Transfer Pricing by U.S.-Based Multinational Firms*

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Abstract

This paper examines how prices set by multinational firms vary across arm's-length and related-party customers. We find that arm's length prices are substantially and significantly higher than related party prices for U.S.-based multinational exporters. The price difference is large even when comparing the export of the same good by the same firm to the same destination country in the same month by the same mode of transport. The price wedge is smaller for commodities than for differentiated goods and is increasing in firm size and firm export share. The difference between arm's length and related party prices is also significantly greater for goods sent to countries with lower taxes and higher tariffs. Changes in exchange rates have differential effects on arm's length and related party prices; an appreciation of the dollar strongly reduces the difference between the prices

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1. Introduction

This paper examines how prices set by multinational firms vary across arm's length and related party customers. It takes advantage of a unique new dataset that tracks the population of U.S. export transactions during the 1990s. Consistent with a model of transfer pricing that we develop below, these data show that there is a large positive gap between firms arm's length and related party prices, particularly for differentiated goods. The size of the price gap varies systematically with firms' market power as well as destination-countries' corporate tax rates, product tariffs and real exchange rates.

U.S. exports are highly concentrated among a relatively small number of firms. The top 1 percent of exporters represents just 0.03 percent of the total number of firms in the United States but accounts for more than 80 percent of the value of exports and employs more than 11 percent of all private sector workers. Among large exporters, U.S.-based multinationals, i.e., firms that are either U.S.-owned multinationals or local affiliates of foreign-owned multinationals, are dominant, controlling more than 90 percent of U.S. exports.[1] A substantial fraction of these exports – one third – occur within the firm, i.e., between the U.S.-based multinational and a related party in a foreign country.[2]

The prominence of multinationals in international trade has stimulated a large body of research attempting to explain their behavior in terms of the goods they produce, where they locate production and their response to policies set by individual governments. Their pricing behavior in particular has drawn wide attention from academics in economics, accounting and finance as well as domestic tax authorities, customs bureaus and legislative bodies. Of specific interest is the potential difference between the prices multinational firms set for their arm's length customers and the "transfer" prices they use to govern international trade within the boundaries of the firm.[3] Given the large volume of U.S. and global trade that takes place inside multinational firms, the potential impact of this form of price discrimination is quite broad. Indeed, it has the ability to influence official trade statistics and national accounts aggregates as well as estimates of inflation and productivity growth via its effect on import and export price indexes.[4]

[1] Exporting multinationals based in the U.S. account for 0.90 percent of all firms, 13 percent of exporting firms, and employ 27 percent of U.S. workers. See Bernard, Jensen and Schott (2005) for these and other facts about U.S. trading firms.

[2] As discussed below, "related party" trade refers to trade between U.S. companies and their foreign subsidiaries as well as trade between U.S. subsidiaries of foreign companies and their foreign affiliates. For exports, firms are "related" if either party owns, directly or indirectly, 10 percent or more of the other party (see Section 30.7(v) of The Foreign Trade Statistics Regulations).

[3] Transfer pricing concerns have traditionally been a cross-border issue; however recent court cases in the U.K. are threatening to impose the same restrictions on within-country intra-firm pricing as exist for cross-border transactions. See the Economist (2005).

[4] U.S. import and export price indexes are currently constructed by the Bureau of Labor Statistics using prices

Multinational firms have both managerial and financial motives for setting different prices for arm's length and related party transactions. Managerial motives include establishing the proper incentives for disparate divisions within a decentralized firm and avoiding "double marginalization" in the presence of market power.[5] Financial motivations encompass the minimization of corporate tax and tariff payments as well as avoidance of foreign exchange controls and quantitative restrictions on cross-border capital movements. Because obtaining direct evidence on the pricing behavior of multinationals has, until now, been extremely difficult, existing empirical studies generally have relied upon indirect evidence or responses in a very narrowly defined industry.[6]

The dataset employed in this paper contains detailed information on every U.S. international export transaction that occurs between 1993 and 2000 inclusive. For each export shipment that leaves the United States, this dataset records the identity of the exporter, the Harmonized System product classification and date of the shipment, the value and quantity shipped, the destination country, the transport mode, and whether the transaction takes place at "arm's length" or between "related parties". This level of detail provides the first opportunity to consider the role that product characteristics, firm attributes and market structure play in the transfer pricing decisions of multinational firms. We use it here to answer the dominant question in the transfer pricing literature, whether and how much the gap between firms' arm's length and related party prices responds to tax and tariff rates in the destination country.

We find that export prices for intrafirm transactions are significantly lower than prices for the same good sent to an arm's length customer. Surprisingly, after matching related-party sales by a firm to arm's length sales by the same firm for the same product to the same country in the same month using the same mode of transport, we find that the average arm's length price is on average 47 percent higher than the related party price. Product characteristics are influential in the determination of this gap. We find that commodity products (i.e., undifferentiated goods) have an arm's length price wedge of only 8.5 percent while the average wedge for differentiated products is 73.4 percent. Firm and market characteristics are also influential: the difference between arm's length and related party prices are significantly higher for goods shipped by larger firms, firms with higher export shares, and firms in product-country markets served by fewer exporters.

Finally, with respect to the influence of tax rates on transfer pricing, we find that the gap

reported by firms in voluntary monthly surveys. To the extent that these prices reflect an unknown mixture of arm's length and related party transactions, they may fail to capture true movements in the U.S. terms of trade. See, for example, Diewert et al. (2005) and Rangan and Lawrence (1993).

[5] "Double marginalization" is a variant of the vertical externality where the downstream firm does not take the upstream firm's profit into account when setting prices, see Tirole (1988).

[6] For exceptions, see the discussion of Lall (1973), Swenson (2001) and Clausing (2003) in the next section.

between arm's length and related party prices is larger when the corporate tax rate in the destination country is lower. Indeed, for each one percentage point reduction in the foreign tax rate we find an increase in the price wedge of 0.54 to 0.71 percent. The difference between arm's length and related party prices also varies with destination-country import tariffs. A one percentage point increase in the foreign customs duty increases the price wedge by 0.53 to 0.66 percent.

We also examine the role of exchange rates in multinational pricing. Though a large literature is devoted to analyzing the interaction of firm market power and exchange rate movements, it largely ignores issues of transfer pricing.[7] Here, we find that the price gap between firms' arm's length and related party prices varies substantially with movements in real exchange rates, with a one percent appreciation of the dollar against the destination currency reducing the price gap by 0.9 percent. This result suggests that multinationals adjust their arm's length and related party prices quite differently in response to exchange rate shocks.[8]

In addition to the literatures cited above, our results contribute to the large body of research on the performance attributes of multinational firms and their affiliates. Existing studies on multinationals find that they are larger, more innovative, exhibit higher productivity, pay higher wages and employ greater numbers of skilled or educated workers than domestic firms.[9] Few, if any, of these studies contemplate the substantial price differences documented here. This omission is potentially significant in that affiliates' ability to purchase lower-priced intermediate inputs from overseas parents may contribute to their observed positive performance, in particular their greater size, better productivity and higher wages.

The remainder of the paper proceeds as follows. We start by briefly surveying the large existing literature on transfer pricing. Next in Section 3, we develop a theoretical framework to highlight the product, firm, and country attributes that potentially influence the gap between firms' arm's length and related party prices. Section 4 describes the dataset and Section 5 outlines how we compare arm's length and related party prices empirically. We present the main empirical results in Sections 6 and 7. In Section 8, we examine the robustness of the results and, in Section 9, we conclude and discuss the implications of the results for future research.

[7] See, for example, the survey by Goldberg and Knetter (1997).

[8] Rangan and Lawrence (1993) argue that the U.S. export price index deviates insufficiently from the U.S. wholesale price index in the presence of exchange rate movements because it is biased towards sampling firms' intrafirm prices. To the extent that exchange-rate driven changes in the arm's length price wedge are due to relatively large adjustments in firms' arm's length prices, our results provide support for this argument.

[9] Doms and Jensen (1998) report significantly higher productivity at plants owned by U.S. multinationals, a fact used by Helpman et al. (2004) to motivate a model of exporting and multinationals. Aitken et al. (1996) and many others report higher wages at foreign-owned plants. Lipsey and Sjöholm (2004) find higher wages, higher levels of education and more inputs per worker in foreign-owned plants in Indonesia. Criscuolo et al. (2005) report higher innovation activity at multinational firms in the U.K..

2. Existing Research on Transfer Pricing

There are large theoretical and empirical literatures on transfer pricing by multinational firms.[10] Theoretical research considers two major topics: managerial and economic incentives in multidivisional firms and tax minimization and compliance in cross-border transactions.

