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Border-Adjusted Consumption Taxes and Exchange Rate Movements: Theory and Evidence

name redacted

Analyst in Public Finance

name redacted

Specialist in Economics

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Summary

In June 2016, House Speaker Paul Ryan proposed a destination-based cash flow tax (DBCFT) as part of the “A Better Way” tax reform blueprint. One component of the DBCFT proposal is the implementation of a border adjustment, which is a common feature of national consumption-based taxes. Were the United States to adopt a DBCFT and the accompanying border adjustment, it would only tax production that is consumed in the United States—domestically produced goods and services sold abroad would not be taxed.

Although there are many important issues surrounding a DBCFT that would require careful consideration before implementation, the response of exchange rates is one that has received substantial attention. (For clarity, this report will refer to the border adjustment under a DBCFT as a border-adjustment tax or BAT.) Economists generally agree that standard economic theory predicts exchange rates will adjust to offset the implementation of a BAT in the United States. As a result, in theory a BAT should have no direct effect on the trade balance. The standard theory rests on two important assumptions—flexible U.S. exchange rates and a full border adjustment. The full border adjustment assumption simply means that all imports are taxed at the same rate, and that all exports are completely excluded from taxation.

While most economists believe that exchange rates will adjust to offset the tax, there is debate over how fast the adjustment will occur. Some have argued that the adjustment should occur almost instantaneously or even before the tax is enacted if market participants include the tax in the price in anticipation of enactment. Others have argued that there may be frictions that would slow the adjustment process and which could result in a situation where the trade balance does favor exports for a number of years until the exchange rate fully adjusts.

Although no other countries have implemented a destination-based cash flow approach to taxation, studies of closely related tax systems may provide some empirical insight into how exchange rates react to border adjustments. The existing literature includes some studies that are broadly supportive of a full exchange rate response and limited timing concerns. Other research has found evidence suggestive of a full exchange rate response in the long run but less clarity in short-term adjustments and industry-specific effects.

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Introduction

In June 2016, House Speaker Paul Ryan proposed a destination-based cash flow tax (DBCFT), a type of national consumption tax, as part of the “A Better Way” tax reform blueprint.¹ One component of the DBCFT proposal is the implementation of a border adjustment. Were the United States to adopt a DBCFT with a border-adjustment tax (or BAT) it would only tax production that is consumed in the United States—domestically produced goods and services sold abroad would not be taxed. This treatment would be a departure from the current corporate income tax system. The proposed change has attracted considerable interest from policymakers and the general public in determining the relative costs and benefits of a switch to a DBCFT and the accompanying BAT.

Although there are many important issues surrounding a BAT that would require careful consideration before implementation, the response of exchange rates is one that has received substantial attention. Standard economic theory predicts that under certain conditions exchange rates would react to a BAT in a way that would leave exports and imports unchanged. That is, exchange rate movements would offset the effects of the tax, leaving the U.S. trade balance unaltered. Some observers, however, have speculated that such a response may not occur in a timely fashion or that exchange rate movements may not completely offset the tax. If either of these two situations were to occur, or if impact across industries was asymmetric, there could be implications for U.S. businesses and consumers, and as a result, the U.S. trade balance.

This report provides a basic framework for understanding how and why exchange rates could respond to a BAT. It first describes a BAT and uses several examples to illustrate how one works. It then summarizes the standard economic theory of how exchange rates should respond to a BAT, as well as the arguments against the theoretical predictions. Finally, this report reviews the existing literature that has empirically investigated the relationship between exchange rates and BAT systems in other countries.

Information on other issues related to taxes with a border adjustment or that share economic features similar to the “A Better Way” proposal may be found in the following CRS products:

- CRS In Focus IF10583, *Border-Adjusted Taxes: A Primer*, by (name redacted)
- CRS Report R44342, *Consumption Taxes: An Overview*, by (name redacted) and (name redacted)

What Is a Border-Adjusted Tax?

