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CONSIDERATIONS FOR THE TAX MIX*

BY BOB HAMILTON,** CHUN-YAN KUO,***
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I. INTRODUCTION

Over the past decade several countries have moved to reform their tax systems substantially. While the central theme of the reform initiatives has been to broaden the tax bases and to lower the tax rates, they have also had a significant impact on the tax mix; that is, the proportion of total tax revenues derived from various tax sources. The United States and Australia recently introduced reforms that would lower the personal tax burden and raise the corporate tax burden. The United Kingdom has undergone two significant tax reforms since the election of the Thatcher government, one of which increased sales tax revenue and reduced personal tax revenue. New Zealand has introduced a value-added tax to raise revenues, allowing a dramatic reduction in personal tax revenues. More recently, Canada has proposed tax reforms designed to lower the personal tax burden and increase the corporate and sales tax burdens.

This paper reviews changes in the tax mix in Canada and several other developed countries over the past two decades and outlines the key factors that influence it. The tax mix is often

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discussed in the context of a closed economy with pure taxes (imposed on a comprehensive base in a non-distortionary manner), and these arguments are reviewed here. However, in practice, tax policy decisions are made in open economies and typically involve very "impure" taxes. The paper illustrates that the ideal tax mix may differ between the open economy and closed economy cases. In particular, a small open economy such as Canada cannot ignore the implications of the tax systems of its major trading partners. In addition, the case for more reliance on a given tax suffers if that tax is highly distortionary and inefficient.

This paper does not offer definitive conclusions for the optimal tax mix in Canada. Rather, it presents a framework for evaluating tax mix changes and illustrates how some of the traditional arguments relating to the tax mix may be misleading. Nor does the paper comment on the important issues surrounding the overall level of taxation and the trade-off between tax and deficit financing by governments. It focuses on reforms where the overall tax revenues remain constant and only the relative share provided by each source is altered.

The paper begins by illustrating the changes in the shares of the important tax components in major OE countries since the 1960s. Part III then discusses several reasons why we observe governments using a variety of tax sources in virtually all developed countries. Part IV analyzes the tax mix in a closed economy, focusing on the major tax mix comparisons: personal versus corporate income tax, and consumption versus income as the basis for taxation. Part V discusses additional tax mix issues for an open economy, and evaluates the potential impact of broad changes to the tax mix in Canada.

II. BACKGROUND

A variety of economic factors and policy decisions have influenced the tax mix in OEC countries back to the early 1960s.

Data on the tax mix for various OECD countries as of 1983 are presented in Table 1. In general, personal income tax (PIT) and social security taxes are seen to be the dominant revenue sources, followed by sales taxes, excise taxes and corporate income tax (CIT).

There are, however, some significant deviations from these norms. For instance, the social security tax share was only 3.9 percent in Denmark, while the share of corporate income tax revenues in Japan was more than double the OECD average.

The tax mix in Canada is approximately the same as the OECD average, with two major exceptions. First, excise and other taxes[1] account for a larger percentage of revenues in Canada than other OECD countries. Second, Canada's social security tax share is well below the OECD average. The next two tables trace the changes in these tax shares over the past two decades.

Table 1
Percentage Shares of Tax Revenues
Collected from Various Sources, 1983
(All Levels of Government)

	Personal Income Tax	Corporate Income Tax	Consumption Taxes		Social Security Taxes	Other Levies	Totals
			Sales	Excises			
Canada	35.6	7.5	11.6	14.4	13.1	17.8	100.0
U.S.	37.1	5.5	7.0	8.6	28.7	13.1	100.0
U.K.	27.7	10.8	13.9	14.2	17.7	15.7	100.0
Japan	25.6	19.6	0.0	13.2	30.0	11.6	100.0
France	13.4	4.3	20.5	7.7	43.9	10.2	100.0
West Germany	28.3	5.1	17.0	9.4	35.7	4.5	100.0
Italy	27.9	9.3	14.9	9.9	35.9	2.1	100.0
Sweden	38.9	3.4	13.6	9.7	26.9	7.5	100.0
Denmark	52.0	3.0	21.1	13.3	3.9	6.7	100.0
Netherlands	21.3	6.1	14.8	7.2	45.0	5.6	100.0
OECD Average	32.3	7.4	13.6	14.5	24.1	8.1	100.0

Source: Organization for Economic Co-operation and Development, *Revenue Statistics of OECD Member Countries*, 1965-84 (Paris: OECD, 1984).

[1]These consist primarily of provincial licence fees and provincial resource royalties.

Table 2
Percentage Shares of Tax Revenue Collected From Various Sources in OECD Countries, 1965-83

	1965	1970	1975	1980	1983
Personal	26.3	28.2	31.4	33.1	32.3
Corporate	9.2	9.0	7.7	7.7	7.4
Sales	11.7	13.1	12.7	13.6	13.6
Excise	23.2	19.7	15.5	13.9	14.5
Social Security	18.2	19.8	23.7	23.8	24.2
Other	11.4	10.2	9.0	7.9	8.0
Total	100.0	100.0	100.0	100.0	100.0

Source: Organzation for Economic Co-operation and Development, *Revenue Statistics of OECD Member Countries,* 1965-84 (Paris: OECD, 1984).