Eden (1998) develops a series of models to describe managerial as well as tax and tariff effects on intrafirm prices when the firm sets a single transfer price.[11] Capithorne (1971), Horst (1971), Samuelson (1982), Halperin and Srinidhi (1987), and Harris and Sansing (1998) examine the effect of tax rate differences on production and pricing when a single agent is responsible for intra-company transactions. A set of recent papers decentralizes the decision-making process within the multinational firm. Hyde and Choe (2005) examine the effects of transfer pricing on economic incentives and tax compliance in a model where the domestic division sets two transfer prices: one for managerial decision-making and the other for tax compliance. Similarly, Baldenius et al. (2004) develop a model with two types of transfer prices and consider the effects of cost-based and market-based transfer pricing.[12]

The empirical literature on transfer pricing focuses almost exclusively on the role taxes or tariffs in influencing over- or under-invoicing of intrafirm, cross-border transactions.[13] Most of these studies address this question indirectly by examining whether firms in relatively low-tax jurisdictions are more profitable than firms in high tax jurisdictions.[14] Hines (1997) provides a survey of this literature, which typically finds a negative correlation between tax rates and high profitability. He cautions, however, that the observed correlation may have other interpretations.

2.1. Price-based studies

In spite of the large amount of research on the issue of transfer pricing, there have only been a handful of empirical studies using actual price data. All of this work has as its focus the relationship between country corporate tax (and tariff) rates and transfer prices. Lall (1973), for example, investigates over-invoicing by a small sample of Colombian pharmaceutical firms with foreign affiliates in response to governmental restrictions on profit repatriation. Foreign

[10] A search on Econlit using the keywords "transfer pricing" and "multinational" yields 66 peer-reviewed journal articles and 10 books.

[11] Eden (1998) also provides substantial coverage of non-academic evidence on the extent of transfer pricing and tax minimization by multinationals.

[12] Halperin and Srinidhi (1991) and Narayanan and Smith (2000) also allow for decentralized decision-making in models with a single transfer price.

[13] To our knowledge none of the empirical papers consider the role of product characteristics or firm market power in the transfer pricing decision.

[14] See, for example, Jenkins and Wright (1975), Bernard and Weiner (1990), Harris et al. (1993), Klassen et al. (1993) and Collins et al. (1996).

exchange and capital controls gave multinational firms an incentive to raise their intrafirm prices above the arm's-length level as a means of transferring profits out of the country. Comparing intrafirm import prices to arm's length prices for similar goods in local, regional and world markets during 1968 to 1970, he finds that related party prices ranged 33 to 300 percent higher than arm's length prices.[15]

Two other studies, by Swenson (2001) and Clausing (2003), are more recent and cover a wider range of industries. Swenson (2001) examines the response of aggregate unit values for country-product pairs to variations in U.S. import tariffs and foreign tax rates using annual U.S. import data for five countries during the 1980s. She finds evidence that changes in prices are consistent with incentives based on taxes and tariffs but that the economic magnitudes are small.[16]

Clausing (2003) uses product price data collected by the Bureau of Labor Statistics (BLS) from 1997 to 1999 to investigate the effect of taxes on related party prices. The BLS data separately identify intrafirm and arm's length transactions. Clausing finds price responses in the expected directions, i.e., higher taxes abroad are associated with higher export prices and lower import prices for related party transactions. Her point estimates suggest that a 1 percent drop in taxes abroad reduces U.S. export prices between related parties by 0.94-1.8 percent.[17]

2.2. Taxes

Before introducing our theoretical framework and empirical analysis we provide a brief discussion of the international tax environment facing U.S. firms. In the United States, firms are taxed according to their worldwide income.[18] As a result, U.S. firms must pay U.S. income tax on both their domestic profits as well as any foreign profits that are repatriated to the United States.[19] The tax liability associated with foreign earnings, however, can be offset by income taxes the firm pays to other countries. If foreign profits are taxed more lightly (heavily) than domestic profits, the firm is said to have 'deficit' ('excess') foreign tax credits. If a firm has deficit foreign tax credits, its U.S. tax liability on foreign profits is the difference between what

[15] A more extensive study by the Colombian government found prices to be an average of 155 percent higher. Lall (1973) notes that similar studies subsequently undertaken by neighboring Latin American countries reached similar conclusions.

[16] Swenson's (2001) data do not separately identify arm's length and related party import transactions, nor do they allow one to control for firm-level differences in prices.

[17] While Clausing (2003) uses individual transaction prices, her data is not without limitations: 42 percent of the prices are imputed and firm and product identifiers are unavailable. As firm- or product-specific variation in prices cannot be examined.

[18] This section draws on the discussion in Hines (1997).

[19] According to Subpart F rules of the U.S. Internal Revenue service, foreign profits of certain majority-owned foreign affilitates are considered repatriated (i.e., "deemed distributed") whether or not they are actually transferred back to the parent. The affected affiliates are generally characterized as "passive" operations in tax haven countries.

would be owed under the U.S. tax rate and what the firm actually paid to foreign government. Excess foreign tax credits cannot be used to offset firm's tax liabilities on domestic income in the year they are incurred, but they can be used to some extent to offset tax liabilities on foreign income in prior or subsequent years, subject to U.S. Internal Revenue Service guidelines.

During our sample period, U.S. firms had at least two alternatives for booking export profits. First, they could be attributed to a Foreign Sales Corporation (FSC) and U.S. tax liability would be imposed at a reduced rate and could be offset by foreign tax credits generated by other foreign income. Second, U.S. exporters could classify up to 50 percent of their export profits as foreign income and U.S. tax liability could be wholly or partly offset by foreign tax credits. Both of these policies create a motive for firms to over- or under-invoice exports depending upon the tax rates of the destination countries. Firms booking profits to a FSC, for example, may have expected tax laws to change in their favor in the future. Indeed, the American Jobs Creation Act of 2004, a corporate tax bill enacted in 2004 largely in response to a World Trade Organization ruling against FSCs, allowed firms to repatriate their foreign profits at a highly advantageous tax rate.[20] Allowing firms to book export profits as foreign income, on the other hand, essentially allowed firms with excess foreign tax credits to escape U.S. tax liability on those export profits.[21]

As a consequence of these components of the tax law, even though the United States relies upon a system of worldwide taxation, U.S. firms continue to face incentives to minimize their tax burden through transfer pricing. These incentives will exist whenever U.S. marginal tax rates differ from the combined burden of foreign marginal tax and tariff rates. In the next section we develop a framework that explicitly links foreign corporate taxes and transfer prices.

3. Theoretical Framework

The goal of our analysis is to understand the forces that shape multinationals' arm's length versus related party prices. It is likely that the same forces that play a role in pricing also influence multinationals' more generally in terms of what they produce and where they locate.[22] Here, however, we develop an explicitly partial equilibrium approach to the problem of transfer pricing in that we take the location of firm activity as given and examine the variation in the resulting prices.

In this section we consider the particular case of a firm exporting the same good both to a

[20] Estimates of profits that will be repatriated at these favorable corporate tax rates (5.25% instead of 35%) range from $320 billion (Wall Street Journal 2005) to as high as $520 billion (Business Week 2005).

[21] Kemsley (1995) shows that firms with excess foreign tax credits are more likely to export from the United States than to produce in an establishment located abroad.

[22] See Hines (1997) for a survey of the enormous literature on the location of multinational activity.

related party and to an arm's length customer in the same destination country. Examination of this case is useful for several reasons. First, it closely corresponds to the concept of arm's length pricing used by U.S. and OECD tax authorities when evaluating transfer pricing for tax purposes. Second, limiting our analysis to the same good sent to the same country enables us to implicitly control for variation in both the nature of the product and in the cost structure of the exporting firm. Finally, this framework corresponds closely to the main strands of research in the existing theoretical literature.

While limited in scope, our focus is broader than most of the existing empirical literature on transfer pricing in that we consider the role of product attributes, firm characteristics and market structure in addition to that of taxes and tariffs in shaping related party prices. Given the high degree of concentration in U.S. exports, even this special case encompasses a large fraction of related party trade.

3.1. A model of transfer pricing

Our basic setup is straightforward and based on the framework developed in Hyde and Choe (2005).[23] There are two divisions in the multinational: a home division and a foreign affiliate. The home division produces an intermediate good which is sold both at arm's length (quantity Q_{al}) and to the foreign affiliate (quantity Q_f).[24] The good sold to both customers is identical, and we assume that both customers reside in the same destination country.[25] For simplicity. we also assume that there are no costs of transforming the intermediate good in the foreign country.

