TAXES AND TRADE

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Abstract

This paper discusses the interactions between appropriate tax design and international trade, emphasizing issues for developing countries. It sets out the impacts of various taxes on trade and overall economic performance, delineating these effects into those from explicitly trade related taxes (such as tariffs), and the wider set of non trade related taxes such as income, corporate, sales and other taxes. It then moves on to review a number of current debates on trade and taxes; including whether developing countries should rely less on trade and taxes such as tariffs and more on broadly based taxes, such as VAT; broader tax adjustments in sales taxes, tax competition, and corporate tax impacts on trade. The conclusion offered is that trade issues impinge on tax design in many central ways.

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1. INTRODUCTION

This paper discusses how the structure of taxes affects both the composition and size of trade (both imports and exports), and how trade considerations influence the appropriate design of taxes. Illustrations from developing country experience are used to inform and concretise the discussion.

The paper begins with a discussion of the ways in which taxes and trade interact. At a theoretical level, as Melvin (1970, 1975) showed some years ago, taxes can induce trade when in the absence of taxes no trade takes place. In that sense, taxes can be a determinant of trade. However, since trade is the difference between consumption and production, both types of trade taxes (tariffs/export taxes) also serve to restrict trade. Trade taxes impose welfare costs on both the consumption and production sides (see Husted and Melvin (2001)). Impacts on smuggling (Sheik (1974) and Pitt (1984)) and the role of evasion are also discussed. Taxes on specific types of consumption reduce trade if the good in question is an importable, and they promote trade if the good is an exportable. Taxes on the non-traded goods sector transfer economic activity to traded goods sectors and hence promote trade. Taxes on factors that are passed backwards to owners of immobile factors have limited trade impacts, but enter as cost factors impacting trade through production related cost effects if factors are mobile (see Whalley (1980)). All of these mechanisms through which trade and taxes are linked are developed.

This is followed by a discussion of more concrete tax/trade issues related to development. The first is whether there should be a general presumption to move away from trade taxes as revenue-raising devices in lower income developing countries to more broadly based taxes. This is often argued for on the grounds they distort both consumption and production, and apply to a narrower base (consumption less production, or vice versa) than just consumption or production. At the margin, they therefore have considerably higher
distortionary costs per unit of tax revenue raised (see Clarete and Whalley (1987)). Their redistributive effects, however, remain an issue and if protection is pro-poor there may be arguments for preserving it. Next comes a discussion of the VAT and border adjustments (origin/destination principle) (de Meza, Lockwood and Myles (1994)). How to apply VAT at the border is discussed. Finally come issues involving tax competition (Wilson (1999)) and corporate tax design, such as tax holidays (Leechor and Mintz (1991)), foreign tax credits (Bruce (1992)) and other such considerations, including international competitiveness. The principles developed in the previous section are applied to each of these issues.

The discussion builds centrally on a typology of major taxes found in the developing world, which vary by level of income and type of economy. These include trade taxes/tariffs/export taxes, sales/VAT, specific excises, corporate, income and resource taxes. The relative importance of these taxes as well as their structure varies by country. Trade performance by volume (trade shares/GDP) and composition (imports/exports) are discussed, and the general expansion in trade volumes, in recent years are all highlighted as to the ways they affect tax design.
2. MECHANISMS LINKING THE STRUCTURE OF TAXES AND THE COMPOSITION AND SIZE OF TRADE

The design of tax structures in both developed and developing countries is influenced by many things, including the ways in which taxes affect both the composition and size of trade. While taxes are used primarily to raise revenue, it is widely agreed that they should be as neutral as possible in their impact on resource allocation in the economy, and hence not undermine international competitiveness and be as neutral as possible in their impacts on trade. Redistributive objective also enter tax design, typically in the degree of progression in the income tax, and in offsets to perceived regressivity in sales and social security taxes.¹ Musgrave and Musgrave (1990) provide an extensive discussion of objectives in tax design.

Trade volumes as a percentage of GDP have been growing steadily in recent decades, reflecting the oft quoted claim (see WTO (1998)) that global trade growth has been double that of global income growth for most of the post war period since the 1950s, while in the decade of the 1990s trade growth was roughly triple that of income. Table 1 reports data on trade/GDP ratios for selected countries which shows this trend of increasing interdependence. For rapidly growing Asian economies, annual trade growth rates in excess of 50% were commonly observed in the early high growth surge period (such as Korea in the 1960s), although these high rates are now much reduced. Increasing interdependence and trade penetration are thus the norm in growing economies, and this is a central factor influencing tax design.