A border adjustment is typically a component of a national consumption tax (including the DBCFT) that applies differently to imports into a country and exports out of a country. The border-adjustment system that has appeared in recent congressional debates would impose a 20% tax on all goods and services imported into the United States and would impose no tax on exports. Additionally, American companies that produced and sold their goods in the United States would also be subject to the 20% tax. Such a tax is often referred to as being “destination based” because the levy of the tax would depend on where the goods or services are consumed; at home or abroad. Were the United States to adopt a destination-based system of taxation, only those goods and services consumed in the United States—whether produced domestically or abroad—

¹*A Better Way: Our Vision for a Confident America*, June 16, 2016, available at http://abetterway.speaker.gov/_assets/pdf/ABetterWay-Economy-PolicyPaper.pdf.

would be subject to the tax. While the exact mechanics can differ depending on the particular destination-based system adopted, any such system will require a process of “adjusting” business taxes at the border to ensure imports are subject to tax and exports are not.

A few general examples may clarify how a BAT functions. In each of the examples below, it is assumed that the tax rate would be 20%, the tax would apply broadly to all domestic consumption, and that it would be fully adjustable at the border. The examples below begin with the simplest cases of how the tax would apply and then explore more complicated situations.

Example 1

A Japanese firm produces \$1 million worth of goods in Japan, which it then sells in the United States. The firm would pay a 20% tax equal to \$200,000 on the \$1 million in sales.

Example 2

An American firm pays \$200,000 for domestically sourced inputs to produce \$1 million worth of goods which it sells exclusively in the United States. In this case, the firm would be allowed to deduct the \$200,000 in production costs (because they are domestically sourced) and then would pay a 20% tax on \$800,000 (\$1 million minus \$200,000) or \$160,000.

Example 3

An American firm pays \$200,000 for domestically sourced inputs to produce \$1 million worth of goods which it sells abroad. This firm would pay no tax on the \$1 million because all of its sales occur overseas. Additionally, because production occurred in the United States using domestically sourced inputs, the firm’s costs would be fully deductible and result in a tax loss of \$200,000. With full border adjustment, the firm would be entitled to a tax refund or credit equal to \$40,000 (20% multiplied by \$200,000)—the value of its tax “loss” position.

Example 4

An American firm pays \$200,000 for domestically sourced inputs to produce \$1 million worth of goods. Half of the firm’s sales are to customers abroad and the other half are to customers in the United States. In this case, the \$500,000 in foreign sales would be exempt from tax. Because the firm’s inputs were entirely domestic, their costs would be fully deductible against the \$500,000 in U.S. sales. The firm would pay a 20% tax on \$300,000 (\$500,000 minus \$200,000) or \$60,000.

Example 5

An American firm produces \$1 million worth of goods using \$100,000 of inputs sourced domestically and \$100,000 of imported inputs. Half of its sales are abroad and the other half are in the United States. Again, the \$500,000 of foreign sales would be excluded from income and free from tax. However, only the value of domestically sourced inputs would be deductible against the \$500,000 in domestic sales. The firm would pay a 20% tax on \$400,000 (\$500,000 minus \$100,000) or \$80,000. Note that not allowing a deduction for foreign-sourced inputs is the same as taxing the inputs when they are imported but allowing the firm to deduct their cost from domestic sales.

Border Tax Adjustment: Theoretical Effects

Economic Theory

Economists generally agree that traditional economic theory predicts exchange rates will adjust to offset price changes arising from the implementation of a BAT in the United States. As a result, a BAT should have no direct effects on the trade balance.² The standard theory rests on two important assumptions—flexible U.S. exchange rates and a full border adjustment. The full border adjustment assumption simply means that all imports are taxed at the same rate, and that all exports are completely excluded from taxation. Since the United States has a flexible exchange rate regime, the analysis below will only discuss the implications of the tax when it is not fully adjusted at the border.³ Before analyzing the exchange rate adjustment process more closely, it is helpful to review the logic of the standard theory regarding exchange rates and a BAT.