Table 3
Percentage Shares of Revenue Collected from Various Sources in Canada, 1965-83

	1965	1970	1975	1980	1983
Personal	23.0	32.4	33.0	34.1	35.6
Corporate	15.1	11.3	13.7	11.6	7.5
Sales	18.2	14.4	12.5	11.5	11.6
Excise	17.1	13.2	13.6	13.0	14.4
Social Security	5.7	9.6	10.1	10.4	13.1
Other	20.9	19.1	17.1	19.4	17.8
Total	100.0	100.0	100.0	100.0	100.0

Source: Organization for Economic Co-operation and Development, *Revenue Statistics of OECD Member Countries,* 1965-84 (Paris: OECD, 1984).

The broad tax-mix changes for OECD countries over the 1965–1983 period are presented in Table 2 and can be summarized as follows:

1. an increase in the share of personal income and social security taxes;
2. a decline in the corporate income tax share;
3. a slight increase in the sales tax share; and
4. a marked decline in the share of excise levies and other taxes.

In Canada, similar trends were observed (see Table 3). The major deviations from the general trend were the sharp decline in sales tax revenue share and the persistently much smaller share of social security taxes, although social security tax revenues grew sharply over this period.

Several key factors appear to have contributed to the empirical evidence outlined above. Tax policies are not designed in isolation and, as such, tend to reflect the general economic conditions and the social and political environment. The 1960s was a decade of generally favourable economic conditions: high growth, low unemployment, and modest inflation. There was little pressure on governments to introduce or enrich industrial subsidies, or to provide selective tax incentives for savings and investments. As a result, corporate and personal income tax systems continued to provide a stable source of revenues. The share of personal income tax increased steadily over this period as the higher growth in average personal incomes pushed individuals into higher rate brackets.

This period also witnessed a significant expansion in the social security system, reflecting, in part, the increased focus on achieving a fairer distribution of wealth. This led to an increase in overall government expenditures for most OECD countries. These expenditures were financed either by increases in direct social security contributions or through the automatic increases in the personal income tax generated by the economic growth (the *fiscal dividend*). Thus, the share of both of these sources increased during this period.

In the 1970s, the broad economic picture turned into one of slower real growth, increased inflation, and increased unemployment. The high inflation produced natural increases in personal, sales, and corporate taxes. Government spending also continued to increase, partially in response to these factors. The recognition of inflationary biases in the corporate income tax led to a series of fiscal initiatives. The early 1970s saw the introduction of investment tax credits, accelerated capital cost allowances, inventory allowances, and other inflation-correcting measures in several countries.[2] These measures

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[2]For example, the introduction of the Asset Depreciation Range (ADR) in the United States in 1971.

were also designed, in part, to respond to concerns about declining productivity and growth. These incentives produced revenue losses that, in many instances, more than offset the increase in revenues as a result of increasing nominal corporate profits due to inflation.

The General Agreement on Tariff and Trade (GATT) also appears to have influenced tax policies over this period. This agreement severely limited the use of tariffs as a tool for industrial and commercial policy, and prompted an ever-increasing use of the corporate tax systems to provide targeted assistance to slow-growth industries and regions in a country. The DISC provision in the United States, the lower corporate tax rate for the manufacturing and processing profits and the regionally differentiated investment tax credits in Canada are examples of this phenomenon.

The net result of these initiatives was a period of declining corporate tax revenues. By the end of the 1970s, corporate tax revenues had stabilized again in many countries. For the OECD as a whole, corporate tax revenues declined between 1970 and 1975, then changed very little until the 1980s. The corporate tax share in Canada declined from over 15 percent to about 11-12 percent, and stabilized at that level throughout the 1970s.[3]

General sales tax revenues as a fraction of total revenues declined slightly between 1970 and 1975 (Table 4). The OECD average dropped from 13.1 to 12.7 percent in this period. However, as a fraction of gross domestic product, the sales tax revenues rose slightly from 4.2 to 4.6 percent. This suggests that sales tax revenues kept pace with economic growth, but the increased reliance on direct taxes reduced the relative share of sales taxes.

In Canada, sales tax revenues dropped sharply from 18.2 percent in 1965 to 12.5 percent in 1975 (see Table 4). During this period federal sales tax was removed from a number of commodities, such as clothing, footwear, and candy and confectionery. This was seen at the time as an effective way of providing stimulus to consumer demand without adding to inflationary pressures in the economy. These tax cuts were facilitated by strong growth in the

[3] A temporary 10 percent surtax in 1974 and 1975 boosted the corporate tax revenue share to 13.7 percent in 1975.

personal income tax revenues resulting from higher inflation rates and the lack of any indexing mechanism.

The share of other consumption taxes also declined significantly between 1965–1975 in Canada as well as other OECD countries. These taxes consist largely of specific excise levies, and their values were eroded by inflation over this period.

The overall tax mix for the OECD countries changed little over the 1975–1983 period. There were slight increases in the shares of personal income tax and sales tax, and slight decreases in the shares of other consumption taxes and other tax revenues. In Canada, however, the share of corporate tax revenues decreased further to less than 10 percent over this period, due in part to the severity of the 1981–82 economic recession and in part to the cumulation of excess, unused depreciation allowances, tax credits and other investment incentives.

In summary, the economic prosperity of the 1960s, and the high inflation and expansion of the social security system in the 1970s, combined to produce tax systems where personal and social security taxes dominated, corporate taxes declined, and consumption taxes remained stable.