¹ Sales taxes are perceived to be regressive because higher income groups save a larger fraction of their incomes; while social security taxes are thought to be regressive because of the cap on contributions at specified income levels. See Whalley (1984) for a discussion of incidence treatment in the literature.
Table 1
GDP and Trade Growth Rates By Country

<table>
<thead>
<tr>
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<tr>
<td>Developed Countries</td>
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<td></td>
</tr>
<tr>
<td>US</td>
<td>4.1%</td>
<td>13.60%</td>
</tr>
<tr>
<td>EU (15)</td>
<td>3.3%</td>
<td>8.69%*</td>
</tr>
<tr>
<td>CANADA</td>
<td>4.7%</td>
<td>12.04%</td>
</tr>
<tr>
<td>Developing Countries</td>
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<td></td>
</tr>
<tr>
<td>CHINA</td>
<td>7.3%</td>
<td>23.92%</td>
</tr>
<tr>
<td>S. KOREA</td>
<td>7.8%</td>
<td>20.83%</td>
</tr>
<tr>
<td>INDIA</td>
<td>3.9%</td>
<td>12.45%</td>
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<td>BRAZIL</td>
<td>3.2%</td>
<td>12.26%</td>
</tr>
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<td>UGANDA</td>
<td>2.2%</td>
<td>8.33%*</td>
</tr>
</tbody>
</table>

* Trade of the Extra EU(15) export + imports

WTO “Annual Report 2002”
2.1. Taxes as a Determinant of Trade

Perhaps the simplest place to start in any discussion of trade/tax linkage is with the observation that taxes themselves can influence, and even be a determinant of trade. This was pointed out some years ago by Melvin (1970, 1975).²

Much of the trade literature concerns itself with what it is that causes trade to flow between countries. Ricardo, in his original formulation of trade in wine and wool between the UK and Portugal developed the principle of comparative advantage. Under this, countries will tend to export those commodities in which they have a comparative, as distinct from an absolute, advantage. This principle still forms the cornerstone of trade theory. From the 1920’s on, trade literature concerned itself with what determines comparative advantage. Hecksher-Ohlin trade theory focussed on differences in relative factor endowments; and developed the so called Hecksher-Ohlin trade theorem stating that countries will tend to export the commodity whose production is relatively intensive in the factor in which the country is relatively abundant. More modern formulations focus on the large size of intra industry trade in manufactures between OECD countries that seemingly has no simple Hecksher-Ohlin explanation, and stress industrial organization and market structure features as the determinant of this trade.

That taxes can be a determinant of trade can be seen from Figure 1. Here we have a simple two good economy with X₁ and X₂, both being produced and consumed. Point A represents an equilibrium where at the given world prices for the two goods consumption equals production and no trade occurs. This is by construction in this case, and is not a general proposition. If, however, a consumption tax on good 1 is introduced, consumption moves to point B, where internal consumption prices from world prices even through trade

² See also the recent book by Hauffler (2001) on the impacts of taxes on the global economy.
takes place along a world price line. Trade results, and in this case is caused solely by the presence of taxes.

Taxes then can determine the direction and size of trade flows, and potentially are an important element in understanding trading patterns between countries. OECD countries generally have larger tax takes from GDP than lower income developing countries, while European Countries rely more on indirect (sales and excise) taxes than in North American economies. Differences in tax levels and composition are thus relevant to any discussion of trade.

**Figure 1**

*Taxes as a Determinant of Trade*
2.2 The Effects of Trade Related Taxes

Beyond the role of taxes as a determinant of trade, it is also important to understand the effects various kinds that taxes themselves have on trade. For the purposes of the discussion here, I will divide tax effects linked to trade into direct effects associated with explicitly trade-related taxes, and indirect effects derived from the collection of non-trade taxes. Trade related taxes refer to tariffs collected on imports, and export taxes (or subsidies; negative taxes) collected as exports leave a country. These are all measures directly administered at the national border. Non trade taxes are the much larger and more revenue significant taxes such as income, corporate, sales, VAT, excise, social security, property and other taxes.

