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Value-Added Taxes (VATs) and Tariffs

During recent policy discussions concerning taxes and tariffs, *value added taxes* (VATs) have been characterized by some as trade barriers. Although VATs, a form of consumption tax, are imposed on imports and rebated on exports, they are not generally characterized by economists as tariffs or export subsidies. The following discussion summarizes some of the reasoning behind such views.

What Is a VAT?

A VAT is a consumption tax, much like a retail sales tax, except that it is collected at each stage of the production process, rather than at final sale to consumers. Most countries have VATs; the United States is an exception. Individual states within the United States generally impose a consumption tax in the form of a retail sales tax. VATs are generally thought to achieve greater compliance than retail sales taxes; each firm in the supply chain pays a VAT and receives a rebate for VATs it paid on inputs, which helps to ensure compliance. VATs are a major source of revenue in most countries.

VATs are border adjusted, meaning the VAT is applied to imports and rebated on exports. The purpose is to impose the tax on consumption, rather than on production, within a country. A retail sales tax is also imposed on consumption. Because it is collected on final sale to consumption, it is also not imposed on exports, which are consumed in another country, and is collected on imports when sold at retail in the importing country.

What Is the Impact Of a Border-Adjusted VAT On Trade?

Border adjustments can best be explained with a simple equation for the balance of payments. Generally, the balance-of-payments framework holds that if a country maintains a trade deficit, the country must borrow foreign capital to finance the purchase of imports. The balance-of-payments relationship (which says that dollars sold equal dollars bought) is shown in equation (1) below:

$$(1) (P \times X) - (e \times P_f \times M) - (P \times F) = 0$$

where P is the U.S. price level, X is the quantity of exports, P_f is the foreign price level, e is the exchange rate relating dollars to foreign currency, M is the quantity of imports, and F is the quantity of net capital outflows and other financial flows for the United States. The value of e is the ratio of the dollar to foreign currency. For example, \$1 for ¥141 (Japanese Yen) would be $1/141$. Although there are many trading partners and currencies, and many products and thus multiple exports and imports, treating these as composites does not change the analysis.

This relation reflects the equation's requirement that dollars bought must equal dollars sold. Foreign purchasers must purchase dollars to buy exports from the United States. Analogously, U.S. purchasers must purchase foreign currency (and therefore sell dollars) to buy imports or investments abroad. The demands for exports and imports are dependent on the relative prices of domestic goods, import and export prices, and on the exchange rate, $P/(eP_f)$. When the U.S. price rises, exports become more expensive in foreign markets and thus the quantity of X (exports) falls. If foreign prices rise, U.S. exports are more attractive. Imports become more attractive when the U.S. prices rise because imports become relatively cheaper than domestic goods. This relative price is the price that matters for purposes of this analysis, which can be seen by dividing each term in equation (1) by P to obtain equation (2) below; the relative price will appear inverted in the equation in the middle term.

$$(2) X - (e \times P_f / P) \times M - F = 0$$

The relative price appears in three locations: it determines the demand for exports, it determines the demand for imports, and it determines the price of imports (the inverted price relationship in the second term of equation (2)). An essential point is that if the relative price $P/(eP_f)$ remains fixed, the balance of payments remains equal to zero with the same quantities and nothing changes.

In practice, this equilibrium could take four forms. The first is a world in which the money supply expands and domestic prices rise to keep the pre-VAT prices of final products the same, and border adjustments are made. The price of domestic goods would rise by the tax rate and, while import prices are unchanged before the tax, the imposition of a tax would equate their price with domestic goods. By rebating the tax on goods exported, the price, for the purpose of export demand, is its original pretax level. Thus, the relative price that drives export demand is unchanged. These effects cancel out, leaving the same fixed relationship and the same quantity of exports and imports.

