International Competitiveness: An Economic Analysis of VAT Border Tax Adjustments

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July 30, 2009

Congressional Research Service
7-....
www.crs.gov
R40735

CRS Report for Congress
Prepared for Members and Committees of Congress

Summary

U.S. international competitiveness has been a topic of heated debate in recent years. In this debate it has been argued that the decline in performance of U.S. firms stems, at least in part, from problems with the federal tax system. In support of these claims, comparisons are often made between provisions of the U.S. tax code and those of the nation's trading partners—with selected differences offered as explanations for unsatisfactory outcomes.

One common argument made by advocates of this position is that the United States' reliance on direct taxes (such as income and payroll taxes) provides a disadvantage when trading with countries that have indirect taxes (such as a value-added tax or VAT). This argument follows from the General Agreement on Tariffs and Trade (GATT) allowance for border tax adjustments (the rebate of indirect taxes on exports and the imposition of indirect taxes on imports) on indirect taxes, but not for direct taxes. According to this argument, U.S. companies are at a competitive disadvantage because they cannot make use of border tax adjustments like many of their international competitors.

Almost since its inception in 1967, this provision has been characterized as an export subsidy and as a source of competitive disadvantage. Beginning in the Johnson Administration, high-level discussions have been held concerning this matter. In addition, Congress has also instructed U.S. trade negotiators to address this perceived distortion as part of granting fast-track trade authorization in 1974, 1988, and 2002.

Congressional interest in this debate continues today with the introduction of the Border Tax Fairness Act (S. 1043) and the Border Tax Equity Act of 2009 (H.R. 2927). In addition to directing U.S. trade negotiators to address this perceived distortion, the acts would impose taxes on imports from countries with border tax adjustments and compensate exporters for border taxes paid. Some assert that these provisions would redress issues of U.S. competitiveness; others maintain this is not the case.

Economists have long recognized that border tax adjustments have no effect on a nation's competitiveness. Border tax adjustments have been shown to mitigate the double taxation of cross-border transactions and to provide a level playing field for domestic and foreign goods and services. Hence, in the absence of changes to the underlying macroeconomic variables affecting capital flows (for example, interest rates), any changes in the product prices of traded goods and services brought about by border tax adjustments would be immediately offset by exchange-rate adjustments. This is not to say, however, that a nation's tax structure cannot influence patterns of trade or the composition of trade.

This report explains these common economic findings on the effect of border tax adjustments on international competitiveness, through two perspectives on the issue—first through a discussion on the neutrality of border tax adjustments with respect to cross-border trade and secondly using economic theory to explain the effect of border tax adjustments on the U.S. balance of trade. As a prelude to these explanations, the report begins with a brief explanation of VATs and border tax adjustments.

This report will be updated as legislative events warrant.

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The international competitiveness of the United States has been a topic of heated debate in recent years. In this debate it has been argued that the decline in performance of U.S. firms stems, at least in part, from problems with the federal tax system. In support of these claims, comparisons are often made between provisions of the U.S. tax code and those of the nation's trading partners—with selected differences offered as explanations for unsatisfactory outcomes.

The United States reliance on direct taxes (such as income and payroll taxes) is commonly argued to provide a disadvantage when trading with countries that have indirect taxes (such as a value-added tax or VAT). This follows from the allowance in the General Agreement on Tariffs and Trade (GATT)—the predecessor of the World Trade Organization (WTO) agreements—for border tax adjustments on indirect taxes, but not for direct taxes.[1]

Almost since its inception in 1967 this provision has been cited as a source of competitive disadvantage and as being an export subsidy.[2] According to this argument, U.S. companies are at a competitive disadvantage because they cannot make use of border tax adjustments like many of their international competitors. Beginning in the Johnson Administration, border tax adjustments have been a matter of concern.