Historically, trade related taxes have been an important source of revenue in all economies because such taxes were relatively easy to collect. Even as late as the 1920s over half of revenues collected in the US economy originated from the tariff. In the last four or five decades, tariffs have greatly declined as a revenue source in developed countries, and now comprise less than half a percent of revenue. But low income developing countries with only rudimentary sales and income tax bases still rely heavily on tariffs (50% of revenues would be an high number now, and only seen in low income African economies). This is despite extensive trade liberalization in these economies from the mid 1980’s on. In growing economies in Asia and elsewhere, this dependence has been falling more sharply than elsewhere. Export taxes have never had the same revenue significance as tariffs, but like tariffs their relative importance has also been declining.

Both tariffs and export taxes have as their principal effect one of retarding trade; reducing trade volumes on both the import and export side and imposing economic costs through their induced resource misallocation effects. These are illustrated in Figures 2(a) and 2(b) for tariffs and export taxes respectively.
Figure 2

Effects of Tariffs and Export Taxes on Trade Volumes and Welfare

Figure 2(a) – Tariff

Figure 2(b) – Export Tax
In Figure 2(a) a demand supply diagram shows the case where at the world price \( p^w \) consumption \( q^c \) exceeds production \( q^p \) and imports \( q^c - q^p \) occur. A tariff at rate \( t^m \) raises both consumer and producer prices to \( p^w(1 + t^m) \) and consumption falls to \( \hat{q}^c \), while production increases to \( \hat{q}^p \). A tariff at rate \( t^m \) thus has the effect of reducing trade by stimulating production and retarding consumption.

In addition, a tariff at this level imposes excess costs on the economy. Area A represents excess costs on the demand side, often referred to as consumer surplus. At \( \hat{q}^c \) the marginal valuation of an extra unit of consumption is \( p^w(1 + t^m) \), since marginal utility equals the consumer price. In contrast, the marginal social cost of importing an extra unit of consumption is \( (p^w) \), and the tariff results in foregone consumption benefits until the demand price equals the world price at \( q^c \). This yields the consumer surplus area A.

Area B represents excess costs on the supply side, often referred to as producer surplus. At \( \hat{q}^p \) additional domestic production stimulated by the tariff costs \( p^w(1 + t^m) \), while imports could be purchased at a price \( p^w \). These excess costs disappear at \( q^p \), where the domestic supply price equals the world price.

Export taxes have similar effects in retarding trade, as shown in Figure 2(b). Here domestic prices fall below world prices, increasing consumption from \( q^c \) to \( \hat{q}^c \), and lowering production to \( \hat{q}^p \) from \( q^p \). Trade falls from \( q^p - q^c \) to \( \hat{q}^p - \hat{q}^c \); and excess social costs shown again by the areas A and B are imposed. This classic analysis of the effects of tariffs and export taxes on trade and welfare can be found in standard international trade texts such as Husted and Melvin (2001).

The effects of other trade restricting instruments, such as quotas, can also be evaluated from a similar perspective. If import quotas are auctioned or sold by government,
then revenues will accrue as under a tariff. In this case, quota restrictions will raise domestic prices, and there is a simple equivalence between a tariff and a quota. The price raising effect of the quota is often referred to as the tariff equivalent of the quota.

If, however, quotas are administered in other ways, this simple equivalence will break down. If, for instance, quotas are issued freely by government, then the revenue from the quota accrues to the quota holder, not to the government. Tariffs and quotas differ in this case in their income effects.

Another variant on quota analysis rests on the idea of rent seeking associated with quotas. This refers to the use of real resources to seek out rights to quota; such as firms taking on excess labour to demonstrate unemployed labour which can be reemployed with imported components if quota is given to the firm. In these cases, real resources equal to the value of the quota may be devoted to rent seeking activities. This means that no revenue accrues from the quota, it is dissipated in rent seeking, and welfare costs of quotas substantially exceed those of equivalent tariffs.
Trade taxes with multiple goods

Trade taxes can also have further effects where rates vary by commodity. If tariffs or export taxes apply at different rates to different commodities, they will affect the composition as well as the volume of trade. Figure 3 presents a case where there are two traded goods, with tariffs at different rates on the two goods. Demands and supplies of the two goods are functions of the prices of the two goods. Tariffs at different rates on the two goods shift demand and supply curves for the two goods differentially and affect the composition as well as the volume of trade. These are shown by the hatched demand and supply functions in Figure 3 shifting as tariffs on the two goods are introduced. As drawn in Figure 3, low tariff goods will tend to be traded more than in a no tariff equilibrium and high tariff goods less. These effects, however, will also depend on the slopes of the demand and supply functions, and hence on elasticities.
Figure 3