Understanding how exchange-rate adjustments can offset the effects of a BAT requires understanding supply and demand in the foreign exchange markets. Implementation of a BAT would initially make U.S. exports more attractive to foreigners. This increased demand for exported goods would increase the foreign demand for dollars to purchase U.S. products and push up the value of the dollar relative to other currencies. At the same time, the BAT would initially make imported goods and services less attractive to American consumers and businesses. This reduction in demand for foreign goods would reduce the supply of dollars on the market—when Americans import foreign goods and services they must supply dollars in exchange for foreign currency.

It is the combination of increased demand for dollars by foreigners to buy U.S. exports and decreased supply of dollars stemming from a reduction in imports that is the mechanism through which the dollar's exchange rate value would increase. Specifically, the standard economic model predicts that the dollar should appreciate in value by $t/(1-t)$, where t is the BAT rate. For example, the “A Better Way” proposal calls for a BAT of 20%, implying that if the dollar fully adjusts to offset the tax then the dollar will appreciate in value by 25% against other currencies.⁴ If this appreciation occurs, there will be no changes in the trade balance resulting from tax.

Potential Complications to Full Adjustment

While most economists believe that exchange rates will adjust to offset the tax, there is debate over how fast the adjustment will occur. Some have argued that the adjustment should occur almost instantaneously or even before the tax is enacted if markets price in the impending policy change.⁵ Others have argued that there may be real-world frictions that would slow the

² The trade balance refers to the difference in exports and imports. A trade surplus occurs when exports exceed imports. A trade deficit occurs when imports exceed exports.

³ It is important to note that some countries manage their currencies to promote domestic industries. Because the dollar is predicted to appreciate in value, these countries would likely accept the exchange rate adjustment, as it would be in line with their currency management policies.

⁴ To see this, assume that the dollar-euro exchange rate is initially \$1/€1. Now a 20% tax is levied on imports. If the exchange rate adjusts to offset this tax, the new dollar-euro exchange rate will be \$0.80/€1. That is, it now only takes \$0.80 to buy €1, which implies that \$1 can buy €1.25, or that the dollar is worth 25% more against the euro.

⁵ Alan J. Auerbach and Douglas Holtz-Eakin, *The Role of Border Adjustments in International Taxation*, American Action Forum, December 2, 2016, <https://www.americanactionforum.org/research/14344/>.

adjustment process and could result in a situation where the trade balance improves for a number of years until the exchange rate fully adjusts.⁶ For example, there may be some contracts already in place that are denominated in dollars that will prevent the exchange rate from adjusting until they expire. In the end, however, the BAT cannot permanently lift exports over imports because economic accounting constrains a country's *aggregate* present-value trade balance to be zero. It is important to remember, however, that a country's aggregate trade balance is the summation of trade surpluses and deficits with every other individual country in the world. Additionally, countries can run bilateral trade surpluses and trade deficits for quite some time.

There can be direct trade-balance effects in the case that the tax is not fully adjusted at the border. Less than full border adjustment could occur in at least one of two ways. The first is if either not all imports are uniformly and identically taxed or if not all exports are completely exempted from tax. If either one of these situations were to occur, it could prevent the exchange rate from fully adjusting or alter the pattern of trade. In short, full border adjustment requires that if imports are subject to taxation, then exports must be completely exempt. The "A Better Way" blueprint indicates this is the approach it would pursue, which is consistent with standard national consumption tax regimes.⁷

The second is if the border adjustment is not made refundable as was the case in "Example 3" above. Large U.S. exporters with domestic production facilities may find themselves in significant tax loss positions (negative income) as their overseas sales would not be included in income while they could still deduct the cost of plant and equipment (expensing), employee compensation, and inputs. Full border adjustment would require that these firms receive a refund from the Treasury equal to the amount of the value of their tax loss. While the "A Better Way" plan would allow for these losses to be carried forward with interest, some firms may find themselves unable to ever use their losses. To the extent that firms could not use tax losses or loss carryovers, full exchange-rate adjustment would not occur. Some have pointed out that firms with permanent tax loss positions would have an incentive to merge with profitable companies to claim the losses.⁸