> American commerce is at a disadvantage because of the tax systems of some of our trading partners. Some nations give across-the-board tax rebates on exports which leave their ports and impose special border tax charges on our goods entering their country.[3]

In addition, Congress has also instructed U.S. trade negotiators to address this perceived distortion as part of granting fast-track trade authorization in 1974, 1988, and 2002.

Congressional interest in this debate continues today with the introduction of the Border Tax Fairness Act (S. 1043) and the Border Tax Equity Act of 2009 (H.R. 2927). In addition to directing U.S. trade negotiators to address this perceived distortion, the acts would impose taxes on imports from countries with border tax adjustments and compensate exporters for border taxes paid. Some assert that these provisions would redress issues of U.S. competitiveness—by offsetting the impact of border tax adjustments on U.S. goods. Others maintain this is not the case.

Economists have long recognized that border tax adjustments have no effect on a nation's competitiveness.[4] In this application, a nation's competitiveness is defined by its balance-of-

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[1] A border-tax adjustment can be defined as the rebate of indirect taxes on exports and the imposition of indirect taxes on imports.

[2] Border tax adjustments were agreed to in the Kennedy Round of GATT. For background on the WTO and GATT, see World Trade Organization, *Understanding the WTO: Basics*, http://www.wto.org/english/thewto_e/whatis_e/tif_e/fact4_e.htm.

[3] President Johnson, "Statement on the Balance of Payments Problem and Steps to Meet It," *New York Times*, January 1, 1968.

[4] Martin Feldstein and Paul Krugman, "International Trade Effects of Value-Added Taxation," in *Taxation in the Global Economy*, ed. Assaf Razin and Joel Slemrod (Chicago, IL: University of Chicago Press, 1990). Congressional Budget Office, *Effects of Adopting a Value-Added Tax*, February 1992. U.S. Congress, Joint Committee on Taxation, *Factors Affecting the International Competitiveness of the United States*, committee print, 102nd Cong., May 30, 1991, JCS-06-91. Charles McLure, *The Value-Added Tax: Key to Deficit Reduction*, American Enterprise Institute, Washington, D.C., 1987. Alan D. Viard, "Border Tax Adjustments Won't Stimulate Exports," *Tax Notes*, March 22, 2009.

payments position. The conclusion on competitiveness follows from the premise that border tax adjustments afforded under VATs reduce the relative price of U.S. imports compared to U.S. exports, resulting in a worsening of the U.S. balance of trade. Economic theory, however, finds this conclusion in error.

Border tax adjustments cannot alter a country's balance of payments because the balance of trade is a function of international capital flows, not the flow of traded goods and services. Border tax adjustments have been shown to mitigate the double taxation of cross-border transactions and to provide a level playing field for domestic and foreign goods and services. Hence, in the absence of changes to the underlying macroeconomic variables affecting capital flows (for example, interest rates), any changes in the product prices of traded goods and services brought about by border tax adjustments would be immediately offset by exchange-rate adjustments. This is not to say, however, that a nation's tax structure cannot influence patterns of trade or the composition of trade, through differences in the relative prices of high- and low-tax goods and services.

This report explains these common economic findings on the effect of border tax adjustments on international competitiveness through a dual-channel approach—first through analogy to the retail sales tax and secondly using economic theory. As a prelude to these explanations, the report begins with a brief explanation of VATs and border tax adjustments.

What Is a Value-Added Tax?

A value-added tax (VAT) is the most widespread general consumption tax in the world, having been implemented by over 140 countries, including most of the nation's major trading partners. In 2006, the European OECD countries collected over 20% of their revenue from the VAT—an amount equal to 7.6% of their GDP.[5] While the U.S. does not have a VAT, revenue from its most similar tax, the sales tax, accounted for 7.8% of revenue and 2.2% of GDP during 2006.[6]

Administratively, the VAT is collected at each stage of production. Each successive firm pays and remits to the government the VAT on the valued added at their stage of production. The value added of a firm is the difference between a firm's sales and a firm's purchases from all other firms. In other words, a firm's value added is simply the amount of value that a firm contributes to a good or service by applying its factors of production (land, labor, capital, and entrepreneurial ability). This method allows the VAT paid by the final consumer to equal the sum of the VATs collected at each stage of production.[7]