Table 4
Percentage Shares of Tax Revenue
Collected from General Sales Taxes, 1965-83

	1965	1970	1975	1980	1983
Canada	18.2	14.4	12.5	11.5	11.6
U.S.	4.6	5.6	6.7	6.6	7.0
U.K.	5.9	6.5	8.8	14.4	13.9
Japan	—	—	—	—	—
France	23.2	25.5	23.3	21.0	20.5
West Germany	16.5	17.1	14.6	16.6	17.0
Italy	12.9	13.2	14.3	16.3	14.9
Sweden	10.4	10.3	12.0	13.4	13.6
Denmark	9.1	18.8	16.9	22.2	21.1
Netherlands	12.4	14.6	14.4	15.9	14.8
OECD Average	11.7	13.1	12.7	13.6	13.6

Source: Organization for Economic Co-operation and Development, *Revenue Statistics of OECD Member Countries,* 1965-84 (Paris: OECD, 1984).

The 1980s, by contrast, have seen economic hardships and large government deficits, and have forced governments to re-evaluate

their tax systems. The focus has swung towards designing an efficient tax system with lower rates, a broader base and fewer selective preferences. The significant increases in the share of direct personal taxes that have occurred over the past two decades have also led to increased interest in the tax-mix issue and in methods of lowering the personal tax burden.

III. POLICY CONSIDERATIONS IN THE TAX MIX

Virtually all countries generate revenue through a variety of tax sources. However, the relative importance of the various components in a country's tax system varies significantly across countries. This Part identifies a number of factors that impinge on the choice of an optimal tax mix, and provides an explanation for why multiple tax sources are observed in all countries.

A. *Ease of Compliance and Administration*

Ease of compliance and administration is clearly an important consideration in the choice of tax mix. The use of a personal or corporate income tax, for example, demands a certain level of sophistication among not only the bureaucracy, but also among the taxpayers themselves. These forms of taxation require the use and maintenance of proper books of account and well-developed procedures for the recording and invoicing of transactions. These requirements are often not met in developing countries, and it is for this reason that these countries tend to rely more on tariffs and excise levies on manufacturers, which are simpler to administer and comply with. In fact, it has been suggested elsewhere[4] that an index of the level of development in a country could be the extent to which it relies on income taxes. For example, in the United States tariffs accounted for over 55 percent of government revenue in 1885; whereas they currently account for less than 1 percent of revenues.

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[4] H.H. Hinrichs, *A General Theory of Tax Structure Change During Economic Development* (Cambridge: The Law School of Harvard University, 1966).

B. *Multiple Objectives*

The tax system is often asked to simultaneously perform several functions: raise revenue, distribute the revenue burden according to particular social values, provide incentives for certain economic activities or regions, extract revenue from foreigners and assist in achieving other policy objectives such as international trade policy. One would not expect a single tax to be able to handle all of these functions optimally. Rather, different objectives of the tax system are often best handled by different taxes.

For example, the personal tax is often seen as the major redistributive tax in the system, yet it is ineffective in achieving fiscal objectives such as regional incentives or particular investment incentives. Conversely, though the sales tax is often seen as an efficient, simple revenue raiser, sole reliance on it would produce an incidence pattern most governments would shy away from.

In other social, political, and economic factors there are also large differences between countries that we would certainly expect to lead to the use of different tax systems. This also explains the substantial variance in the tax mix across countries, despite the strong pressures for harmonization of tax policies.

C. *Marginal Excess Burdens*

The marginal excess burden (MEB) of a tax is the efficiency cost of raising an additional dollar of revenue from that particular tax source. Since the efficiency cost of a tax increases by the square of the tax rate, as a tax rate is increased the MEB of that tax becomes higher and, more important, may become higher than the MEB of an alternative tax. From an efficiency standpoint, additional government revenues should be raised from the tax with the lowest MEB. Recent work for the United States[5] shows that the MEB for the overall tax system is about 33¢ per dollar of tax revenue raised. The MEBs for the various tax sources, per dollar of tax revenue, are 31.4¢ for personal tax, 46.3¢ for capital taxes and 38.8¢ for sales

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[5] C.L. Ballard, J.B. Shoven & J. Whalley, "General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States" (1985) 75 Am. Econ. Rev. 128.

taxes. Although these estimates are sensitive to parameter values and vary from country to country, for this best-guess scenario we see that the personal tax is the most efficient and that capital taxes are the least efficient revenue sources.

Gillespie[6] offers a somewhat similar argument in a political context. He postulates that governments equate the marginal political costs and marginal political benefits of raising revenues through the various taxes. The equilibrium is where all taxes have equal marginal political costs. These political costs could arise from economic costs, but are also intended to capture the political component of tax reform.

D. *Stability of Revenues*

Stability of revenues is also a consideration in designing a tax system, and there are a couple of reasons why a variety of tax sources could produce more stable government revenues. During business cycles, a mix of taxes will provide greater revenue stability than reliance on a single tax. A period of declining corporate profits, for example, could produce less corporate tax revenue but more personal tax or sales tax revenues. If government expenditures are relatively constant, stability of revenues is essential.

In addition, the risk of evasion or avoidance of any particular tax makes it desirable to have a portfolio of tax sources, the idea being that someone is less likely to be able to escape all taxes. For example, if an individual is able to escape taxation on income, he or she may still be liable for some tax indirectly if there is a broad-based sales tax.

E. *Level of Taxing Jurisdiction*

In a federal system, particular taxes are better suited to particular levels of government, although there is often substantial overlap. This places constraints on the tax mix for any particular level of government. Two key factors that may determine taxes used

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[6] W.I. Gillespie, "Tax Reform: The Battlefield, The Strategies, The Spoils" (1983) Can. Pub. Admin. 182.

by particular governments are the degree to which the taxes paid are related to the benefits provided and the mobility of factors.