The firm keeps two sets of books, one used to set incentives within the firm, i.e., used by foreign managers to make quantity and price decisions and also to reward those same foreign managers, and the other reported to tax authorities in both countries and to customs authorities as the good crosses the border.[26]

Pre-tax profits for the two divisions are given by

$$\tilde{\pi}_h = P_{al}Q_{al} - TC\left(Q_f + Q_{al}\right) + P_{in}Q_f \tag{1}$$

$$\tilde{\pi}_f = S_f Q_f - eP_{in}Q_f - \tau eP_{tx}Q_f \tag{2}$$

where P_{al} is the price charged the foreign arm's length customer, P_{in} is the internal incentive price for the intermediate good, P_{tx} is the price of the intermediate good reported to the tax

[23] The differences with Hyde and Choe (2005) include the introduction of a tariff and an exchange rate and the higher relative tax rates of the home country.

[24] By intermediate good we merely mean that the good is not directly consumed by the foreign importing firm, i.e. it is subject to further processing or handling by wholesale and/or retail establishments.

[25] We assume that there are no sales to the domestic market.

[26] The main conclusions are unchanged if we assume the firm has a single transfer price for both managerial and tax purposes. See, for example, the discussion in Baldenius et al (2004).

authorities, both income tax and customs or border, i.e., for tariff purposes, e is the exchange rate (foreign currency units per unit of home currency) and S_f is the price faced by the final customer of the foreign affiliate. The total cost of production is given by $TC(\cdot)$ and the ad valorem tariff rate is given by τ.[27]

Taxable income is given by

$$I_h = P_{al}Q_{al} - c(Q_f + Q_{al}) + P_{tx}Q_f \tag{3}$$

$$I_f = S_f Q_f - (1+\tau) e P_{tx} Q_f, \tag{4}$$

where c is the firm's marginal cost of production, assumed here, without loss of generality, to be constant.[28] We assume the transfer price is bounded from below by the firm's marginal cost and from above by an amount, B, that prevents the taxable income of the foreign affiliate from becoming negative, i.e, $c \leq P_{tx} \leq B$ where $I_f(B) = 0$.[29]

After-tax profit of the two divisions is given by

$$\pi_h = \tilde{\pi}_h - t_h I_h = (1-t_h)[P_{al}Q_{al} - c(Q_f + Q_{al})] + (P_{in} - t_h P_{tx}) Q_f \tag{5}$$

$$\pi_f = \tilde{\pi}_f - t_f I_f = (1-t_f)[S_f Q_f] - (eP_{in} + (\tau - t_f(1+\tau)) e P_{tx}) Q_f \tag{6}$$

where t_h and t_f are home and foreign tax rates respectively.

The foreign division chooses the quantity to sell given the foreign tax, incentive transfer prices, tariffs and the elasticity of demand it faces in the foreign market, μ_f:

$$\frac{\partial \pi_f}{\partial Q_f} = (1-t_f)\left(\frac{1}{\mu_f} + 1\right) S_f - e(P_{in} + \tau P_{tx} - P_{tx} t_f (1+\tau)) = 0 \tag{7}$$

$$S_f = \left(\frac{1}{1-t_f}\right)\left(\frac{\mu_f}{\mu_f + 1}\right) e(P_{in} + \tau P_{tx} - P_{tx} t_f (1+\tau)). \tag{8}$$

The response of S_f (and thus the quantity of intrafirm sales) to the reported transfer price, P_{tx}, depends on a combination of foreign taxes, tariffs, and the exchange rate.

After-tax profits for the parent firm are given by

$$\begin{aligned} \pi_p \;=\; & (1-t_h)[P_{al}Q_{al} - c(Q_f + Q_{al})] + (1-t_f)\frac{1}{e}[S_f Q_f] \\ & + (t_f(1+\tau) - (\tau + t_h)) P_{tx} Q_f \end{aligned} \tag{9}$$

[27] For sales to the arm's length customer we assume that the importing firm pays the tariff. 75 percent of U.S. multinationals report that they consider the customs and VAT implications of their transfer pricing policies, Ernst and Young (2003).

[28] The appropriate marginal cost for tax purposes would include non-production components such as interest and depreciation changes.

[29] These bounds reflect likely objections of the tax authorities.

where $Q_f = Q_f(P_{in}, P_{tx})$. The last term in equation 9 shows clearly that the profits of the parent are decreasing in the reported transfer price when the home tax rate is above the foreign tax rate. Without some restriction on behavior, the firm will choose the lowest possible tax transfer price. Similarly, whatever the level of the tax rates at home and abroad, a positive tariff rate will also induce the firm to minimize the reported tax transfer price.[30]

Following Hyde and Choe (2005), we add a probability of being penalized by an amount θ if the reported price is too far from the benchmark price, $\hat{P}$, expected by the tax or customs authorities. We consider the case where $t_h > t_f$ and where the cumulative distribution function of the probability of being penalized is $F\left(\hat{P} - P_{tx}\right)$ where $F(0) = 0$ and $F\left(\hat{P}\right) = 1$. Under this setup, a firm reporting a transfer price of zero is punished with certainty. The associated density function is $f\left(\hat{P} - P_{tx}\right)$ where $f(0) = 0$ and $f\prime(\cdot) > 0$.[31]

After-tax profits for the parent firm are now given by

$$\begin{aligned} \pi_p &= (1-t_h)\left[P_{al}Q_{al} - c\left(Q_f + Q_{al}\right)\right] + (1-t_f)\frac{1}{e}\left[S_f Q_f\right] \\ &\quad + \left(t_f(1+\tau) - (\tau + t_h)\right)P_{tx}Q_f - F\left(\hat{P} - P_{tx}\right)\theta. \end{aligned} \tag{10}$$

The firm chooses (Q_{al}, P_{in}, P_{tx}) yielding first-order conditions:

$$Q_{al} : (1-t_h)\left[\left(\frac{1}{\mu_{al}} + 1\right)P_{al} - c\right] = 0 \tag{11}$$

$$P_{tx} : \frac{dQ_f^*}{dP_{tx}}\left[P_{in} - (1-t_h)c - t_h P_{tx}\right] + \left[t_f(1+\tau) - \tau - t_h\right]Q_f + f\left(\hat{P} - P_{tx}\right)\theta = 0 \tag{12}$$

$$P_{in} : \frac{dQ_f^*}{dP_{in}}\left[P_{in} - (1-t_h)c - t_h P_{tx}\right] = 0 \tag{13}$$

From the first-order conditions in equations 12 and 13, we obtain the following relationship between taxes, tariffs, and the transfer price reported to the tax authorities:

$$\left[t_h - t_f + \tau(1-t_f)\right]Q_f = f\left(\hat{P} - P_{tx}\right)\theta. \tag{14}$$

The right hand side of equation 14 gives the cost to the firm of deviating from the tax authority's benchmark price while the left hand side represents the benefits of deviating. In

[30] If the foreign income tax rate is higher than domestic income tax rate, then the response of the after-tax profits of the parent to a higher tax/border transfer price depends on the level of the tariff, and the two income tax rates. If $t_f > t_h$ and $t_f - t_h < (1-t_f)\tau$ then $\frac{\partial \pi_p}{\partial P_{tx}} < 0$. Normally high (relative) foreign income tax rates would induce the firm to raise the reported transfer price to shift profits into the low-tax home country. However, with small differences in income tax rates, high tariffs can induce the firm to once again reduce the reported transfer price to reduce tariff payments. See Swenson (2001) for a discussion.

[31] This form of the penalty function assumes that the probability of being penalized depends solely on the gap between the firm's price and a known benchmark price set by the tax authority. A more realistic setting would model the penalty function as the outcome of strategic choices by both the firm and the tax authority and would consider the potential influence of the firm's arm's length price. See Graetz et al. (1986) and De Waegenaere et al. (2005).

equilibrium the firm sets the transfer price reported to the tax and customs authorities to equalize the costs and benefits. The tax transfer price, P_{tx}, equals the benchmark price, $\hat{P}$, only when the tariff-adjusted difference in tax rates is zero. When $t_h > t_f + \tau(1 - t_f)$, or whenever the home tax rate is above the foreign rate, the firm will choose to report a transfer price below the benchmark price. Decreases in the foreign tax rate will reduce the optimal tax transfer price as will increases in the tariff.

From equation 11, we generate the standard markup price for arm's-length sales,

$$P_{al} = \left(\frac{\mu_{al}}{\mu_{al} + 1}\right) c.$$

The simple set-up for the arm's length price is an important component of the framework as it explicitly introduces the market power of the firm in the pricing decision. Greater market power increases the price to the arm's length customer but does not affect the tax or incentive transfer prices to the foreign affiliate.[32]

The framework developed here provides a guide for our subsequent empirical work. As in the existing theoretical and empirical literature, tax and tariff differences across countries provide an incentive for firms to vary their reported transfer prices and induce a wedge between arm's length and intrafirm prices even for the same product destined for the same country.