A common feature of VATs is a border tax adjustment. As commonly applied to VATs, under a border tax adjustment exports are exempt from the VAT. This is implemented through a refund of the VAT paid at previous stages of production. In addition, imports are taxed on the same basis and at the same rates as local production. Under the border tax adjustment, the total tax paid is determined by the rules of the jurisdiction of consumption, and therefore all revenue accrues to

[5] Organization for Economic Co-operation and Development (OECD), *Consumption Tax Trends 2008: VAT/GST and Excise Rate, Trends and Administration Issues*, 2008.

[6] The sales tax is the largest consumption tax currently levied in the United States.

[7] A numeric example of this is shown in **Table 1**.

the jurisdiction where the sale to the final customer occurs. This feature allows VATs to be neutral to trade through the application of the destination principle of taxation.[8]

Border tax adjustments are permitted under the General Agreement on Tariffs and Trade (GATT).[9] The rationale behind this permission is that VATs are an indirect tax and that a border tax adjustment of indirect taxes is needed in order to "level the playing field" relative to producers in countries that do not levy such taxes or levy them at a different rate. As a result, the goods purchased by consumers are taxed similarly whether produced domestically or abroad. In contrast, direct taxes—those imposed directly on individuals or businesses—may not be rebated.

As mentioned above, popular perception holds that this constitutes an unfair trade advantage for VAT countries. That is, the ability of firms in VAT countries to export tax-free goods constitutes a competitive advantage when competing with U.S. goods in the same market. In addition, the imposition of the VAT on U.S. exports to VAT countries—in addition to normal U.S. taxes—is argued to be a barrier to U.S. exports. This issue will be examined after a discussion of the mechanics of a VAT.

While there are several variations of the VAT, this report considers only the consumption-type VAT collected by the "credit-invoice method."[10] This type of VAT is the dominant form used by the nation's major trading partners and is often targeted by the critics of the border tax adjustments. The conclusions of the economic analysis of the VAT border tax adjustments are similar across all types of VATs collected by the "credit-invoice method."

The Mechanics of a Valued-Added Tax

At its simplest level, the VAT is equal to sales minus purchases from other firms—value added—multiplied by the VAT rate, at each stage of production. Drilling down a level, the VAT is imposed as a percentage of a selling price at both the intermediate and the final stages of the supply chain, under the credit-invoice method. Registered sellers are required to show the VAT separately on all sales invoices, with each sale marked-up by the total amount of the VAT due. At each stage, the seller adds up the total VAT collected from its customers, deducts from this amount the VAT paid to its suppliers, and remits the difference to the government.

While the mechanics of VAT administration may not be intuitively apparent, consider the following example in **Table 1**. We begin in the upper panel without a VAT. Here a farm sells produce to a store located in the same jurisdiction, at $1 per unit. The store sells the produce to the final consumer at $1.50 per unit. In the upper panel, no tax is collected since the VAT has not yet been imposed.

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[8] A full discussion on origin-principle vs. destination-principle taxation is contained in the **Appendix**.

[9] For a full description of the GATT, see General Agreement on Tariffs and Trade 1994, Text of the General Agreement, Art. I:1, available at http://www.wto.org/english/docs_e/legal_e/gatt47_e.pdf.

[10] Under the "credit-invoice method," a firm would be required to show the amount of VAT paid separately on all sales invoices. Each sale would be marked up by the amount of the VAT. A sales invoice for a seller is a purchase invoice for a buyer. A firm would calculate the VAT to be remitted to the government by a three-step process. First, the firm would aggregate VAT shown on its sales invoices. Second, the firm would aggregate VAT shown on its purchase invoices. Finally, aggregate VAT on purchase invoices would be subtracted from aggregate VAT shown on sales invoices, and the difference remitted to the government. The credit-invoice method is calculated on a transactions basis.