For pure public goods, such as national defence, where the benefits accrue to all individuals equally, a tax based on the ability to pay (that is, an income tax) seems appropriate. In other cases, however, the benefit principle may be more appropriate. For instance, municipal services, the benefits of which are closely related to property values, could be financed through a property tax. Indeed, it has been argued that local governments should concentrate solely on "benefit-related" taxes, leaving income and consumption taxes to higher levels of government.[7]

This argument can be carried further, to suggest that consumption taxes may be most appropriate to finance consumption-related government benefits like medical services and education. In Canada the provincial governments are largely responsible for these services. Relating taxes to the nature of the benefits they finance may suggest natural divisions in tax sources, with property taxes appropriate for the lowest levels of government and income taxes appropriate for the highest levels.

If factors (capital, labour) are completely mobile across regions within a country, then a region will find it difficult to increase its tax on a particular factor above the level of other regions. Dramatic differences in personal income tax burdens between regions can certainly contribute to labour movements into or out of that region. These mobility considerations are important in the taxation of capital, which is the most mobile of all factors of production. This suggests that taxes on mobile factors be left to the central government as much as possible. This argument has parallels in an international context, as we will see later.

Lower levels of government that use sales taxes also have to worry about driving out purchasers to surrounding jurisdictions. In Canada we see this, in a limited manner, in cities which lie near provincial borders. Certainly if municipalities were to impose sales taxes, this type of inter-jurisdictional shopping would reduce the tax

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[7] C.E. McLure, "Comments" in J.A. Pechman, ed., *Comprehensive Income Tax* (Washington, D.C.: The Brookings Institution, 1977).

base of high-tax areas. Again, this has parallels in the international context.

IV. THE TAX MIX IN A CLOSED ECONOMY

This Part discusses the relative merits of the major tax sources in an attempt to understand the economic rationale behind using these taxes. We focus on choices between income and consumption taxes and between personal and corporate income taxes, revisiting some of the standard tax mix arguments and providing several interesting extensions.

It seems crucial to distinguish between discussions of pure and impure taxes. Discussing pure tax systems allows us to distill the key characteristics without becoming bogged down in practical details. However, actual tax systems are often composed of quite impure taxes, and the economic effects of actual taxes could be significantly different from the effects of their pure counterparts. For instance, a pure personal income tax would distort savings, whereas the personal income tax in Canada contains many relieving provisions for savings and investment income, and its impact is significantly different from that of a pure income tax.

Similarly, the federal manufacturers' sales tax in Canada is generally believed to be highly distortionary and inefficient. Even the staunch proponents of consumption taxes would shy away from recommending increased reliance on a sales tax of this form. Until this tax is made more efficient, an increase in reliance on sales taxes and reduction in personal taxes could be bad for Canada. With a reformed sales tax, however, the effects could become positive.

A. *Equivalences in Taxation*

It may be useful here to outline some equivalences between various types of taxes to illustrate that often different tax sources can be used to tax the same base in a different way. This suggests that the effects of differences in tax mix between countries can, in some instances, be more perceived than real.

The equivalences that are described below require certain restrictive assumptions: that the economy is closed, that there are

perfect capital markets, that there is only one level of government, that the tax is comprehensive and has a uniform rate, and that there are no bequests and inheritances.

The most basic equivalence is between a value-added consumption tax and a retail sales tax. This simply states that the retail price of a good is the sum of all values added in production. These are also equivalent to a pure profits tax[8] plus a payroll tax, since a value-added tax has two components: a tax on wages and a tax on pure profits (or economic rents). In fact, if pure profits are equal to zero, then a consumption tax is equivalent to a payroll tax.[9] Finally, we see that a personal expenditure tax is equivalent to a sales tax, since these are merely two ways of taxing consumption.

Several interesting points can be made about tax mixes once these equivalences are recognized. In the absence of pure profits, a country can substitute a payroll tax (such as social security contributions) for a sales tax, since their economic effects will be equivalent. If pure profits are non-zero, then a cash-flow corporate tax (a tax on corporate profits computed by allowing a full and immediate deduction for depreciables and inventories but no deduction for interest or dividends) may be required to maintain the equivalence. This suggests that some of the observed differences in tax mixes may be due simply to different countries using different methods to tax the same base.

Reforms in Canada have moved the personal income tax partially towards an expenditure tax by virtue of the exemptions given to savings and investment income (pension contribution deductions, $1,000 investment income deduction, capital gains exemption). This suggests that replacing some personal tax revenues with a value-added tax may have only limited aggregate economic effect. This illustrates the basic point that in a comparison of tax sources the differences between countries may not be as dramatic as they seem.

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[8]Pure profits are defined as profits over and above the normal rate of return on capital employed.

[9]This well-known equivalence is illustrated in A.B. Atkinson and J.E. Stiglitz, *Lectures on Public Economics* (London: McGraw–Hill, 1980).

The equivalences noted above are dramatically altered once we move away from the restrictive assumptions on which they are based. The closed economy assumption is perhaps the most significant. With no international trade in goods or factors of production, taxes on consumption can be shown to be similar to taxes on factor incomes (for example, on payroll or profits). However, in an open economy this is no longer true. Consumption taxes are traditionally applied on a destination basis (that is, they apply to imports but not to exports), while taxes on factor incomes are applied on the basis of origin (that is, where the incomes are earned). Their impact on trade patterns and factor movements is thus likely to be quite different in an open economy.