Trade Taxes (Tariffs) and the Composition of trade

Figure 3(a) – good 1 (high tariff)

Figure 3(b) – good 2 (low tariff)
Impact on the non-traded goods structure

Trade taxes also have the effect of diverting economic activity into the non-traded goods sector and hence further reducing the volume of trade. The non traded goods sector comprises several key service items, such as retail and wholesale trade, as well as government, professional and other services. By many counts, in most OECD economies the non-traded goods sector is large (perhaps 50% of GDP) and hence the response by it to trade taxes is important in evaluating the performance of the overall economy.

Figure 3 highlights the response of the non-traded goods sector to a tariff imposed on the traded goods sector. Prices of non-traded goods rise; since the demand curve for non-traded goods shifts outwards due to the effect of the tariff on traded goods, while the supply curve shifts inwards as domestic producer prices for traded goods rise. This in turn has impacts back on the traded goods market affecting both their consumption and production.

Indirect and Unintended Effects of Trade Taxes

Trade taxes can also generate indirect (or unintended) effects on economic activity. Trade taxes, for instance, can be the source of smuggling, and evasion of taxes can occur either for imports or exports (see Sheikh (1974), Pitt (1981, 1984)).

Smuggling represents socially wasteful activity in which real resources are used to avoid payment of the tax; in effect, tariff revenues that would otherwise accrue to the government are now dissipated in real resources devoted to smuggling. Smuggling, in turn, can coexist with corruption, where again real resources are devoted to evasion of taxes, either by bribing officials or by mis-invoicing and other related schemes. Relative to smuggling, bribery can be a more efficient outcome insofar as tariff revenues are transferred as payment to officials, and benefits accrue to bribers in the form of profits from resale of lower cost imports.
Trade taxes can also impact on the foreign exchange market. Tariffs restrict imports, and with unchanged monetary policy will have either positive or negative effects on exchange rates depending on elasticities of import demand. If there are fixed exchange rates and rationed foreign exchange with a surrender requirement for exporters, there will be a premium on foreign exchange on parallel (or black) markets. A tariff serves to reduce this premium, as the premium itself serves as a surrogate tariff. A 10% tariff, for instance, will serve to reduce the foreign exchange premium by 10 percentage points.
Figure 4

The Impact of Tariffs in the presence of non traded goods
Central to the outcome in this area is what form of enforcement device is used by government agencies to control such practices as smuggling and at what economic cost. Enforcement is often taken in the literature to be based on two separate elements; one is the fine charged on bribers and smugglers if caught, and the other is the probability of detection. From a purely efficiency point of view, it is cheapest to use large fines for those caught as the enforcement device and devote smaller amounts of resources to detection. This is, however, typically not done partly because of the risks of incorrect apprehension, with a draconian penalty being exacted on a compliant taxpayer. It also reflects the general philosophical belief that the punishment should fit the crime. For these reasons, then, penalties for evasion of small trade taxes are usually moderate, and hence smuggling and evasion frequently occur in lower income economies with limited administrative infrastructure.

2.3 Trade Effects of Non-trade Taxes

In most economies non-trade taxes are by far the most significant source of revenue for government compared to those raised from direct trade taxes. Here one has in mind income, corporate, excise, broadly-based sales (VAT), social security, property and resource taxes. By affecting relative production costs and consumption though consumer price effects, each of these can have a direct effect on trade. Key to their trade effects are the extent to which taxes are passed forward in the form of higher prices for inputs and final products, or the extent to which taxes are passed backwards and wholly (or partially) borne by fixed factors or sector specific inputs. A further set of trade effects reflect the extent to which non-traded goods sectors are relatively lightly taxed, and hence economic activities involving traded goods are discouraged by the tax system.
Forward and Backward Shifting of Taxes

A key way in which non-trade related taxes can have impacts on trade is by being shifted forwards to buyers of products in the form of higher prices. The issues are whether taxes on the use of capital as an input (corporate taxes, for instance) enter as higher capital costs and show up as added production costs, and whether taxes on intermediate inputs, such as taxes on gasoline, have similar effects. To the extent that such tax-induced effects are commodity or sector specific, they impact on relative costs and hence affect trade through impacts on consumption and production.