Even if exchange rates fully adjust, a BAT could indirectly affect the trade balance. Economic accounting states that there is an intimate relationship between a country's trade balance and the amount of its investment and saving. Specifically, when a country is running a trade deficit, it is also true that domestic investment exceeds domestic saving. Included in the domestic saving component is the government budget deficit. A BAT that is expected to raise revenue in the near term would therefore increase government saving. The increase in government saving would reduce the trade deficit as there would be less reliance on foreign capital and therefore a narrowing of the gap between exports and imports, all else equal.⁹ However, as pointed out

⁶ Karl L. Kellar, George Korenko, and Lori Hellkamp, "Border Adjustments in the Destination-Based Cash-Flow Tax," *Bloomberg BNA*, February 16, 2017; Kenneth Rogoff, "Trump's Virtual Wall," *Project Syndicate*, March 8, 2017, <https://www.project-syndicate.org/commentary/trump-border-adjustment-tax-costs-by-kenneth-rogoff-2017-03>.

⁷ Any proposal that attempts to tax all imports may encounter administrative difficulties with collecting tax on direct business to consumer sales, particularly digital sales. The problem is similar to the collection of state taxes on internet sales. In those cases, it is often left to the consumer to pay the tax on out-of-state internet purchases, and compliance tends to be low.

⁸ Elena Patel and John McClelland, *What Would a Cash Flow Tax Look Like For U.S. Companies? Lessons From a Historical Panel*, The Department of Treasury, Working Paper 116, January 2017, <https://www.treasury.gov/resource-center/tax-policy/tax-analysis/Documents/WP-116.pdf>.

⁹ Outside budgetary estimates of the BAT proposal include Jim Nunns, et al., *An Analysis of the House GOP Tax Plan*, Tax Policy Center, September 16, 2016, <http://www.taxpolicycenter.org/publications/analysis-house-gop-tax-plan/full/>; and Kyle Pomerleau, *Details and Analysis of 2016 House Republican Tax Reform Plan*, Tax Foundation, July 5, 2016, (continued...)

earlier, a country cannot indefinitely run a trade surplus or trade deficit. That is, a country must have a zero present-value trade balance. Thus, while a temporary revenue surge may increase national saving and therefore improve the trade balance temporarily, it cannot cause the United States to be a net exporter permanently.

The analysis just presented was conditional on holding all else constant. However, because the proposed BAT under the DBCFT would be part of a larger tax reform plan, all else would not be constant, and initial indications are that the revenue generated from a BAT may be offset by other aspects of the tax reform proposal. While the Joint Committee on Taxation (JCT) will be the official score keeper for any formal legislative proposal, two outside groups have already estimated the revenue effects of the “A Better Way” plan. Both the Tax Policy Center (TPC) and the Tax Foundation have estimated that the plan would lose revenue as a whole.¹⁰ A revenue loss implies that the national investment and saving relationship would be altered in such a way that the trade deficit would increase. Additionally, other proposals in the plan such as a repatriation holiday or incentives that encourage investment in the United States could dampen any improvement in the trade deficit.

Border Tax Adjustment: Empirical Evidence

Direct empirical evidence of exchange-rate responses to the DBCFT is limited by the fact that such a tax has not been implemented in other countries. Some evidence of exchange-rate responses to border adjustments is available through the international experience with the value-added taxes (VAT), which is another type of consumption tax levied on the difference between firm sales and purchases from other firms.¹¹ VATs often use border adjustments to ensure that such taxes apply exclusively and comprehensively to jurisdictional consumption. Theory would predict that border adjustments for uniform BATs and VATs would have matching predicted effects on exchange rates and balances of trade. Nevertheless, several complications related to both the practicalities of tax policy shifts and of global markets may limit the usefulness in applying empirical VAT exchange rate evidence to a U.S. BAT.