B. *Consumption Versus Income Taxes*

Along with the income taxes, most developed countries employ some form of general sales tax at the retail level, either of the value-added type or a retail sales tax. Canada and the United States are two notable exceptions to this rule. In Canada, the provincial governments impose retail sales taxes but the federal government has a sales tax applied at the manufacturers' level. The U.S. federal government has no national sales tax, although many states do have retail sales taxes. Over the past two decades many countries, especially in Europe, have moved to a value-added tax. These often replaced existing gross turnover taxes or relatively narrowly-based sales taxes.[10]

There has been considerable debate and discussion among economists about the relative merits of income and consumption taxes. Although the arguments in favour of consumption (or expenditure) taxation have a long history,[11] two fairly recent documents have had a great deal of impact on the consumption

[10] As a prerequisite to joining the European Economic Community, countries are required under the 6th Directive to implement a VAT.

[11] See, for instance, N. Kalder, *An Expenditure Tax* (London: George Allen & Unwin, 1955).

versus income tax debate. The *Meade Report* (1978)[12] and the *Blueprints for Basic Tax Reform* (1977)[13] both articulated the arguments in favour of consumption taxes clearly and forcefully. Although they did not have an immediate effect on policy reforms, they have certainly been catalysts for a noticeable shift among some public finance economists and policy-makers towards consumption taxes.

In a closed economy context, the main arguments in favour of consumption taxes include inter-temporal efficiency and administrative simplicity. Let us examine them in turn.

Taxes which do not distort decisions regarding the level of savings and investment are said to be inter-temporally efficient. Sales taxes are inter-temporally efficient because they only tax current consumption; the income return from savings is not taxed until it is spent. Therefore individuals' savings decisions would not be affected by a pure sales tax. Inter-temporal efficiency could be a reason for replacing a pure income tax with a pure sales tax, but in practice the argument may be less than compelling. First, if the income tax is taxing capital income at a reduced rate, then the reform may not alter the inter-temporal distortion significantly.

Second, any gains in inter-temporal efficiency may be offset by its adverse impact on the labour–leisure choice. The pure income tax base differs from the pure consumption tax base only to the extent that there are savings. If there are positive savings, the income tax base becomes broader and a lower rate is needed to raise equal revenue, producing less distortion to the labour–leisure choice. In this sense the personal tax is more efficient than the sales tax.

Administratively, income taxes are very difficult to run in their purest form. In fact, a key argument in favour of consumption taxes over income taxes is that correct measurement of income is very difficult due to adjustments required for inflation, depreciation, and accrued but unrealized amounts of income. These adjustments

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[12] Institute for Fiscal Studies, *The Structure of Reform of Direct Taxation* (London: George Allen & Unwin, 1978) (Chair: J.E. Meade) [hereinafter *Meade Report*].

[13] United States Department of the Treasury, *Blueprints for Basic Tax Reform* (Washington, D.C.: U.S. Government Printing Office, 1977).

for correct measurement of income are essential at both the corporate and personal levels. In each case the method to be used in applying the tax is clear, but it is either too complex or the information necessary is not readily available. A consumption tax, on the other hand, is typically run on a cash-flow basis allowing immediate expensing of capital purchases. Therefore, the consumption tax is neutral with respect to inflation, and depreciation schedules are unnecessary.

In addition, sales taxes are typically collected in smaller pieces, whereas the income tax is collected in large sums. This makes the income tax somewhat more visible, reduces the risk of and effects of tax evasion, and may also reduce pressures for the introduction of selective tax preferences.

The major criticism of sales or consumption taxes is their regressive nature. Since lower-income households consume a larger fraction of their income than higher-income households, consumption taxes tax a larger percentage of the income of lower-income households. This argument is correct in annual terms, but is very misleading if we consider a longer time horizon. Considered over a lifetime, a comprehensive, uniform rate sales tax can be viewed as equivalent to a wage tax, and is seen as a proportional tax on all income groups. In essence, savings do not escape taxation; rather, taxation is delayed until the income is used to consume goods and services. This implies that sales taxes are not regressive, but proportional across income groups, especially for those who leave limited bequests.[14]

One can go even further and assert that sales taxes are progressive, at least at low-income levels. The argument is that low-income households receive a relatively large share of their income in the form of transfer payments, which are typically indexed (at least partially) to changes in the general price level.[15] Therefore, low-income households are largely insulated against sales tax

[14] J.B. Davies, F. St-Hilaire, & J. Whalley, "Some Calculations of Lifetime Tax Incidence" (1984) 74 Am. Econ. Rev. 633.

[15] E.K. Browning, "The Burden of Taxation" (1978) 86 J. Pol. Econ. 649-71.

Notwithstanding these arguments, a personal income tax provides much greater flexibility than a sales tax in achieving a progressive distribution of tax burden. The personal income tax is an indispensable component of the tax system if that system is to serve the objective of redistribution of income. This rationale for a personal income tax is, however, often misinterpreted to suggest that even a partial shift from a personal tax to sales tax is regressive or otherwise burdensome to lower-income households. The invalidity of such an assertion can be illustrated with the help of an example. Consider a simple change where all households in Canada are provided a refundable personal income tax cut of $100, and the resulting revenue loss is made up by an appropriate, uniform, percentage sales tax on all goods and services. The net impact of such a change in revenue mix would be highly progressive across all income ranges. The increase in the sales tax burden for the lower-income families would be much less than the $100 decrease in their personal income tax. In Canada, for example, households below $25,000 (in 1982 dollars) of income would account for one-half of the total personal tax cut, but bear only about one-third of the total sales tax increase. It is thus misleading to suggest that a change in tax mix with greater reliance on sales taxes is necessarily regressive.