We emphasize, in addition, that the optimal price wedge varies according to the market power of the firm in arm's length market. Even in the absence of tax differences and tariffs, firms will have an incentive to price discriminate between customers inside and outside the firm. The price to the arm's length customer will continue to reflect markups over marginal cost while the price reported to the tax authority will equal the benchmark price. In such a case the internal incentive price will be set equal to marginal cost to avoid distortions in the quantity purchased by the foreign affiliate. Both the characteristics of the product and those of the firm will potentially influence the desire and ability of the firm to price discriminate between arm's length and related purchasers. If the firm is selling an undifferentiated commodity, there will be little mark-up over marginal cost and thus a smaller wedge. Similarly, the firm's ability to vary its transfer prices of undifferentiated commodities, or goods with easily visible reference prices, in response to differing tax rates may also be limited.[33]

Our framework does not capture all the possible sources of differences between arm's length and related party prices. For example, firms may have to offer explicit or implicit guarantees for

[32] This idea is clearly not original to our framework but is central to the large theoretical literature on the tension between setting transfer prices based on tax considerations versus managerial incentives. See Eden (1998) for a survey.

[33] We note that this model does not include other relevant aspects of the pricing decision. For example any relationship-specific components of the arm's length transaction have been assumed away. Firms that repeatedly deal with the same customers may offer price discounts.

products sold at arm's length which would tend raise the arm's length price above the intrafirm price. Similarly, intrafirm sales may act like implicit long-term contracts and thus lower the price relative to arm's length sales. More generally, unmeasured aspects of the transaction will tend to push the arm's length price away from the related party price.

4. Data Description

At the heart of our empirical analysis is the Linked/Longitudinal Firm Trade Transaction Database (LFTTD) which links individual trade transactions to firms in the United States.[34] This dataset has two components. The first part, foreign trade data assembled by the U.S. Census Bureau and the U.S. Customs Bureau, captures all U.S. international trade transactions between 1993 and 2000 inclusive. For each flow of goods across a U.S. border, this dataset records the product classification, the value and quantity shipped, the date of the shipment, the destination (or source) country, the transport mode, and whether the transaction takes place at "arm's length" or between "related parties".[35] "Related party", or intrafirm, trade refers to shipments between U.S. companies and their foreign subsidiaries as well as trade between U.S. subsidiaries of foreign companies and their affiliates abroad. For export transactions, firms are "related" if either party owns, directly or indirectly, 10 percent or more of the other party (see Section 30.7(v) of the Foreign Trade Statistics Regulations). This definition of related party corresponds exactly to that used by the Bureau of Economic Analysis in their annual surveys of multinational activity.

The second component of the LFTTD is the Longitudinal Business Database (LBD) of the U.S. Census Bureau, which records annual employment and survival information for most U.S. establishments.[36] Employment information for each establishment is collected in March of every year and we aggregate the establishment data up to the level of the firm. Matching the annual information in the LBD to the transaction-level trade data yields the LFTTD. Products in the LFTTD are tracked according to ten-digit Harmonized System (HS) categories, which break exported goods into 8572 products. These products are distributed across two-digit HS "industries" as noted in Table 1. Table 1 also records the share of exports in the industry that are intrafirm and the share of total U.S. exports accounted by the sector.

For the purposes of this paper we focus only on export transactions in the LFTTD, corresponding to exports by U.S.-based firms (as distinct from firms with U.S. nationality). From

[34] See Bernard et al. (2005) for a description of the LFTTD and its construction.

[35] See Appendix A for a discussion and an example of the Shipper's Export Declaration which form the basis for the export data in the LFTTD.

[36] This dataset excludes the U.S. Postal Service and firms in agriculture, forestry and fishing, railroads, education, public administration and several smaller sectors. See Jarmin and Miranda (2002) for an extensive discussion of the LBD and its construction.

the raw LFTTD data we make several adjustments to create our starting sample. First we eliminate firms with fewer than 10 transactions during 1993-2000 inclusive. Second we eliminate all transactions with missing, imputed or 'converted' quantities to ensure that all the observations in the data set for a product are measured in comparable units and are quantities recorded by the transacting firm.[37] For the remaining observations, we compute the export price as the unit value of the transaction, i.e., total value per unit quantity.

In order to understand the role of product and country characteristics in shaping related party prices we link several additional datasets to the LFTTD. Two datasets record time-series variation in international corporate tax rates. The first is the World Tax Database (WTD) compiled by the Office of Tax Policy Research at the University of Michigan.[38] From the WTD, we use the maximum statutory corporate tax rate. Table 2 reports the maximum corporate tax rate for countries in the database for 2000. Across the 140 countries, the mean (median) tax rate is 30.8 (32) and the rates range from zero in the tax havens of Bermuda and the Bahamas to 75 percent in Iran. One hundred thirteen countries (80 percent) have tax rates at or below that of the United States. Table 2 also reports estimates of countries effective tax rates estimated from Bureau of Economic Analysis (BEA) data, which record foreign revenues as well as the foreign taxes paid by foreign affiliates of U.S. firms.[39] Following the literature, we estimate an effective corporate tax rate for country c in year t by dividing the foreign taxes paid by total foreign revenue less cost of goods sold and selling and administrative costs.

The ideal rate as suggested by the model is a firm-specific marginal tax rate and, as such, neither measure of country tax rates is entirely satisfactory. Firms, especially multinationals, may receive a variety of tax holidays or exemptions that reduce their own marginal tax rate relative to the published statutory maximum. The calculated effective rate represents an average, rather than a marginal, rate across firms in a destination country.

Two datasets provide product information: the first is from Rauch (1999) and is used to group products into differentiated and non-differentiated categories. The second is from the UNCTAD TRAINS database and provides tariff rates for six-digit HS (HS6) categories by country for 1993 to 1998.[40] Table 1 reports the average differences in maximum and minimum tariff rates across products within two digit industries. The range of tariffs (highest minus lowest) across countries for the typical product is 64 percent. For example, the tariff rate on handheld computers (HS

[37] This set of adjustments to the raw data reduces the number of transactions by 12-20 percent depending on the year.

[38] These data are available and described in greater detail on the web at http://www.bus.umich.edu/OTPR/otpr/introduction.htm.

[39] These data are available and described in greater detail on the web at http://www.bea.doc.gov/bea/uguide.htm#_1_24.

[40] These data are available and described in greater detail on the web at http://r0.unctad.org/trains/

847130) ranges from 0 (Canada and others) to 22 percent (Brazil), with a mean and median of 4 percent while the tariff rate on men's dress shirts (HS 480990) ranges from 0 (Norway) to 80 percent (Mauritius).

Real exchange rates are constructed using monthly data on the end of period (line ae) nominal exchange rate and CPI from the IMF International Financial Statistics. Exchange rates are given in log units of foreign currency per U.S. dollar. Real per capita GDP (annual) is taken from the World Bank's World Development Indicators Database.[41] We also make use of the Governance Matters IV dataset compiled by Kaufmann et al. (2004) and available from the World Bank.[42] Two of the indicators in this database provide measures of countries' corruption and the strength of their rule of law. These indexes are based on a large number of individual variables, drawn from 37 separate data sources constructed by 31 different organizations, that measure perceptions of countries' governance. In Table 2 we report the mean index for each country over the years for which they are available. Indexes range from -2.5 to 2.5, with higher indexes indicating less corruption and a stronger rule of law, respectively.

5. Arm's Length Standard and Comparable Uncontrolled Prices

In order to examine the transfer pricing behavior of multinational firms, we want to compare the price associated with each of a firm's related party (i.e., "controlled") transactions to some reference, or benchmark, price. As indicated in both the U.S. tax code[43] and OECD tax guidelines[44], the preferred benchmark for determining the appropriate transfer price is the "arm's length standard". The reported transfer price must be "consistent with the results that would have been realized if uncontrolled taxpayers had engaged in the same transaction under the same circumstances (IRS 2005)."

While there are several approved methods for satisfying the arm's length standard, the most commonly used is the price associated with corresponding arm's length (i.e., "uncontrolled") transactions, the so-called "comparable uncontrolled price" (CUP).[45] The U.S. tax code and

[41] World Bank data can be accessed at http://devdata.worldbank.org/dataonline/.

[42] The data may be downloaded from www.worldbank.org/wbi/governance/govdata/.