Table 1. Simple Supply Chain Example of a Value-Added Tax

Supply Stage	Purchase Price	Price Before Tax	Price After Tax	Tax Collected	Tax Rebated	Net Tax
			No Tax			
Farm		1.00	1.00	NA	NA	NA
Store	1.00	1.50	1.50	NA	NA	NA
			VAT rate: 10%			
Farm		1.00	1.10	0.10	0.00	0.10
Store	1.10	1.50	1.65	0.15	0.10	0.05

Source: CRS

In the lower panel of **Table 1** we expand the example by including a VAT with a 10% rate. Here the farm would face a 10% tax on its produce, for a total price of $1.10 ($1.00 + $0.10), with the additional $0.10 shown on its invoice to the store. Similarly, the store would add a 10% tax to its selling price, for a total of $1.65 ($1.50 + $0.15).

Both the farm and the store would remit their respective VAT collections to the government. In the case of the farm, it did not pay any VAT taxes on its inputs, so the process is simple. It remits $0.10 to the government.

The computation of the VAT liability is more complicated for the store. The store paid some VAT embedded in the farm's total selling price and shown separately on the invoice when it purchased the produce from the farmer. As a result the store would subtract the VAT it had paid itself ($0.10) from the VAT the store collected ($0.15) from the final consumer of the produce, and remit only the balance of $0.05 ($0.15 – $0.10) to the government.[11] At the end of this process the government would have collected $0.15 from both taxpayers (0.10 from the farm + $0.05 from the store).

A Comparison of the Value-Added Tax and the Sales Tax

Understanding the mechanics of the VAT computation is a useful starting point for a comparison to the retail sales tax, since they share a similar impact on competitiveness. As mentioned in the previous section, the VAT is a type of a consumption tax. In the U.S. there is no federal VAT, but many state and local governments levy a sales and use tax. To see how they compare, we continue the example started in **Table 1.**

The top panel in **Table 2** reminds us of the tax implications of a 10% VAT, discussed in **Table 1**. The lower panel illustrates the application of a 10% sales tax to the same supply chain. In the first stage, from the farm to the store, no tax is collected, due to the resell exemption. As a result, the before-tax price equals the after-tax price.[12] In the second stage the store would add a $0.15 sales

[11] In this example it is assumed that all of the burden of the VAT is borne by the final consumer (so-called full forward-shifting of the tax burden) for sake of simplicity. A more realistic assumption is that the farm and the store would likely absorb some portion of the tax burden. Note however, that full-forward shifting is implicitly assumed by those who assert that border-tax adjustments negatively impact U.S. international competitiveness.

[12] A resell exemption is a common feature of a retail sales tax intended to reduce the potential for applying the sales tax at multiple stages of the supply chain.

tax (10% of $1.50) to its selling price, for a total final selling price of $1.65 per unit, and remit the sales tax to the government. Note that under either the retail sales tax or the VAT the government would receive the same tax revenue ($0.15) and the final consumer would pay the same tax-inclusive price ($1.65).

Table 2. Simple Supply Chain Example of a Value-Added Tax and Sales Tax

Supply Stage	Purchase Price	Price Before Tax	Price After Tax	Tax Collected	Tax Rebated	Net Tax
			VAT rate: 10%			
Farm		1.00	1.10	0.10	0.00	0.10
Store	1.10	1.50	1.65	0.15	0.10	0.05
			Sales tax rate: 10%			
Farm		1.00	1.00	0.00	0.00	0.00
Store	1.00	1.50	1.65	0.15	0.00	0.15

Source: CRS

In addition, other similarities exist. Under both scenarios, the supplier (the farm) does not pay the tax. In the VAT example the farm collects the tax from their customer (the store) and transmits it to the government. Similarly, in the sales tax example, the farm could obtain a sales tax exemption certificate, which excludes sales of intermediate goods from the sales tax.[13]

As mentioned in footnote 11, the zero tax burden on suppliers (the farm) is a result of the assumption of full forward shifting made to simplify this discussion. More sophisticated economic models, which relax this assumption, may result in non-zero tax burden. These more sophisticated models would, however, reiterate the finding that after full adjustment, the distribution of the burden among producers and consumers would be the same under the VAT and the sales tax. The distribution depends on the intrinsic characteristics of the economic agents and the markets, not on the administrative form of the new tax.

