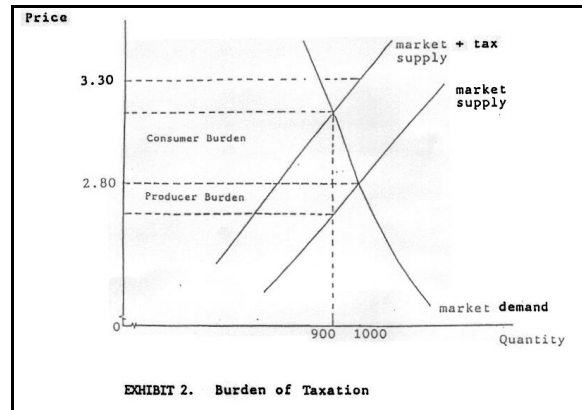
The usual argument against excise taxes has been that they relatively penalize lower income more than higher income persons. This argument is based on the contention that lower income people spend a larger portion of their income on the taxed items than do higher income people. With this analysis, excise taxes are seen to penalize each person regardless of income size due to their distortion of free choice of consumption. In conclusion, it can be argued that the free enterprise economy is enhanced by the use of tax systems that least distort the exercise of consumer sovereignty and freedom of choice. The analysis in this paper indicates that this occurs when income taxes rather than excise taxes are used.

It might be counter-argued that products like cigarettes should be discouraged due to their health effect. It has not been a purpose of this paper to deal with such health or value judgments. Instead of cigarettes, any other individual product could have been used for illustration purposes. It might also be argued that taxes on products like cigarettes might be justified if they are imposed on a seller. However, most studies of this matter indicate that the demand for cigarettes is relatively inelastic. It has been well established that the more inelastic demand is, the greater the incidence of a tax upon the consumer. Such taxes are not really a tax on consumers or a tax on producers, but a tax on the transactions between consumers and producers.

Exhibit 2 shows how the price paid by consumer and the price received by producers might change with a 50-cent excise tax. Who bears the burden of a tax depends on how the new equilibrium compares to the old equilibrium. The consumer's per unit burden is equal to the new equilibrium price. The producer's per unit burden is equal to the old equilibrium price less the price received by producers after paying the tax. Depending upon elasticities of demand and supply, the after tax equilibrium price outcome could vary. Consequently, the dollar amounts could vary in the previous analysis. The basic conclusion would remain valid though the dollar amounts could vary.

The final point to be evaluated in this paper is the equity of the principle of progressive income taxation. The issue is one of achieving equity in the distribution of the burden of taxation. It has already been argued that the income tax is, in principle, the fairest of taxes. If that is accepted as a starting premise, the issue then becomes whether the income tax rate structure should be progressive, proportional, or regressive. The usual definition is given of each of these terms

with progressive defined as higher tax rates applying to higher income tax bases, proportional being the same rate (flat rate?) applying to all income tax bases, and regressive defined as lower tax rates applying to higher tax bases.



The development of an objective and logical foundation or criteria for measuring equality of sacrifice is difficult. The argument put forth is that, ideally, taxpayers should make equal sacrifices in paying taxes out of their incomes. This does not necessarily mean equal payment of money by taxpayers at various income levels. Sacrifice is a subjective thing depending upon how fast the marginal utility of income diminishes. All of us individually have our own utility function and there is no accurate manner in which one person's utility can be added to that of other individuals. The argument put forth in this paper is that equity is achieved when the tax system results in an equal loss of utility by taxpayers.

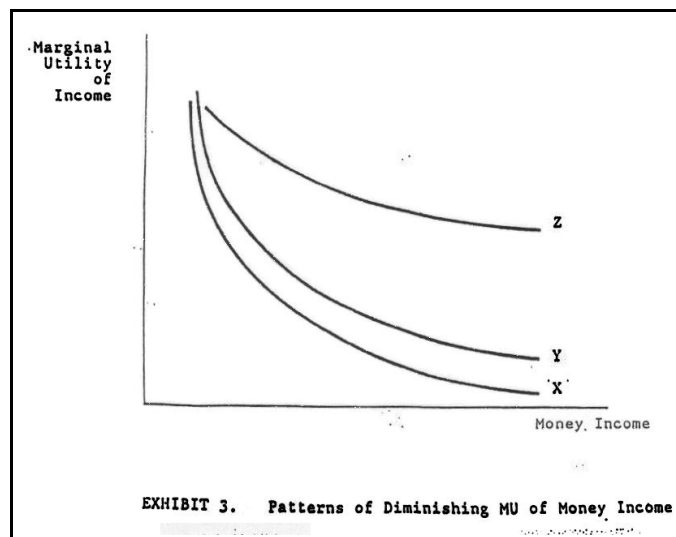
Does the above infer the progressive income taxation is fairer? The answer is perhaps, but not necessarily. Exhibit 3 displays the variation of how marginal utility of income may diminish relative to money income. Each of these relationships would give us a different answer as follows:

Y demonstrates that MU declines at the same rate as money income rises, and calls for the use of proportional taxation. The

curve is a rectangular hyperbola.

X demonstrates that MU declines at a faster rate as money income rises, and calls for the use of progressive taxation.

Z demonstrates that MU declines at a slower rate as money income rises, and calls for the use of progressive taxation.



If we could just determine which of the three relationships is characteristic, we could solve the issue. If the situation is as curve Y displays, a person with an income of \$100,000 and paying \$10,000 would make the same subjective relative sacrifice as a person with \$20,000 income and paying \$2,000. This would assume that the MU of a \$100,000 income is five times that of a \$20,000 income and $\$100,000 \times 1/5$ equals $\$20,000 \times 1$.

On the other hand, if the curve is like X, marginal utility of income declines faster than the rate of change of income thus justifying progressive taxation. In this case the \$100,000 income would have less than five times the marginal utility of the \$20,000 income, and the amount collected as taxes would

need to be more than \$10,000 to equal the subjective relative sacrifice made by the \$20,000 income person who paid \$2,000.

The purpose of this paper has not been to prove or disprove any tax propositions. Rather, it has been to make a few observations based on economic theory that offer some guidelines for thought as issues relative to taxation are explored.

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