[43] As noted on www.irs.gov, "Section 482 of the Code authorizes the IRS to adjust the income, deductions,credits, or allowances of commonly controlled taxpayers to prevent evasion of taxes or to clearly reflect their income. The regulations under section 482 generally provide that prices charged by one affiliate to another, in an intercompany transaction involving the transfer of goods, services, or intangibles, yield results that are consistent with the results that would have been realized if uncontrolled taxpayers had engaged in the same transaction under the same circumstances." See Treasury Reg. §1.482-1(6)(1).

[44] As stated in OECD (1995), "[When] conditions are made or imposed between ... two [associated] enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises, then any profits which would, but for those conditions, have accrued to one of the enterprises, but, by reason of those conditions, have not so accrued, may be included in the profits of that enterprise and taxed accordingly."

[45] Ernst and Young (2003) report that CUP was the most common method used to create transfer prices for

OECD tax guidelines indicate the desirability of a tight match between the characteristics of the related party and CUP transactions. Here, we make full use of the unique level of detail available in the LFTTD dataset to define the CUPs used in our analysis very narrowly, i.e., to match the characteristics of the transactions as closely as possible.

Denote the related party price of product i from firm f to country c in month t by transport mode m as rp_{ficmt}.[46] We define the comparable uncontrolled price associated with this related party price to be the average of the firm's N comparable arm's length prices made in the same month,

$$cup_{ficmt} = \frac{1}{N} \sum_{n} al^{n}_{ficmt}, \tag{15}$$

where al^{n}_{ficmt} is one of the firm's N arm's length export prices of product i to country c in month t by transport mode m. Note that if $N = 0$, i.e., if the firm does not export to an arm's length party within the product-country-mode-month bin, the CUP for a related party transaction does not exist. Of the more than 15 million related party export transactions in the LFTTD, 3.3 million can be associated with our definition of a CUP. These matched transactions account for roughly one fifth of the total value of related party exports in 2000.

For each related party export transaction that can be matched to a comparable uncontrolled price, we define the arm's length-related party (ALRP) price wedge to be the difference between the log CUP and the log related party price,

$$wedge_{ficmt} = \ln cup_{ficmt} - \ln rp_{ficmt}. \tag{16}$$

As noted in the theoretical discussion in Section 3, $wedge_{ficmt}$ is expected to be greater than zero. The wedge will be positive when the arm's length price is marked up over marginal cost and when the U.S. tax rate is greater than the tariff-adjusted foreign tax rate.

In addition to adhering to U.S. and OECD guidelines, the narrowness of the CUPs we define afford several advantages vis-a-vis the data used in previous examinations of multinational transfer pricing behavior. In particular, within-firm comparisons of export prices to both arm's length and related parties allows us to control for time-varying firm-specific marginal costs. Unlike previous empirical studies, we are able to both more closely match the theory and the definitions of arm's length prices preferred by most national tax authorities. In addition, our comparison of prices within firms, months, products, destination countries and modes of transport minimizes the likelihood that the ALRP price wedge captures price variation due to product heterogeneity or varying market conditions. Transport mode, for example, has been

their tangible goods, used by 35 percent of surveyed multinationals.

[46] Transport mode refers to whether the product is sent by air, ship or some other method.

linked to variation in product quality, time sensitivity and other factors that might affect price (Harrigan 2005; Hummels and Skiba 2004).[47]

Even though we are able to difference out firm, country, time, transport and product effects, there remain unobservable attributes of the transactions that may vary across arm's length and related party customers. While the data provide detailed product classification information, we do not have information on product characteristics or ancillary services (packaging, marketing, etc) provided by U.S.-based firms that might explain the price differential between related party and arm's length prices. In addition, transactions inside the firm may act like implicit long-term contracts and as a result be price below similar arm's length trades. We caution that the levels of the price wedge must be interpreted in light of these unobservables, i.e., the mere existence of a positive price wedge does not imply inappropriate behavior by the firm.

5.1. Magnitude of the Wedge

We report the price wedge for several definitions of the CUP in Table 3. In each case, we find that U.S.-based exporting firms charge arm's length customers higher prices for their products than related party (RP) customers.

The top row of the table reports the mean wedge for the CUP defined in equation 16. As indicated in the table, the wedge averages 47.8 percent within a firm, product, month, transport mode, and destination country group. The other rows of the table relax the definition of the group defining the CUP. The second row of the table, for example, indicates the price wedge for a CUP defined over the arm's length transactions of all firms within a product, month, transport mode, and destination country group. Within this broader group of comparable arm's length prices, the price wedge almost triples in size to 128 log points. Further relaxing the definition of comparable transactions continues to increase the size of the arm's length price wedge.

Even controlling for firm, product, month, transport mode, and destination country, we find a sizable price wedge between arm's length and related party transactions. However the magnitude of the gap does not pin down the source of the price differences. If we make the strong assumption that firms' related party prices are an accurate estimate of their marginal costs, and ignore all other potential sources of price variation, it implies an average markup in the sample of 47.8 percent. However, we suspect that omitted characteristics of the transaction are responsible for a substantial amount of the ALRP price wedge. In the next section we examine the relationship between the price wedge and product, firm and country attributes.

[47] We caution that even within a relatively narrow product category, it is possible that a firm may be shipping products with very different attributes.

6. Main Results

The theoretical model in the Section 3 shows that the difference between arm's length and related party prices depends on firm, product and country characteristics. In this section we examine the variation in arm's length and related party prices by U.S. exporters from 1993 to 2000. The basic empirical specification regresses firms' ALRP price wedges on proxies of product differentiation and firm market power, destination-country tax rates and destination-country product-level import tariff rates as well as product fixed effects.

6.1. Products and the Price Wedge

Our theoretical framework includes an important role for product characteristics in determining the wedge between arm's length and related party prices. If the exporting firm has no market power in the product then in the absence of tax or tariff incentives the arm's length and related party prices should coincide. Even with differences in taxes and tariffs across countries, if the product in question is an undifferentiated commodity the exporting firm will have little opportunity to shift profits between affiliates without risking offending one of the relevant tax authorities. As a result we expect that there will be substantial differences in the price wedge for differentiated and commodity products.

Table 4 documents that the price wedge is substantially larger for differentiated products than for commodities. We make this comparison using three different classifications of product differentiation. The first classification is based upon a "naive" inspection of the HS industry identifiers reported in Table 4: products in two-digit HS industries 01 to 21 and 25-29 are designated 'commodities', products in industries 84 to 97 are denominated 'differentiated', and all remaining HS industries are assigned to the category 'other'. The second and third classifications are due to Rauch (1999), who provides liberal and conservative identifications of commodities according to whether goods are quoted on an organized exchange.[48] The Rauch classification separates products into three categories: 'commodities', which are traded on an exchange, 'reference-priced', which are not traded on an exchange but whose prices can be found in catalogs, and 'differentiated', whose prices cannot be looked up. We combine the commodity and reference-priced categories into a single group.

All three classification schemes give similar results. The price wedge between arm's length and related transactions is positive for all groups of goods. However, the wedge is substantially larger for differentiated goods than for non-differentiated goods. The average price wedge for commodity products ranges from 8.5 percent using the HS-based classification to 18.6 percent

[48] The Rauch (1999) classifications are for four-digit SITC industries. To make use of it here, we concord ten-digit HS products to these industries using the concordances available in Feenstra et al. (2002).

using the conservative Rauch system. The price wedge is 39.6 percentage points higher for the conservative Rauch set of differentiated products and 64.9 percent higher for differentiated products using the HS classification system.

The results match the predictions generated by the simple model of firm behavior. Commodity product markets are less likely to show evidence of differential pricing behavior. In our subsequent analysis, we focus on differentiated goods by dropping all transactions designated as 'commodity' in the HS-based classification system.

6.2. Firms and the Price Wedge

Table 5 examines the relationship between the ALRP price wedge and firm and market characteristics. Firms with greater market power and those selling to less competitive product markets are expected to have larger price wedges. Lacking direct measures of market power or product-market competitiveness, we use three proxies: firm size as measured by log total employment, the firm's share of U.S. exports in the product across all countries, and the number of firms exporting the product from the U.S. to a particular destination country in a calendar year. If the price wedge is increasing in the market power of the firm, and if our measures capture aspects of firm pricing power and market structure, then we would expect to see a positive correlation between firm size and the wedge. Similarly, the wedge would be increasing in the export share of the firm and decreasing in the number of exporters in the product-destination country.

The results in Table 5 support the hypothesis that firms with greater market power have larger ALRP price wedges. The OLS estimate of the price wedge on log employment is positive and statistically significant at the 10 percent level. Including product fixed effects, the coefficient remains positive and is significant at the 1 percent level, although the magnitude falls.

Columns four and five report the estimates using firm export share. The coefficients are again positive, as expected if market power increases the price gap, however export share is only statistically significant once product fixed effects are included.