Given that the VAT and sales tax both tax consumption, it is not surprising that they display many theoretical similarities. That is, if their rates and taxable bases are defined similarly, as in our example, then tax collections from the two taxes are expected to be the same. In practice this is not always the case, as different jurisdictions, generally, place jurisdiction priorities over the goal of harmonizing tax rules. As a result, similarity between VATs and sales taxes are less apparent in observation.

In an idealized example, however—without tax avoidance, non-compliance, and other imperfections—the economic effects would not differ between either the VAT or the sales tax. These two taxes are economically similar. They create largely similar incentives and disincentives for economic agents. The burden distribution of these two taxes is also largely the same.

While economically similar, the VAT and sales tax are administratively different. Some of the administrative differences are apparent from the above examples. Others are less obvious. While

[13] An intermediate good is a product used as an input in the production of other goods and not for sale to the ultimate consumer of the product.

a discussion of the administrative differences is beyond the scope of this report, it is important to note that they do not alter the economic similarities of the VAT and sales taxes—namely the neutrality of border tax adjustments with respect to international competitiveness.

Economic Analysis: Cross-Border Trade Neutrality of a Border Tax Adjustment

As mentioned above, some believe that border tax adjustments or VAT rebates represent an unfair export subsidy which impairs U.S. international competitiveness, because it is purported to reduce the cost of exports to the rest of the world while raising the cost of imports from other countries. Economic analysis cannot answer questions about fairness or unfairness. Economic analysis suggests, however, that border tax adjustments do not result in preferential treatment of exports and discrimination against imports (i.e., border tax adjustments are neutral with respect to cross-border trade). This occurs because border tax adjustments do not alter the fundamental economic exchange of goods and services that underlies trade.

To better see this point, it might help to build on the example first presented in **Table 2** and modify it so that the farm and store are located in different jurisdictions. While farms are located in different jurisdictions, they both sell identical items at the identical pre-tax price. This extension is presented in **Table 3** and described below.

Comparing the top panels of **Table 2** and **Table 3**, to focus on the VAT, we can make several observations. Regardless of the location of the farm, the VAT tax burden is the same—$0.15. What changed was the mechanics of the VAT collections and rebates. Also note that potential differences in tax rates and other policies between jurisdictions A and B do not affect the consumers in jurisdiction B. The VAT paid in a jurisdiction is determined solely by the home country and applies in the same manner to both domestic and imported produce.

Table 3. An Example of a Cross-Border Supply Chain, 10% Sales and Use Tax (SUT) in Both Jurisdictions, Destination-Principle Taxation

Supply Stage / Jurisdiction	Purchase Price	Price Before Tax	Price After Tax	Tax Collected	Tax Rebated	Net Tax
			VAT rate: 10%			
Farm/A		1.00	1.10	0.10	0.10	0.00
Store/B	1.00	1.50	1.65	0.15	0.00	0.15
			Sales tax rate: 10%			
Farm/A		1.00	1.00	0.00	NA	0.00
Store/B	1.00	1.50	1.65	0.15	NA	0.15

Source: CRS

The border tax adjustment to the farm located in country A of the VAT is equivalent to offering a sales-tax exemption for exported goods, a common feature of the state sales tax systems in the United States. Even though sales taxes are not federal taxes, the analysis of international trade should include the overall tax system of each country, as this is what ultimately affects exporters and importers.