The first limitation of existing empirical evidence is that uncertainty in the timing of exchange rate responses to border tax adjustments may make it difficult to empirically isolate the “true response” to a given policy. For example, exchange rates may respond to a BAT upon enactment as the shift from proposal to law induces behavioral changes. However, exchange rates may also respond before enactment if individuals and firms are forward looking and try to capitalize on any opportunities in foreign exchange markets. Moreover, market participants may not fully respond to the new tax until its mechanics are understood after implementation, allowing for further responses after enactment.

Second, implementation of border-adjusted taxes elsewhere has often been accompanied by other changes in tax and spending policies. In those cases, any exchange-rate evaluation of the border-adjusted tax may require estimation or assumptions of the economic response to other policy

(...continued)

<https://taxfoundation.org/details-and-analysis-2016-house-republican-tax-reform-plan>.

¹⁰ Ibid. The Tax Policy Center (TPC) estimates a “static” revenue loss from the proposal of \$3.1 trillion over 10 years. The TPC also conducted a “dynamic” analysis that placed the revenue loss at between \$2.5 trillion and \$3 trillion, depending on the model used. In contrast, the Tax Foundation’s static estimate puts the 10-year revenue loss at \$2.4 trillion, and the dynamic revenue loss at \$191 billion.

¹¹ More information on VATs is available in CRS Report R44342, *Consumption Taxes: An Overview*, by (name redacted) and (name redacted).

changes. This adds an additional layer of difficulty and uncertainty in isolating exchange-rate and trade-balance responses to a border adjustment.

Third, some recent implementations of border adjustment have been in countries with economies that have a smaller global impact than that of the United States. That difference could change the likelihood or degree to which potential sources of interference with full exchange-rate adjustment take effect in each case. For instance, exchange-rate changes may have a significant impact in countries whose debt is denominated in U.S. dollars but with assets in their own currencies, which could have subsequent effects on financial markets.¹² Other potential obstacles to full exchange-rate adjustment do not depend on the size of the economy and would be unaffected by this distinction.

Finally, some recent introductions and modifications of VATs have occurred in economies where the local currency is fixed against another currency (in some cases the dollar).¹³ These countries are described as having fixed exchange rates and cannot be used to evaluate border adjustments because the adjustment mechanism for trade flows is not possible. Even countries that do not fix their currency may have exchange rates that are less flexible due to currency unions and international trading patterns. A notable example of this is in the set of countries that use the Euro (which include many OECD countries mentioned below), which would limit exchange rate responses to border adjustments in those countries since a large portion of their trade is likely conducted with countries that use the same currency.

The existing literature includes some studies that are broadly supportive of a full and timely exchange-rate response to VATs. de Mooij and Keen (2013) used data for 30 Organization for Economic Co-operation and Development (OECD) countries from 1965 through 2009 to estimate the effect of VATs on trade balances.¹⁴ The authors made adjustments to address potential complicating factors in the estimation process, including separation of countries into categories based on the flexibility of their exchange rates. They found that VAT implementation had no significant effect on a country's trade balances in most specifications (particularly in countries with flexible exchange rate regimes), measured both in the short and long run, which is consistent with a full exchange-rate response to border-adjusted taxation.¹⁵ The authors note that timing and compliance issues are important factors in determining the ultimate short-run effects of tax reform. Desai and Hines (2001) analyzed market reactions to threatened action by the European Union against the United States regarding foreign sales corporations.¹⁶ The threatened action would have eliminated a tax incentive afforded U.S. exporters, and thus provided an opportunity to observe market responses to the possibility of a tax policy shift. They observed immediate exchange-rate movements consistent with trade-based exchange-rate determination.

¹² Gale, William G., *A quick guide to the 'border adjustments' tax*, The Brookings Institution, February 7, 2017, <https://www.brookings.edu/opinions/a-quick-guide-to-the-border-adjustments-tax/>.

¹³ For example, Denmark has fixed their local currency (the Krone) to that of the European Union (Euro). For more information on that specific policy, see <http://www.nationalbanken.dk/en/monetarypolicy/implementation/Pages/Default.aspx>.