The final two columns in Table 5 examine relationship between the ALRP price wedge and the number of firms exporting the product to each destination country in each calendar year. Here, too, we find the expected relationship: thicker markets are associated with lower differences between firms' arm's length and related party prices. The simple OLS specification is negative and statistically significant at the 10 percent level, while the regression with product fixed effects yields a larger coefficient and is significant at the 1 percent level.

To our knowledge, the results in Table 5 provide the first evidence that firm characteristics and market structure influence transfer pricing by multinationals. Greater market power is

associated with larger wedges between arm's length and intrafirm prices.

6.3. Taxes, Tariffs and the Price Wedge

The role of taxes on transfer pricing has dominated the existing theoretical and empirical literature. In this section we investigate the relationship between countries' corporate tax rates and their product-level import tariffs on transfer pricing. As discussed in Sections 2 and 3, the expected relationship between the foreign tax rate and the ALRP price wedge is negative. Low (high) destination-country tax rates provide firms with an incentive to report relatively low (high) related party prices. Firms are also expected to change their related party prices in response to tariffs. As noted in the theoretical framework, firms have an incentive to lower their related party prices when exporting to countries with high import tariffs.

The ideal dataset for examining the influence of tax rates on multinational firms' pricing behavior would track the nationality of ownership of each firm, the relevant (preferably firm-specific) corporate tax rates in the countries to which they export, and, for U.S. firms, their worldwide tax exposure. While we have substantial detail on individual transactions, we do not have any detail on either firms' corporate structure or their foreign earnings. As a result we estimate a simple regression of the ALRP price wedge on the destination country tax rate.

The second and third columns of Table 6 report the results using statutory maximum tax rates from the Michigan World Tax Database. As predicted by the model, we find large, statistically significant and negative coefficients for both specifications. A decrease of one percentage point in the tax rate is associated with an increase of the price wedge of 1.88 to 3.95 percent.

Using effective tax rates calculated from BEA data in columns four and five, we again find the expected negative relationship. The point estimates are smaller, 0.51 to 0.63, and are significant at the 1 percent level with the inclusion of product fixed effects.

The final two columns of Table 6 examine the role of tariffs on price differentials. High tariffs work like low corporate income taxes as they give firms the incentive to lower related party prices. The availability of the tariff data is more limited, cutting the sample size substantially. Pooling all products and countries in an OLS specification, we find a negative relationship between tariffs and the ALRP price wedge. However, once we look within a product, or within a firm-product pair, we find the expected positive relationship.[49] A one percentage point increase in the tariff increases the price wedge by 0.55 to 0.57 percentage points.

The results presented in this section provide evidence that taxes and tariffs matter for transfer pricing by multinationals. Even for products with a narrowly defined CUP available within the

[49] These results suggest that, within a country, high tariff products are those with low wedges – possibly because of low market power.

firm, we find that lower taxes and higher tariffs increase the gap between arm's length and related party prices.

6.4. Multivariate results

In this section we present multivariate specifications that incorporate combinations of firm, product and country characteristics. Results are reported in Table 7. Columns two to four present OLS regressions including Michigan WTD tax rates and product fixed effects with each of the three market structure variables, firm size, firm export share and firms per product-country respectively. In each case the measure of market structure has the expected sign and is statistically significant at the 1 percent level. Firm size and firm export share are positively correlated with the price wedge while the count of firms per product-destination country is negative. In every specification, destination-country tax rates are negatively associated with the arms' length price wedge; coefficients are large in magnitude and are statistically significant at the 1 percent level.

In columns five to seven we add the tariff measure to the base OLS specification including product fixed effects. As before the sample size is substantially reduced when tariffs are added. However, our findings on market structure and taxes are unchanged. Firm size, export share and the number of exporters continue to be significantly correlated with the price wedge and in the cases of firm size and the number of exporters the magnitude of the coefficient is substantially larger. We continue to find that the price wedge is negatively and significantly associated with the tax rate. Tariffs enter with the expected positive sign. The coefficients on tax rates and tariffs are of a comparable order of magnitude as predicted by the theoretical framework; a decrease in the corporate tax rate or an increase in the tariff rate of one percentage point increases the gap between arm's length and related party prices by 0.54 to 0.71 percent.

The coefficients reported here correspond to substantial price differences across firms and countries. A one standard deviation increase in log employment corresponds to an increase of the price wedge by 1.3 percent. A one standard deviation increase in firm export share is associated with a 2.1 percent rise in the price wedge, while increasing the number of firms exporting in a product to a country by a standard deviation decreases the price wedge by 12.1 percent. The difference in maximum corporate tax rates between Mexico (35%) and Chile (15%) corresponds to a 14.2 percent increase in the price wedge (column 4). For handheld computers (HS 847130), the difference in import tariffs between Canada (no tariff) and Brazil (22 percent) corresponds to a 12.3 percent increase in the price wedge (column 4).

7. Exchange Rates and the Price Wedge

This section examines how exchange rates affect prices set by multinational firms to their arm's length and related party customers. There is a large body of research on pricing-to-market by exporters, see Knetter (1989, 1993) and the survey in Goldberg and Knetter (1997). This literature has focused on the interaction of firm pricing (i.e., market) power and changes in the real exchange and generally concludes that firms 'price-to-market', i.e. their prices partially offset exchange rate movements.[50] For the most part the pricing-to-market literature has been silent on whether the international structure of the firm shapes price responses to exchange rates. An exception is Rangan and Lawrence (1993) who argue that the presence of intrafirm exports by U.S. multinationals and their low price responsiveness explains low U.S. aggregate export price responsiveness during the dollar decline in the late 1980s.[51] We use the matched transactions and the ALRP price wedge to test whether U.S.-based multinationals change their prices differently for arm's length and related party customers.

The basic framework in the pricing-to-market literature can be directly applied to the effect of exchange rates on arm's length prices in our theoretical framework. In response to a dollar (home currency) appreciation, the home affiliate will lower dollar-based prices to the arm's length customer. The degree of the price reduction depends on the demand elasticity in the foreign market. In contrast, the transfer price set by the firm is not directly affected by the appreciation; the foreign affiliate sees an increase in its marginal cost (the foreign currency price of the intermediate rises) and responds by raising its final good price thus lowering quantity demanded. In the absence of tax differences or tariffs, the ALRP wedge will fall by the amount of the change in the arm's length price. If there are tax differences between the countries or in the presence of a tariff, the firm will have an incentive to adjust its tax transfer price upward slightly.[52] Again the expected response of an appreciation of the home currency is to lower the price wedge between the arm's length and related party prices.

[50] Goldberg and Knetter (1997) find that the typical response is on the order of 50 percent, i.e. only half of the exchange rate change shows up in the destination market price.

[51] Clausing (2003) reports the opposite result, i.e., that prices for intrafirm exports respond much more strongly to an exchange rate change (no pass-through of the exchange rate change to the price in the foreign currency) than do prices of arm's length transactions (65 percent pass-through). Adding controls for GDP and GDP per capita, Clausing (2003) finds an unexpected significantly positive response of arm's length export prices to a dollar appreciation.

[52] This is a second-order response driven by the lower quantity demanded by the foreign affiliate. The upward adjustment can be seen in equation 14; the reduced quantity demanded by the foreign affiliate leads to a lowering of the benefits (left hand side) and the firm will raise the tax transfer price to lower the costs (right hand side) of deviating from the tax authorities benchmark price.

7.1. Empirical Evidence

Table 8 adds three months of the log of real exchange rate to the specification with tax, tariff, and number of exporters in column 6 of Table 7. The real exchange rate is defined in units of foreign currency per US dollar and the value for month m, $\ln RER_m$, is the rate on the last day of the month before the trade transaction. Column two uses the WTD marginal rate as the tax variable while column three uses the BEA average tax rate. The cumulative (long-run) response to an exchange rate change is given in final row of the table.

In both cases we see a strong response of the price wedge to the real exchange rate. A one percent appreciation of the dollar results in a 0.88 to 0.92 percent reduction in the price wedge with most of the adjustment occurring in the month immediately following the exchange rate change. This response is larger than the typical range found in the pricing-to-market literature. However, the stronger response is less surprising when one realizes that previous studies have not been able to separately identify intrafirm (low response) and arm's length (high response) transactions. Making the strong assumption that intrafirm prices do not adjust at all to exchange rate movements and using our results and the fact that intrafirm shipments represent one third of U.S. exports, we would expect to find an average response to exchange rates on the order of 0.6, within the range found in the literature.