To see the similarity of exporters' treatment under the sales tax and the VAT, examine the bottom panel in **Table 3**. It demonstrates that in the case of a cross-border trade under the sales tax, the final incidence is identical to the example of the VAT presented in the top panel of **Table 3**. Thus, border tax adjustments under the VAT are equivalent to a sales tax exemption for exports. While some might prefer VAT or sales tax regimes for various reasons, such as administrative or cash flow differences, the reasons are unrelated to the presence of the border tax adjustments under the VAT. In fact, without border tax adjustments exporters would have faced double taxation first in their home country, then in the destination country.

Economic Analysis: Impact of a Border Tax Adjustment on the U.S. Balance of Trade

As mentioned above, the border tax adjustment of VATs commonly raises concerns about U.S. competitiveness. This argument often concerns the proposition that border tax adjustments have a negative impact on the U.S. balance of trade.[14] This conclusion follows from the premise that border tax adjustments afforded under VATs reduce the relative price of U.S. imports compared to U.S. exports—resulting in a worsening of the U.S. balance of trade. Economic theory, however, finds this conclusion in error.

Economists have long recognized that border tax adjustments have no effect on the balance of trade. This is because the balance of trade is a function of international capital flows, not the flow of traded goods and services. In the absence of borrowing and lending (international capital flows), trade between nations would always be in balance. The only way the balance of trade could be out of balance is if one nation lends another nation the resources to pay for the extra goods it imports but does not pay for with its current exports. Capital flows and trade balances are always mirror images of one another; a capital inflow produces a trade deficit while a capital outflow produces a trade surplus.

Hence, in the absence of changes to the underlying macroeconomic variables affecting capital flows (for example, interest rates), any changes in the product prices of traded goods and services brought about by border tax adjustments would be immediately offset by exchange-rate adjustments.

This is not to say that changes in the U.S. tax structure could not influence the level or composition of trade. As long as a VAT applies evenly across all goods and services, it will have no impact on either the level or composition of trade. If, however, the VAT is applied unevenly, it can alter both the composition and level of trade—with the balance of trade remaining unchanged.

[14] Balance of trade is defined as the difference between a country's imports and exports of goods and services. Balance of trade is part of a larger economic unit, balance of payments, which also includes capital flows.

Appendix. Origin-Principle vs. Destination-Principle Taxation

A fundamental choice in tax policy is whether to tax according to the origin principle or the destination principle. Therefore it is no surprise that this question arises concerning the taxation of goods and services when they are produced in one jurisdiction, but consumed in another.

Complicating the matter is the fact that if tax mechanisms are not coordinated between the two jurisdictions, certain goods and services may not be taxed, while certain other goods and services may be taxed twice. Most policymakers would probably consider either situation undesirable. A coordination of tax systems could solve this problem, but the question of tax jurisdiction still remains.

The destination principle ensures a level playing field among suppliers from different jurisdictions. Under this principle, differences in consumption taxes in the countries of production do not generate inherent cost advantages or disadvantages among producers from different countries or states. If not for this principle, goods imported from a lower-VAT country into a higher-VAT country would have a cost advantage over local competitors. The opposite would be true if the exporting country had a higher VAT than the country of consumption. Similar outcomes would occur under the sales tax.

International tax and trading rules, established by the General Agreement on Tariffs and Trade, allow destination-principle border tax adjustments to be applied to taxes on products, such as excise, sales tax, or VAT, but not to direct taxes such as income or social insurance taxes.[15] Using the destination principle means that taxes are levied at the point of consumption, or sale to the final consumer.

States in the United States face a similar dilemma when imposing sales taxes. States, generally, adhere to the destination principle as well. In other words when a product is manufactured in one state and sold in another, the sales tax applies in accordance with the policies of the state of consumption. In fact, the full name of the tax is "sales and use tax," and the "use" refers to cross-border trade situations, since it implies that tax is due upon first use of an item by the final consumer.

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[15] GATT/WTO Articles II, III, and XVI