One interesting question is whether the consumption tax should take the form of a personal expenditure tax or a sales tax. The former is calculated annually by taking the aggregate of an individual's income and subtracting his or her savings during the year. The latter is collected and remitted by businesses as they provide goods and services to consumers, with no need for any calculation of incomes or savings. Administratively, a sales tax is much simpler than an expenditure tax. It involves fewer taxpayers (only business firms as opposed to all households) and simpler procedures for audits and assessments. A personal expenditure tax, on the other hand, involves all of the complexities of an income tax (such as definition of income, reporting of income, tax deductions at source, and depreciation schedules) and additional complexities related to definition and measurement of savings. The only advantage of personal expenditure tax is that it can be imposed at progressive tax rates.

Much of the discussion above relates to a choice between a pure consumption tax and a pure income tax. In Canada, however,

both of our personal income tax and sales tax systems are impure. The personal income tax contains many relieving provisions for savings and investment income. The sales tax system does not apply to a range of goods and services and is highly distortionary in its impact where it does apply.

Such hybrid and impure systems often result in the worst outcome. It has been suggested elsewhere[16] that the largest gains in efficiency may come from moving to either a pure income or pure consumption tax; the difference between the two is less important.

C. *The Income Tax Mix: Personal Versus Corporate*

The income tax systems in all developed countries apply the tax to both individuals (or households) and corporations. While personal income taxes have generally been accepted as integral parts of a tax system due to their distributional characteristics, the rationale for the corporate tax has been a source of debate for a number of years. The corporate tax is seen in its ideal form as a withholding tax and, more recently, as a method of taxing the pure profits of firms.

In this context, it is useful to distinguish between a classical system and an imputation system. Recognizing that corporate profits are taxed at the corporate level and then again when they are distributed to shareholders, various systems, referred to as imputation systems, have been used to provide a credit to individuals for taxes already paid at corporate level to avoid double taxation of corporate profits. A system that takes no account of this double taxation is referred to as a classical system.

Canada's corporate tax is closer to an imputation system in that there is a high degree of integration between the personal and corporate taxes by virtue of the dividend tax credit (and also partial inclusion of share-capital gains in income). The United States, on the other hand, has a classical system with no dividend tax credit or other form of relief to shareholders for the corporate income tax.

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[16] B. Hamilton & J. Whalley, "Border Adjustments and US Trade" (1986) 20 J. Int'l Econ. 377-83.

paid by individuals. Corporations may submit the cheques, but the higher prices of their output, or lower returns to shareholders or workers, reflect the ultimate burden of the tax. As such, it has been argued that the corporate tax is at best unnecessary except as a withholding tax, and at worst a severe penalty to capital income.

There are two possible counter-arguments to this view. First, the corporate tax may be one method of extracting benefits that are provided to corporations by the government. Second, the corporate decision-making process may be such that these corporations are properly viewed as distinct entities. That is, are corporations best thought of as merely a group of shareholders, or are they more properly viewed as separate entities, and taxed accordingly? In the absence of a one-to-one correspondence between the well-being of the corporations and their shareholders, a case could be made for the classical system.

The degree of integration between the corporate and personal tax clearly has implications for the tax mix. In a closed economy with full integration, the corporate tax share is irrelevant as it is merely a withholding mechanism for the personal tax. Any discussion of the mix between corporate and personal tax is therefore meaningful only under a system with less than full integration. Under a pure imputation system, the rate of corporate tax is set by reference to the rate applicable to individual shareholders, and the overall share of corporate tax depends upon the share of corporate profits in the national income.

The revenue mix can still be subject to policy discretion if the tax system is not pure; that is, if there are provisions that favour certain types of income, investments, activities or groups of taxpayers over others. For example, governments can reduce or increase the overall share of corporate tax by providing more or fewer incentives to businesses relative to employees or individuals with portfolio investments. In many ways, the public debates about revenue mix in Canada, as well as abroad, are directed not so much at the balance between corporate and personal tax, but at the balance in the taxation of income from business and non-business sources. It is likely the case that in most countries the revenue yield of the corporate tax, even as a pure withholding tax, would be substantially higher were it to be applied on a comprehensive base with no selective investment incentives.

This, indeed, is the primary thrust of tax reform initiatives in the United States and Canada, as well as other industrialized countries. It does not appear that any country is moving closer to either of the two types of corporate tax systems as outlined above. Rather, they are trying to modify their existing systems, which are usually riddled with special preferences and high marginal rates. The general trend is toward increased effective tax rates through reduced statutory rates and broadened bases, with more uniform application across sectors and different types of investments.

While there are no clear conceptual arguments for the imposition of an unintegrated corporate tax in a closed-economy context, the *Meade Report* suggested that the corporate tax could be designed in a classical system to capture the pure profits of corporations. By capturing only the pure profits of firms, the corporate tax would not affect the investment decisions of firms at all and would thus be an efficient tax. While a strong argument could be made for increasing the share of such a tax in the tax mix, the revenue potential of such a tax would be extremely limited because of its small base. In fact, under perfectly competitive market conditions, the pure profits would be close to zero.

Beyond these basic tax mix questions, we now briefly discuss the role of social security taxes and excise taxes in tax mix in a closed economy.

D. *Social Security Taxes*

Some would argue that social security contributions are not taxes at all and should be excluded from analysis of tax systems. While this may be true of systems that are essentially insurance schemes, it is not true of most current social security systems. If a social security system is essentially an insurance fund whereby a household contributes as its members work and then while retired withdraws the entire amount, including interest built up, then the contributions should not be considered a tax. However, in practice these schemes appear to be more akin to a transfer from one segment of the population (working) to another (retired); they are clearly very similar to a tax. The case is strengthened if the programme is not fully funded and must be supplemented by general

revenues. It is probably most constructive to think of social security contributions as payroll taxes.