8. Robustness

Finally, in this section we consider whether omitted country characteristics may be responsible for the observed price wedge responses to taxes and tariffs. In particular, we include measures of per capita GDP and the quality of the destination market institutions. If the probability of repayment for arm's length transactions is lower in poorer countries or in countries with weaker institutions, then we would expect to see larger price wedges in those locations. In addition we add year dummies to the specification to account for any aggregate trends in omitted variables. We run separate specifications for the WTD and BEA tax variables.

The results are reported in Table 9. The income and institution variables are significant and have the expected sign. Countries with lower income per capita or weaker institutions have higher wedges between arm's length and related party prices. The year fixed effects show a pattern of increasing wedges over time. At the same time the magnitude of the tax coefficients is somewhat lower, although they retain their expected sign and significance. These results might reflect trends in omitted variables that caused the price wedge to rise over time. A more likely explanation is that the time dummies are capturing the overall downward trend in corporate tax rates during the sample period. Market structure, tariff and real exchange rate effects are unchanged in sign, significance or magnitude.

9. Conclusions

Multinational firms based in the U.S. report large differences in prices for arm's length and related party exports. These differences exist even for the same product produced by the same firm shipped to the same country in the same month by the same mode of transport. Following the development of a simple theoretical framework we find that the price wedge between arm's length and intrafirm prices responds to differences in market structure, taxes, and tariffs.

Commodity products show much smaller price wedges while those for differentiated products are large, averaging over 73 percent. Similarly, firms with characteristics indicating greater market power, i.e., larger firms and firms with bigger export shares, have larger price differences. Looking across countries, we find the price wedge is larger when the number of exporting firms is smaller.

Much of the interest in transfer pricing centers on the behavior of firms in response to taxes and tariffs. We find significant differences in price wedges for the same product in countries with different tax and tariff rates. Lower corporate taxes and higher tariffs are associated with larger gaps between the arm's length and related party prices.

Our results suggest that transfer pricing may be playing an important in aggregate national accounting, potentially reducing the reported value of exports and the current account (and thus GDP). The response of the price wedge to tax rates indicates that tax minimization may be an important part of transfer pricing decisions with consequences for the level of corporate tax revenue and strategic responses to changes in the tax code.

This paper also provides some of the first evidence on the effect of exchange rates on pricing decisions inside and outside the firm. The price wedge responds strongly to movements in the real exchange rate: an appreciation of the dollar is associated with a substantial narrowing of the wedge. This result supports the hypothesis that intrafirm trade plays a role in the determination of aggregate export price indices. More importantly, this suggests that intrafirm trade may play a role in insulating multinationals from exchange rate movements.

Our findings also are important for future research on the role of the multinational corporation in both advanced and developing economies. The sizable gap in prices may be playing an unobserved role in the perceived performance advantage of multinational firms both at home and abroad

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A Appendix - The Export Customs Form

Figure 1 displays the Shipper's Export Declaration (SED) form that accompanies each export transaction in the United States. As noted in the guidelines for filling out this form posted on the web[53]:

- A separate SED is required for each shipment per U.S. Principal Party of Interest (USPPI), including each rail car, truck, ocean vessel, airplane, or other vehicle.
- A shipment is defined as all merchandise sent from one USPPI to one foreign consignee, to a single foreign country of ultimate destination, on a single carrier, on the same day.
- Where two or more items are classified under the same Harmonized System product code, the product code appears only once on the SED with a single quantity, shipping weight, and value, unless a validated license requires otherwise or the shipment consists of a combination of foreign and domestic merchandise classified under the same product code.
- Shipments involving multiple invoices or packages must be reported on the same SED.

[53] See http://www.census.gov/foreign-trade/regulations/forms/correct-way-to-complete-the-sed.pdf.

Two-Digit HS Category		Number of Products	Related-Party Share 2000	Share of U.S. Exports 2000	Mean High-Low Tariff Rate
01-05	Animal & Animal Products	340	0.087	0.013	87
06-15	Vegetable Products	495	0.167	0.032	56
16-24	Foodstuffs	402	0.226	0.030	134
25-27	Mineral Products	211	0.157	0.016	51
28-38	Chemicals & Allied Industries	1,079	0.444	0.110	45
39-40	Plastics / Rubbers	281	0.385	0.044	61
41-43	Raw Hides, Skins, Leather, & Furs	107	0.152	0.040	53
44-49	Wood & Wood Products	447	0.200	0.030	58
50-63	Textiles	1,168	0.252	0.025	66
64-67	Footwear / Headgear	91	0.249	0.001	60
68-71	Stone / Glass	261	0.161	0.021	56
72-83	Metals	804	0.265	0.035	54
84-85	Machinery / Electrical	1,983	0.336	0.409	49
86-89	Transportation	283	0.391	0.140	64
90-97	Miscellaneous	607	0.297	0.081	59
98-99	Service	13	0.273	0.008	--

Notes: First column reports the number of ten-digit Harmonized System (HS) exports products in 2000 by two-digit prefixes; they total to 8,572. Second and third columns report the share of related-party activity by two-digit categories and the the share of that product category in total U.S. exports.exports, by year. Fourth column reports the mean high minus low tariff rate in percentage points across products in the noted two-digit HS categories.