These effects are illustrated in Figure 5. Here, taxes which get built into domestic costs of production shift the domestic supply curve from $S$ to $S'$. In the case of goods which are importables, trade volumes expand as domestic production contracts. For exportables, trade volumes contract as exports fall with reduced production.

Thus, in assessing the trade impacts of non-trade taxes it becomes critical to evaluate the degree of forward shifting that occurs with various taxes and the ways in which they impact on production costs. Table 2 gives some examples of key non-trade taxes and the ways in which they can each be forward or backward shifted. Whalley (1984) and Fullerton and Metcalf (2002) discuss incidence treatments in the literature. The corporate tax is often treated as a tax on the return to capital investments made by incorporated businesses. To the extent that the tax increases the cost of capital as an input, it is passed forward in the form of higher input costs. If it is not passed forward, then the tax falls on owners of capital as a lowered return to investment. In the 1950s, and based on the econometric work of Kryzaniak and Musgrave (1963), the corporate tax in the US was thought to be fully shifted forward to consumers in the form of higher product prices for consumers. Later, however, Harberger (1962) developed a general equilibrium model of the US economy in which the corporate tax was treated as a tax on the use of capital inputs in
Figure 5

Impacts of Forward Shifted Production Taxes on Trade

Figure 5(a) – Importables Sector

Figure 5(b) – Exportables Sector
only one sector (the incorporated sector) and showed that capital bears the burden of the corporate tax, implying no forward shifting and hence no trade effects from the tax.

In contrast, excise taxes are typically treated as commodity-specific taxes that are passed on in the form of higher prices to buyers of taxed commodities. In the case of gasoline, one of the more prominent of such taxes, trade effects occur because fuel is an input into production and enters into costs (and hence prices). If exports are intensive in their use of fuels, such taxes will reduce them. If importables are intensive in their use of fuels, such taxes will encourage imports which displace domestic production. The precise degree of pass forward depends on the elasticities of demand and supply functions for taxed commodities.

Payroll (or social security) taxes are another element of tax structure which can influence trade. They vary in importance from country to country, but to the degree that such taxes are viewed as pure taxes and not as benefit-related charges for which benefits and taxes roughly offset, these are usually treated in the literature as taxes on labour. The extent to which they affect costs depends once again on demand and supply elasticities in the labour market. It is common in the literature to assume 50% forward shifting for such taxes, and hence if exports are labour intensive they are retarded, while if importables are labour intensive imports are stimulated.

A final set of taxes listed in Table 2 are resource taxes. To the extent that the returns to non-renewable depletable resources, such as metallic ores or oil and gas, reflect a pure rent then any taxes on them are borne solely by the owners of such resources. In reality, however, any such taxes will also affect new exploration activity and hence impact on supply. If, however, the market for resource products (oil) is global rather than national, and if the country involved is relatively small there will be little impact of tax-induced changes in exploration on prices, and such taxes will still be backward shifted with impacts on trade reflecting longer run impacts on reserves generated from changes in exploration.
Table 2

Forward Shifting and Impacts on Production Costs and Trade

<table>
<thead>
<tr>
<th>Tax</th>
<th>Mechanism For Forward Shifting</th>
<th>Degree/Significance of Shifting</th>
<th>Trade Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Tax</td>
<td>Higher cost of capital</td>
<td>Often assumed in literature shifted 50% forward to consumers –50% backwards to capital owners</td>
<td>Costs of capital intensive goods relatively more affected. Exports of OECD countries, imports of developing countries</td>
</tr>
<tr>
<td>Excise Taxes (fuel)</td>
<td>Higher fuel prices for energy users</td>
<td>100% forward shifting typically assumed</td>
<td>Energy intensive exports of OECD countries (energy intensive imports of developing countries) retarded</td>
</tr>
<tr>
<td>Payroll/Social Security</td>
<td>Higher gross of tax wage rates</td>
<td>Depends on demand-supply elasticities for labour – often assumed 50% forward/backward shifting in literature</td>
<td>Exports of labour intensive products retarded</td>
</tr>
<tr>
<td>Resource Taxes</td>
<td>Non-shifted-shifted backwards to resource owners</td>
<td>Backward shifted</td>
<td>None</td>
</tr>
</tbody>
</table>
**Taxes, Economic Structure and Trade**

A further important effect that taxes on trade can have is through indirect effects that change the composition of economic activity in various ways, and hence trade flows. Several prominent features should be noted in this connection.