In Canada the major contributory social security programmes are the Canada and the Quebec pension plans, the unemployment insurance programme, hospital and medical insurance, and workers' compensation. These programmes are financed from either tax-like payroll deductions or general revenues or both.

If social security taxes are viewed as payroll taxes, then our earlier discussion suggests an equivalence between the steady-state effects of social security and sales taxes, as both, in their purest form, are equivalent to a tax on wages. This might suggest that a comparison could be made between high sales tax countries and high social security tax countries to see if these sources were being substituted for each other. However, this equivalency rests on some very strict assumptions. In practice, social security taxes often have exemptions and ceilings, and sales taxes often have multiple rates and are somewhat less than comprehensive. Under these conditions, the effects of the two taxes are likely to be quite different.

Social security systems that are effectively transfers from working to retired cohorts can influence the level of savings in an economy. Feldstein[17] argues that the U.S. social security system caused individuals to reduce their savings by about 30 percent. This effect, however, arises from the availability of social security benefits, and not from the method of financing those benefits. There is no reason to believe that the impact on savings of a social security system financed by a payroll tax would be any different than one financed by a sales tax.

It has been suggested that payroll taxes distort the capital–labour ratio by taxing labour more heavily than capital. A consumption tax, however, taxes the output, and therefore results in a neutral treatment of capital and labour. This seems to suggest that our earlier equivalences between payroll and sales taxes are incorrect. However, this argument is misleading, since capital used in a payroll tax system will have been subject to taxation by virtue

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[17] M.S. Feldstein, "Social Security, Induced Retirement and Aggregate Capital Accumulation" (1974) J. Pol. Econ.

of the labour used to construct it. Therefore the equivalence still holds.

E. *Excise Taxes*

The theoretical justification for excise taxes and their use in practice appear to be very different. In theory, selective excises can be optimal because they can correct for externalities or selectively tax low-elasticity products or luxuries. In fact, an extensive literature on optimal taxation has been built up to illustrate these theories.

In practice, however, it appears that excises are used as a means of extracting revenue from socially acceptable sources. The heavy taxation of alcohol, tobacco, and fuels may have justifications in the arguments of externalities and user fees, but in practice no attempt is made to link the level of taxation with the perceived social costs. The tax level appears to be driven by revenue requirements more so than by economic reasoning.

V. CONSIDERATIONS IN AN OPEN ECONOMY

While many of the same arguments from the closed economy analysis can be applied to an open economy, there are also many new considerations. In fact, a small open economy may well pursue a strategy completely opposite to that which would be predicted for a similar, but closed, economy. The degree of factor mobility (labour and capital), discussed earlier in a regional context, is also important internationally. The presence of various foreign-tax crediting schemes is also a critical factor when determining the desired tax mix.

In an open economy, taxes can be applied either on an origin or a destination basis. On an origin basis, the tax is applied at the point of production; exports leave tax-paid and imports bear no domestic tax. On a destination basis, the tax is applied at the point of consumption; exports leave tax-free and imports are taxed at the border. Income taxes are an example of the former and sales taxes an example of the latter.

A common perception is that an economy's international competitiveness is improved if taxes are administered on a destination basis. Indeed, the United States has argued for many years that the increased reliance on destination-based taxes (VAT) by the EEC has given it an unfair trade advantage over the United States, which has relied much more heavily on origin-based taxes. The United States argues that EEC producers exporting to the United States do not pay the VAT and also do not pay any U.S. taxes, whereas U.S. producers exporting to the EEC pay both U.S. income taxes and EEC value-added taxes. On the surface it appears to be a tremendous advantage for EEC producers.

Economists, on the other hand, have traditionally dismissed this line of reasoning by explaining that exchange-rate adjustments will compensate for this apparent tax distortion and, consequently, the basis of the tax becomes irrelevant.[18]

A couple of additional points should be made. First, economists have traditionally illustrated their proposition with models where sales tax rates are uniform across all commodities. While this simplifies the exposition, it may be misleading. In practice, tax systems have multiple rates and, in particular, are often heavier on manufacturing products. Hamilton and Whalley[19] show that with non-uniform rate taxes the basis of taxation can indeed make a difference. They show that because of trade patterns and the structure of these taxes, the United States may in fact be better off having the EEC administer its VAT on a destination basis.

This further illustrates the difference between pure and impure tax systems. For a comprehensive, uniform rate tax, the basis may not matter at all. However, once non-uniform taxes are considered, the picture is complicated and the correct strategy will depend upon the pattern of imports and exports and the rate structure and coverage of the tax.

Origin-based taxes will also be affected by the degree of factor mobility. Just as we saw that factors of production moving

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[18] H. Shibata, "The Theory of Economic Unions: A Comparative Analysis of Customs Unions, Free Trade Areas and Tax Unions" in C.S. Shoup, ed., *Fiscal Harmonization in Common Markets*, vol. 1, Theory (New York: Columbia University Press, 1967).

[19] Hamilton & Whalley, *supra*, note 16.

across regions within a country can erode a tax base, the international mobility of these factors can influence tax policy in an open economy.

A. *Labour Mobility*

Labour is clearly more mobile within a country than across borders, although the difference may be less dramatic between developed countries. However, there are several key factors to remember when discussing labour mobility.