¹⁴ de Mooij, Ruud and Michael Keen, "Fiscal Devaluation" and Fiscal Consolidation: The VAT in Troubled Times," *Fiscal Policy after the Financial Crisis*, University of Chicago Press, Chicago, IL, 2013, pp. 443-485.

¹⁵ "... the VAT is rarely significant in any of the results ... reminiscent of the theoretical implication of no short-run impact of an increase in the VAT if applied uniformly to all commodities—strikingly so, indeed, given how nonuniform VATs are in practice." (p. 459) The authors did find mixed evidence of potential trade balance effects in countries whose reforms also sought to reduce labor taxation, such as in certain Eurozone countries.

¹⁶ Desai, Mihir and James Hines, "Exchange Rates and Tax-Based Export Promotion," NBER Working Paper No. 8121, Cambridge, MA: National Bureau of Economic Research, 2013.

Other research has found evidence suggestive of a full VAT exchange-rate response in the long run but with less clarity in short-term adjustments and industry-specific effects. Keen and Syed (2006) used OECD country data from 1967 to 2003 to analyze the effect of VATs on export performance.¹⁷ The results of some empirical models indicated that there were no effects on net exports in either the short or long run, while other models found a short-term reduction in net exports that disappeared over time. Nicholson (2010) used data from 1997 to 2008 to examine the effect of VATs on trade behavior across industries in 29 OECD countries.¹⁸ The author finds that border-adjusted taxation reduces trade volumes of both exports and imports. Those results differ across industries, however, with beverage, tobacco, and leather industries increasing net import behavior while natural resource and apparel industries are induced to increase net exports. Freund and Gagnon (2017) examine the effect of consumption taxes on trade behavior using OECD data from 1980 to 2015.¹⁹ Their preliminary results support the notion of a long-term exchange-rate adjustment in the direction predicted by theory, but does not offer insights on the short-term response.

Concluding Thoughts

Replacing the current corporate income tax system with a DBCFT with a BAT would be an unprecedented shift in U.S. tax policy. While such a significant change would bring with it some uncertainty, economists tend to agree that any tax-induced advantage for U.S. exports or tax-induced costs on U.S. imports would be offset by adjustments to the exchange-rate value of the dollar. In other words, if the dollar appreciation occurs as economic theory predicts, there should be no changes in the trade balance resulting from tax. One unanswered question is how fast the adjustments would occur. Although other countries have introduced border adjustments as part of a supplemental VAT, it is unclear if the findings of empirical studies of these countries would apply to the largest economy in the world.

Additionally, there are a number of other issues that may need to be addressed. For example, some have raised concerns that the structure of the current DBCFT proposal would not be permitted under WTO rules or bilateral tax treaties (an issue that is beyond the scope of this report). There is also a concern that large exporting companies may generate significant tax losses as the result of the adjustment. Although the “A Better Way” tax reform plan would allow for losses to be carried forward, some exporters may find it difficult to generate sufficient taxable income to offset those losses. Lastly, other parts of any tax reform package could influence exchange rates or the trade balance in a way that counteracts or reinforces those effects predicted by traditional economic theory on border adjustments.

¹⁷ Keen, Michael, and Murtaza Syed, “Domestic Taxes and International Trade: Some Evidence,” IMF Working Paper, Washington, DC: International Monetary Fund, 2006.

¹⁸ Nicholson, Michael, “Value-Added Taxes and US Trade Competitiveness,” Office of Competition and Economic Analysis, International Trade Administration, Washington: U.S. Department of Commerce, 2010.

¹⁹ Freund, Caroline and Joseph Gagnon, “Consumption Taxes, Real Exchange Rates, and Trade Balances,” *Border Tax and Corporate Tax Reform*, PIIE Briefing, ed. Adam Posen and Chad Bown, Washington: Peterson Institute for International Economics, 2017 (forthcoming).

Author Contact Information

(name redacted)
Analyst in Public Finance
[redacted]@crs.loc.gov , 7-....

(name redacted)
Specialist in Economics
[redacted]@crs.loc.gov , 7-....

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