One is the relatively light taxation of the non-traded goods sector in most countries, and specifically housing. In many economies around the world, housing comprises a large portion of the economy-wide capital stock (perhaps 50% of household net wealth). Housing is relatively lightly taxed compared to most other assets. The imputed income stream from housing accrues to owner-occupiers who effectively rent from themselves and this goes untaxed, as does the capital gain accruing to homeowners. In some economies, interest paid on mortgages is also deductible under the income tax adding to the lighter tax treatment of housing. These elements combine to direct more resources into housing than would otherwise be the case, a key tax effect from the overall tax treatment of the non-traded goods sector, which reduces the volume of trade.

Another element is the tax treatment of service sectors. These tend to be more heavily populated by small family-owned and unincorporated businesses than is true of the manufacturing sector where the bulk of trade occurs, and hence are lightly taxed. Also, under the VAT it is common in most countries to exempt key service activities such as banking, once again adding to the lighter tax treatment of these sectors in general. To the extent that economic activity in them is stimulated and activity in tradeables sectors is retarded there will also tend to be a negative impact on trade volumes from this element of tax structure.
3. TRADE RELATED ISSUES IN CONTEMPORARY TAX POLICY DEBATE

With this background on the mechanisms through which taxes and trade interact, it is now possible to move on to discuss a number of contemporary policy debates involving taxes and trade. These are discussed in general terms, although they all relate to both developing and developed economies.

**Trade Taxes versus Broadly-Based Consumption Taxes**

A central issue in tax design in low income countries over recent decades has been whether such countries should be encouraged to move away from trade-based taxes, such as tariffs towards more broadly-based consumption taxes, such as a VAT. This has generally been the position taken by World Bank country missions advising on tax policy.

The arguments in favour of using a VAT rather than trade taxes usually run as follows. The first is that because the tax base is consumption rather than imports (consumption less production) it is considerably larger, and hence to raise a given amount of tax revenue a lower tax rate can be used. This will generally be less distortive. A second is that tariffs distort both consumption and production, in contrast to the single distortion of consumption associated with a broadly based consumption tax. On these grounds, tariffs yet again tend to be more distortionary than consumption taxes.

The third, and related, is that the marginal welfare costs of raising additional revenues from a tariff tend to be high compared to a yield equivalent consumption tax or VAT. This is because two distorting margins are involved rather than one, and the tax base of trade taxes is narrow compared to a consumption tax. In a study on the Phillipines, for instance, Clarete and Whalley (1987) put the ratio of marginal welfare costs of tariffs to taxes at 9:1.

All these reasons are often cited for the general presumption that in tax design, broadly-based consumption taxes dominate narrower-based trade taxes. Other factors include
evasion of tariffs through smuggling and false declaration, and other unintended effects of tariffs noted earlier.

Such comparisons, however, generally assume that the VAT at issue will be broadly based and non distorting, which in practice is rarely the case. Generally financial services and housing are exempt or lightly treated under the VAT, giving lighter tax treatment to the non traded goods sector and hence a retarding effect on trade. Also the rural/traditional sector (typically agriculture) is usually lightly taxed adding both to the distortionary effects of the tax and the relatively small tax base. Thus a comparison between a tariff and a broadly based VAT is not a fair comparison in practice as a basis for guiding policy, although the general presumption in favour of a move away from trade to consumption or production taxes remains and is widely appealed to in policy debate. Even if a VAT has exemptions and multiple rates, generally it is believed that in terms of welfare costs per dollar of revenue raised it will dominate the use of a tariff.

**Border Adjustments for Broadly Based Taxes**

A further central trade related tax issue (of some long-standing) concerns both the GATT/WTO legality of and the economic effects of adjustments made for taxes as goods flow across national borders. These adjustments are primarily associated with broadly based retail sales and value added taxes (VAT) and implicitly reflect the difference between taxing consumption or production. Adjustments for services where no customs clearance takes place (such as banking) remain as a separate matter.

The issue at stake here involves the two separate bases for administering these taxes in terms of the way national borders operate. One involves the so-called origin principle. Under this, taxes apply at the point where goods originate or are produced. Under this
principle, imports enter a country tax free, while the price of exports embodies those taxes which are built into production costs and go unrelieved.