First, there is very little empirical evidence studying the degree to which labour is mobile across borders. However, casual empiricism suggests that for most of the population there is effectively no mobility decision, because of immigration restrictions and cultural differences. Most of the opportunity to cross borders appears to come at the upper end of the income scale. Executives for large multinationals and highly specialized professionals are examples of the limited group of people who realistically could face a decision regarding which country to work in.

Second, even among this mobile crowd, we often focus solely on their personal tax considerations. Indeed, in recent years with the popularity of analysis based on marginal tax rates, the focus is often on the marginal personal tax rates faced by these people. This is misleading because international labour movements are not marginal decisions; migration decisions are all-or-nothing. These individuals should instead consider the relative average tax burdens in the two countries, considering the effects of the entire tax system (sales, income, property, and other taxes). A complete model would also consider the benefits of government expenditures. In short, labour mobility has more to do with total fiscal burdens than with marginal tax rates, and this differentiates the analysis of labour taxation from that of capital taxation.

The implications for the tax mix are quite clear. If the policy objective is to keep labour in the country, changing the tax mix is of limited use. Lowering personal marginal tax rates and broadening bases, while desirable for other reasons, will not typically induce people to stay. Shifting the tax burden from personal to sales taxes

may not have any direct effects on labour mobility because the total tax burden will not have changed.[20]

Two caveats should be mentioned here. First, if individuals suffer from some sort of tax illusion and only consider changes to net wages, then they could move in response to personal taxes or payroll taxes. If this is the case, then shifting the tax burden to another source, perhaps sales taxes, could induce labour to stay. Second, some taxes can be passed on to foreigners or capital owners. If these taxes are increased, the total tax burden on domestic labour will decline and this could affect mobility decisions. This is discussed below, where we consider capital taxes.

B. *Capital Mobility*

The corporate tax plays an important role in an open economy where capital is mobile across international borders. Because most countries impose a corporate tax, the degree of capital mobility is a very important consideration for the tax mix, especially in the presence of foreign tax credits.

Foreign tax credits are typically part of a domestic country's corporate tax system. Although they vary in detail, the general thrust is to give a credit to domestic corporations for corporate taxes paid abroad at the lesser of the domestic and foreign rates of tax on the income. As a result, where foreign taxes are fully credited, the relevant average corporate tax rate for a domestic firm is the domestic rate no matter where the income is earned.[21] The case of a small open economy (Canada) will best illustrate the importance of this for tax policy.

If capital is perfectly mobile internationally and the country is small enough that its actions do not affect the international market, it faces an exogenous net-of-corporate-tax rate of return on capital. With a complete foreign tax credit, foreigners' investments

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[20]If the mix change also results in a more efficient tax system overall, then there could be some mobility response. Also, there could be a response to a regressive shift in the tax burden from the higher-income groups (mobile) to the lower-income groups (immobile).

[21]This ignores the deferral incentive. Since domestic corporate taxes are not due until the income is repatriated, there may be an advantage to a firm in deferring this repatriation if the foreign tax rate is lower than the domestic rate.

in Canada will not be affected as long as the Canadian corporate tax rate is at or below the foreign corporate tax rate. However, if the Canadian corporate tax rate rises above the foreign rate, Canadian taxes cannot be fully credited and foreign investment in Canada will decline.

This has clear implications for tax policy and the desired tax mix. There is a built-in incentive to have a corporate tax just equal to the corporate taxes abroad. All Canadian corporate taxes paid by foreign corporations are, in effect, transfers from foreign treasuries to Canada's treasury with no effects on investment behaviour. If domestic corporate taxes are completely integrated with the personal tax, the tax burden on domestic residents is not affected by this corporate tax; it only affects foreign taxpayers. In one sense the optimum share of corporate taxes is predetermined by the tax systems in other countries. The above discussion illustrates that factor mobility places a constraint on the revenue that a small open country can collect from factors of production. The severity of this restraint is an empirical matter, but it clearly exists.

This points to the importance of destination-based taxes, such as sales taxes, for small open economies. This is especially true if the cost or level of government services is relatively higher than in other trading partners. In this case increasing origin-based taxes, in response to the extra burden caused by additional government financing costs, may simply cause factors to migrate abroad. Consequently, increases in destination-based taxes may be more attractive to these governments. In the Canada–U.S. context, this suggests that reforms that increase the sales tax share and reduce the personal and corporate income tax share could be desirable. Again, this hinges on the degree of mobility of these factors.

VI. SUMMARY

This paper discussed a number of factors that impinge upon the choice of an optimal tax mix. It is worth emphasizing three observations in conclusion. First, much of the debate and discussion in the literature relates to polar extremes of exclusive reliance on one type if tax – usually either an income or consumption tax. In reality, however, most countries use a mix of taxes to meet their

revenue needs, and the arguments advanced in the literature, which primarily discuss single-tax systems, may not be valid for marginal changes in the tax mix. For example, while the replacement of a personal income tax by a sales tax would clearly be a regressive move, a partial shift from one to the other need not be so.

Second, analysis of the optimal tax mix where the taxes under consideration are pure, textbook-style taxes, may not provide much insight into the appropriate mix in actual tax systems. The various components of tax systems are, in practice, impure variants of the taxes usually analyzed. The appropriate mix of these impure taxes is not necessarily related to the ideal mix of pure taxes.

Third, the optimal tax mix in an open economy is likely to be quite different from that in a closed economy. In particular, for a small open economy like that of Canada, destination-based taxes play an important role in providing needed revenues to fund additional government services and programmes.