The second is when domestic prices rise and border adjustments are not made. With pre-VAT prices the same, the price of exports rises by the tax and the price of imports is lower than the price of domestic goods. Import demand rises, increasing the supply of dollars, and export demand falls, decreasing the demand for dollars. To equate the supply and demand, the price of dollars falls (the dollar depreciates), causing import prices to rise and export prices to fall. An equilibrium is reached when the exchange rate adjustment offsets the domestic price change and the quantity of imports and exports is unchanged. (This

mechanism is the same one that offsets an increase in prices for any reason).

In the third scenario, one can suppose the money supply did not accommodate the tax and the tax was passed backward in lower nominal wages and asset values (a consumption tax is effectively a tax on wages and existing assets). Prices are unchanged and not making a border adjustment would preserve all of the original nominal prices and lead to no effects. That is, export prices, import prices, and domestic prices would not change.

However, in a fourth scenario, if prices remain fixed and the tax is passed backward, but a border adjustment is made, the price of exports falls, while the price of imports rises. Import demand falls and the supply of dollars falls, while export demand rises, increasing the demand for dollars. The dollar rises in value (the dollar appreciates) until it offsets the effect of border adjustments, leaving relative prices and the quantities of exports and imports unchanged.

Why Are Border Adjustments Important?

If border adjustments do not affect export and import quantities in aggregate, one may ask why they are needed. They are important because many VATs are not imposed at a uniform rate across goods. The United States has border-adjusted excise taxes on specific products, such as alcohol and tobacco, that are collected at the manufacturer's level. A border tax adjustment may be used when different tax rates are imposed on commodities to allow each country to choose its own consumption tax regime. Exchange-rate adjustments allow only for addressing the general price level. Thus, regardless of how the process of adjustment occurs, many consider it preferable to have border adjustments for any tax aimed at domestic consumption.

How Do Economists Analyze Tariffs and Export Subsidies?

Tariffs and export subsidies are generally characterized as not having the neutrality of border-tax adjustments because they apply only on exports or only on imports and do not involve a tax on domestic consumption from domestic sources. The broadly accepted standard economic theory of supply and demand would suggest that if a tariff is imposed in the United States while holding other effects constant, that tariff (only on imports) would affect the quantities of both imports and exports. Under this scenario, the tariff would cause the quantity of imports to fall as the price rises. That fall would lead to a fall in the demand for foreign currency as purchasers in the United States buy less foreign

currency to purchase the smaller quantity of imports. Because dollars are used to purchase foreign currency, fewer dollars would be offered on the currency market and thus the supply of dollars would fall. The reduction in supply would lead to a rise in the value of the dollar in terms of foreign currency, causing exports to be less attractive to foreign consumers and also offsetting some of the decline in imports due to the tariffs. The result would be less trade (fewer imports and fewer exports), with the magnitude of the change depending on the demand elasticities and the presence of a trade deficit or surplus initially. Because of the economic effects on exports, this theoretical outcome would be consistent with a common fundamental precept in trade that a tax on imports is essentially also a tax on exports.

Other economists might also characterize this outcome as consistent with the Lerner symmetry theorem, that is: "If a country reduces how much it buys from the rest of the world in imports, it will not need to sell as much to the rest of the world in exports."

Why Is There a Perception That VAT Border Adjustments Are Tariffs and Export Subsidies?

This perception may be because these statements on their surface may seem intuitive: VATs are imposed on imports and rebated on exports. Conversely, economists' explanations about exchange rates and trade and balance of payment equilibrium may be complex. As a result, the perception that VATs are trade barriers may persist.

One illustration that may help clarify the neutrality of border adjustments is to return to a comparison to retail sales taxes. A uniform VAT is equivalent to a uniform retail sales tax. Both tax domestic consumption regardless of where goods or services were produced. Since a retail sales tax is collected at the final stage of domestic consumption, it is the same as if the tax were imposed at an earlier stage and border adjustments made. A retail sales tax does not favor domestic over foreign production and, as it is not imposed on exports, it does not discourage or encourage imports and exports. These observations together imply that a VAT (like a retail sales tax) neither encourages nor discourages exports or imports. Therefore, VATs are not generally characterized by economists as tariffs or export subsidies.

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