The other basis, and the one which is the most widely used at an operational level is the destination basis, which reflects taxes on the basis of point of consumption. Under this, taxes apply at the point where consumption takes place. Imports are taxed, while any value added or other taxes collected in the production chain for a good exported are rebated.

There has been much debate both over the relative merits of these two principles and whether they have effects on trade. Originally, and in the 1960s, it was thought that the origin principle was disadvantageous to a country’s trade compared to the destination principle, since taxes applied to exports but imports entered a country tax free. The US, in particular, made much of this argument during the early stages of the GATT Tokyo Round (1973-79), by arguing that heavy reliance by them on origin-based income and corporate taxes compared to the EU VATs placed them at a major trade disadvantage.

Subsequently, however, analytical work showed that in the simple case where there are only traded goods and all are taxed at a single uniform rate, a move from an origin to a destination basis (or vice versa) will be neutral in terms of its trade impacts (see Grossman (1980), Whalley (1979), and De Meza, Lockwood and Myles (1995)). One tax is a broadly-based production tax, and the other a broadly-based consumption tax, and moving between these in a simple model is from one non-distorting tax to an other. The change in tax treatment can be simply accommodated by an exchange rate change, or adjustment in the price levels across the two trading economies leaving real trade flows unchanged. No impacts on trade occur since the effect of the tax basis change is neutral in its trade impacts. In general then, it is now widely accepted that no tax advantage accrues in terms of trade impacts from using either the origin or the destination basis in the administration of broadly based sales taxes.
In reality, however, basis switches at issue are for impure, and hence distortionary, tax regimes. Hamilton and Whalley (1986), for instance, use a numerical general equilibrium model of major world trading areas and show that between the EU and the US, the EU is a net exporter of manufactures. These tend to be more heavily taxed under the EU VATs. Hamilton and Whalley’s results show that using an origin basis becomes advantageous to the EU because a tax on production operates akin to an export tax and improves the EU terms of trade. In this case, under discriminatory taxes an origin basis benefits the EU, although there are no general results one can appeal to once one moves away from the non distortionary case.

A further set of issues concern restricted principles of various forms for broadly based taxes. One that has been analysed (Whalley (1979)) is the use of the origin principle for trade among member countries of a regionally integrating trade area, along with the use of the destination principle for trade between member countries and non-member countries (this has been proposed in the past for the EU). This is termed a restricted origin or destination basis. In some federal states, structures such as this apply to internal trade between regions as against trade between regions and other countries. Whalley shows that movements, say, from a general origin to a restricted origin principle can only be neutral in their effects on trade if restrictive conditions held; typically bilateral balance in trade between members of the trade integrating area and non-member countries.

**Tax Competition**

A further current issue hotly debated in terms of international impacts from taxation is that of tax competition (see Wilson (1999)). Here the issue is less the direct effects of taxes on trade, but rather whether in the presence of mobile factors, such as capital, jurisdictions
will be induced to compete one with another to attract the mobile factor as an addition its tax base.\(^3\)

The argument is that by lowering tax rates relative to other jurisdictions more capital will locate within the jurisdiction and higher revenues result from the larger base even with the slightly lowered tax rate. In turn, as jurisdictions compete one with another through successive rounds of retaliation, tax rates will be driven down in an interjurisdictional competition for the mobile tax base. As this happens there will be associated impacts on trade, although in the literature these are not the major focus.

A central theme from this literature is that governments engage in highly wasteful competition for mobile capital through both tax rate reductions and targeted government expenditures. As such, the balance of taxation changes away from that on mobile capital to taxes on sales and internationally immobile labour. Later literature, however argues that efficiency enhancement can occur from tax competition if there are imperfectly competitive market structure, or political economy considerations.

Tax competition in practice, however, is hard to document since tax rates across most OECD countries have fallen little in recent years. Some point to the reduction in statutory corporate tax rates since the 1980s in most countries as evidence of tax competition, but equally bases of these taxes have broadened as rates have fallen with yields little changed. In the OECD initiative on tax competition the major focus was on reducing the use of and attractiveness of tax haven small jurisdictions.

**Trade Implications of Corporate Taxes**

Literature also exists on the international dimensions of corporate tax design\(^4\). Transfer pricing used by multinational companies to reward cross border inter-corporate transactions

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\(^3\) Devereux and Griffiths (1998), and Devereux, Griffiths and Kleram (2001) provide empirical evidence on the
is one factor that can influence trade (see Grubert and Mutti (1991)). Other effects can reflect differences in corporate tax rates across countries. Whalley (1980), for instance, uses numerical simulation methods to assess the impacts of differing domestic tax structures on trade and welfare in a four region global model, finding that there are larger effects from these taxes on trade than from the then present tariffs used in the modelling exercise. Again, while only indirect in their implications for trade per se, international considerations figure prominently and indicate that differential corporate tax structure affects trade. Mendoza, Razin, and Tesar (1994) provide more recent estimates of effective marginal tax rates across countries.

Another issue involves the use of rules which allow for deferral of taxes on a portion of export earnings. This has been a long-standing feature of the US corporate tax code, first in the Domestic Import Sales Corporation (DISC) in the 1960’s and 1970’s and more recently in the Foreign Sales Corporation (FSC) (see Hammer and Green (2001), and Beattie and Rothschild (1984)). These rules have been challenged by the EU to both GATT and WTO dispute settlement, and panels have ruled on behalf on the EU on the grounds that they represent export subsidies and hence these structures have had to be unravelled. As export subsidies, trade is artificially promoted by such tax rules.

A further issue is the impact of the system of double tax reliefs that most countries apply in the presence of the corporate tax, given cross border flows of foreign investment. These reliefs typically consist of two parts, one unilaterally applied and the other jointly applied by treaty. Under unilateral reliefs, either a credit is given for taxes paid abroad in calculating taxes in the source country, or an exemption system applies under which corporate profits taxed abroad are exempted from taxes in the source country even if taxes abroad are lower. Treaty reliefs relate to double taxation arrangements under which countries degree to which relocation in response to tax considerations has actually occurred. See also Hines (1996)
agree to mutually lower withholding tax rates on dividends, interest, and royalties. These arrangements are hotly debated in the literature. Bruce (1992), for instance, questions whether foreign tax credits which effectively transfer tax revenues to foreign treasuries make sense from a national point of view. The impact of treaties in the presence of tax competition is discussed in Janeba (1995).

In terms of their trade impacts, these arrangements tend to remove tax retarding effects on flows of factors between countries. Mundell (1957) long ago demonstrated that factor mobility and goods mobility are substitutes for one another, in the sense that a similar equilibrium world price ratio will prevail with either goods freely mobile and with factors immobile, or with goods immobile but with factor immobility. Hence, these treaty related corporate tax arrangements can be viewed as retarding trade in goods to the extent that they promote trade in factors.

A final element is the role of special tax incentives, such as tax holidays. These are discussed in Leechor and Mintz (1991) in the Thai case. Tax holidays are widely used as an incentive device in developing countries to attract inward foreign investment by making such investments free of tax for a specified number of years (sometimes 5-10 years). These are common in resource sectors where large investments of long gestation are involved, and especially in African countries.

As with treaty arrangements, these also have the effect of stimulating factor flows and generally displacing goods flows, if goods and factor flows are substitutes. In resource sectors, however, factor and goods flows can be complements since increased investment generates more extraction for export. In these cases, then opposite tax induced effects on trade can occur.

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4. CONCLUSION

This paper discusses the many interactions between taxes and trade. Taxes are shown to be a potential determinant of trade. Taxes are then divided into directly applied trade taxes, such as tariffs and export taxes, and the more significant revenue raising non-trade taxes such as sales, income, corporate, social security, and other taxes. In low income countries trade taxes are still an important source of revenue; in wealthier (OECD) countries this is not the case.

The effects of tariffs and export taxes in retarding trade is discussed in both the single good and the multi-good case. Elaborations including discriminatory tariffs, and induced effects such as smuggling and evasion are then highlighted. Welfare effects, and production and consumption impacts are discussed. Non trade taxes impact trade indirectly through forward shifting of production taxes into costs, including taxes on inputs such as fuels. The more that such taxes are backwards shifted, the smaller their impacts on trade.

The paper concludes with a discussion of contemporary tax issues as they relate to trade and international factor flow issues. These include the use of trade versus broadly based consumption taxes, and border adjustments in sales taxes, which remain central issues in tax design. Tax competition and corporate tax design impacts on trade (including treaty reliefs) are then discussed. The paper thus highlights the many ways in which taxes can affect trade and how trade considerations can affect tax design.
References