Table 1: Exports and Related-Party Exports by Two-Digit HS Categoryr

Country	WTD	BEA	Corruption	Rule of Law	Country	WTD	BEA	Corruption	Rule of Law	Country	WTD	BEA	Corruption	Rule of Law
Bahamas	0	10.9	0.9	1.1	Luxembourg	33	29.6	2.1	2.0	Portugal	40	41.3	1.4	1.2
Bahrain	0	.	0.5	0.8	New Zealand	33	83.1	2.4	2.0	Angola	40	.	-1.2	-1.4
Bermuda	0	5.8	1.1	1.2	United Kingdom	33	20.6	2.1	1.9	Antigua	40	.	0.9	1.0
Cayman Islands	0	.	1.2	1.3	Monaco	33	.	.	0.8	Bangladesh	40	.	-0.7	-0.7
Vanuatu	0	.	-0.6	-0.3	St. Lucia	33	.	0.3	0.3	Barbados	40	16.0	1.1	0.8
Lebanon	10	.	-0.4	-0.2	Jamaica	33	39.3	-0.3	-0.3	Bulgaria	40	.	-0.3	-0.1
British Virgin Islands	15	.	.	.	Austria	34	24.0	1.9	2.0	Egypt	40	46.9	-0.2	0.1
Liechtenstein	15	.	1.5	1.4	France	34	19.4	1.5	1.4	Gabon	40	.	-0.8	-0.4
Macao	15	.	0.8	1.1	Guatemala	34	43.8	-0.7	-0.8	Hungary	40	10.7	0.7	0.8
Hong Kong	18	13.9	1.6	1.5	North Korea	34	.	-0.9	-1.1	Iceland	40	.	2.2	1.9
Macedonia	18	.	-0.6	-0.4	Venezuela	34	20.0	-0.8	-0.9	Ireland	40	7.4	1.8	1.7
Cambodia	20	.	-1.0	-0.9	Argentina	35	30.3	-0.4	-0.2	Lesotho	40	.	0.0	-0.1
Georgia	20	.	-0.9	-0.8	Chile	35	19.3	1.4	1.2	Malawi	40	.	-0.7	-0.4
UAE	20	.	0.8	1.1	Colombia	35	37.2	-0.4	-0.7	Morocco	40	.	0.1	0.2
Puerto Rico	22	.	1.2	0.9	Croatia	35	.	-0.1	-0.1	Namibia	40	.	0.5	0.6
Puerto Rico	22	.	.	.	Estonia	35	.	0.6	0.7	Poland	40	25.4	0.4	0.5
Bolivia	25	.	-0.7	-0.5	Gibraltar	35	.	.	.	St. Vincent	40	.	0.2	0.4
China (Taiwan)	25	28.6	0.7	1.0	Guinea	35	.	-0.5	-1.0	Uganda	40	.	-0.7	-0.6
Cyprus	25	.	1.2	0.8	Haiti	35	.	-1.2	-1.4	Zambia	40	.	-0.8	-0.4
Ecuador	25	34.7	-0.8	-0.6	Honduras	35	208.3	-0.8	-0.7	Belize	45	.	-0.1	0.3
El Salvador	25	.	-0.4	-0.4	Indonesia	35	52.1	-0.9	-0.8	Czech Republic	45	21.7	0.4	0.6
Latvia	25	.	-0.1	0.3	Ivory Coast	35	.	-0.5	-0.8	French Polynesia	45	.	.	.
Norway	28	15.3	2.1	2.0	Malaysia	35	26.9	0.4	0.6	India	45	52.9	-0.3	0.1
Finland	29	20.8	2.5	2.0	Malta And Gozo	35	.	0.7	0.8	Mozambique	45	.	-0.6	-0.8
Lithuania	29	.	0.2	0.3	Mauritius	35	.	0.4	0.8	Panama	45	43.6	-0.3	0.0
Albania	30	.	-0.6	-0.8	Mexico	35	13.2	-0.3	-0.3	Romania	45	.	-0.3	-0.2
Armenia	30	.	-0.7	-0.5	Nigeria	35	60.3	-1.1	-1.3	Saudi Arabia	45	9.2	0.2	0.6
Belarus	30	.	-0.6	-1.1	Philippines	35	29.0	-0.4	-0.4	Slovakia	45	.	0.3	0.3
Botswana	30	.	0.7	0.7	Russia	35	21.2	-0.8	-0.8	Sri Lanka	45	.	-0.2	0.0
Brazil	30	27.5	0.0	-0.2	Senegal	35	.	-0.4	-0.2	Suriname	45	.	0.1	-0.6
Burma	30	.	-1.3	-1.4	Solomon Islands	35	.	-1.1	-1.2	Tanzania	45	.	-0.9	-0.4
China (Mainland)	30	22.4	-0.3	-0.3	Spain	35	20.3	1.4	1.2	Trinidad And Tobago	45	36.6	0.2	0.3
Costa Rica	30	21.8	0.8	0.7	The Gambia	35	.	-0.3	-0.2	Zimbabwe	45	.	-0.7	-0.8
Dominica	30	.	0.1	0.2	Tunisia	35	.	0.3	0.3	Greece	46	27.7	0.6	0.7
Dominican Republic	30	18.7	-0.4	-0.3	Uzbekistan	35	.	-1.0	-1.1	Turkey	46	84.1	-0.2	0.1
Grenada	30	.	0.4	0.4	Nicaragua	36	.	-0.5	-0.7	Sierra Leone	47	.	-1.0	-1.0
Kazakhstan	30	.	-0.9	-0.8	Yemen	36	.	-0.6	-1.0	South Africa	48	20.4	0.5	0.3
Kyrgyzstan	30	.	-0.8	-0.8	Israel	37	29.4	1.2	1.3	Congo	50	.	-1.0	-1.2
New Caledonia	30	.	.	.	Israel	37	21.0	.	.	Ethiopia	50	.	-0.5	-0.5
Papua New Guinea	30	.	-0.7	-0.6	Italy	37	30.4	0.8	0.9	Ethiopia	50	.	.	.
Paraguay	30	.	-0.9	-0.9	Netherlands	37	9.8	2.2	1.9	Germany	50	24.4	1.9	1.8
Peru	30	26.0	-0.2	-0.5	Fiji	38	.	0.2	-0.3	Ghana	50	.	-0.4	-0.1
Slovenia	30	.	1.0	0.9	Kenya	38	.	-1.0	-0.9	Oman	50	.	0.7	1.1
Sweden	30	10.5	2.3	1.9	Swaziland	38	.	-0.4	-0.3	Qatar	50	.	0.6	1.0
Thailand	30	105.0	-0.3	0.3	Canada	38	26.2	2.2	1.9	Syria	50	.	-0.6	-0.4
Ukraine	30	.	-0.9	-0.8	Denmark	38	25.9	2.4	2.0	Guyana	55	.	-0.4	-0.2
Uruguay	30	.	0.6	0.5	Cameroon	39	.	-1.0	-1.1	Jordan	55	.	0.1	0.4
Yugoslavia	30	.	.	.	Virgin Islands	39	.	0.9	1.2	Kuwait	55	.	0.9	0.9
Singapore	31	41.4	2.4	2.0	Australia	39	25.5	2.0	1.9	Pakistan	55	.	-0.8	-0.7
Azerbaijan	32	.	-1.0	-0.9	Belgium	39	18.6	1.4	1.5	Libya	60	.	-0.9	-0.9
Switzerland	32	22.4	2.3	2.1	Netherlands Antilles	39	19.3	1.0	0.8	Sudan	60	.	-1.0	-1.4
Vietnam	32	.	-0.7	-0.6	Western Samoa	39	.	.	.	Iran	75	.	-0.6	-0.6

First two columns of each panel report the maximum statutory corporate tax rate (Michigan World Tax Database) and the maximum effective tax rate (Bureau of Economic Analysis) for each country over the sample period. Second two columns of each panel report countries' corruption and the strength of their rule of law, both of which are drawn from the World Bank's Governance Matters IV database. Countries are sorted by the first tax rate.

Table 2: Country Variables

Bins Within Which Arm's Length Prices Are Averaged	Mean Wedge
Within product, month, country, transport mode, firm	0.478
Within product, month, country, transport mode	1.279
Within product, month, country	1.370
Within product, month	2.033

Notes: Table displays mean log difference of firms arm's length and related party prices across successively more refined bins for averaging firms' arm's length prices. In each cell, averages are across the 3,360,261 related party transactions in the sample.

Table 3: The Price Wedge

	Method for Assessing Product Differentiation		
	HS	Rauch Conservative	Rauch Liberal
Commodity (baseline)	0.085 ***	0.186 ***	0.123 ***
	0.022	0.050	0.015
Differentiated	0.649 ***	0.396 ***	0.463 ***
	0.111	0.097	0.083
Other	0.118 ***		
	0.033		
R-Squared	0.02	0.01	0.01
Transactions	3,360,261	3,360,262	3,360,263

Notes: Table reports OLS regression results of the log difference in firms' arm's length and related party prices on a constant and a dummy for differentiated products. The first column divided products into three categories: commodity (two-digit HS categories 01-21, 25-29), differentiated (two-digit HS categories 84-97) and other (all remaining two-digit HS categories). For the second and third columns commodity and reference price groups given by Rauch(1999) are combined. Standard errors are adjusted for clustering at the product level (6767 clusters).

Table 4: Product Characteristics and the Price Wedge

	Price Wedge	Price Wedge	Price Wedge	Price Wedge	Price Wedge	Price Wedge
Ln Employment	0.034 *	0.012 ***				
	0.018	0.001				
Ln Export Share			0.001	0.0014 ***		
			0.001	0.0007		
Exporters per Product-Country[a]					-0.004 *	-0.007 ***
					0.002	0.002
Fixed Effects	No	Product	No	Product	No	Product
R-Squared	0.00	0.15	0.00	0.25	0.00	0.25
Observations	3,050,242	3,050,242	3,055,730	3,055,730	3,055,730	3,055,730

Notes: Table reports OLS regression results of the log difference in firms' arm's length and related party prices on noted covariates. Standard errors are robust to clustering (firm-year in columns two and three, firm-product-year in all other columns). Constant is suppressed. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively. [a]Coefficients and standard errors for exporters per product-country have been multiplied by 100 to increase readability.

Table 5: Firm and Market Characteristics and the Price Wedge

	Price Wedge	Price Wedge	Price Wedge	Price Wedge	Price Wedge	Price Wedge
Tax Rate (WTD)	-3.951 ***	-1.882 ***				
	0.703	0.514				
Tax Rate (BEA)			-0.509	-0.630 ***		
			0.345	0.225		
Tariff Rate					-0.549 **	0.573 ***
					0.236	0.190
Fixed Effects	No	Product	No	Product	No	Product
R-Squared	0.01	0.13	0.00	0.15	0.00	0.11
Observations	2,982,223	2,982,223	2,244,318	2,244,318	1,397,880	1,397,880

Note: Table reports OLS regression results of the log difference in firms' arm's length and related party prices on noted covariates. Standard errors are robust to clustering (country-year for both types of tax rates, product-country-year in for tariff rates). Constant is suppressed. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.

Table 6: Country Characteristics and the Price Wedge

	Price Wedge	Price Wedge	Price Wedge	Price Wedge	Price Wedge	Price Wedge
Ln Employment	0.008 ***			0.015 ***		
	0.001			0.001		
Firm Export Share		0.002 ***			0.001 ***	
		0.000			0.000	
Exporters per Product-Country[a]			-0.0056 ***			-0.0145 ***
			0.0003			0.0005
Tax Rate (WTD)	-1.562 ***	-1.470 ***	-1.463 ***	-0.711 ***	-0.704 ***	-0.542 ***
	0.024	0.024	0.025	0.045	0.045	0.046
Tariff				0.561 ***	0.565 ***	0.535 ***
				0.021	0.021	0.021
Fixed Effects	Product	Product	Product	Product	Product	Product
R-Squared	0.16	0.16	0.16	0.16	0.16	0.16
Observations	2,976,816	2,982,223	2,982,223	1,381,685	1,384,571	1,384,571

Notes: Table reports OLS regression results of log difference in firms' arm's length and related party prices on noted covariates. Tax rate is the statutory maximum rate from the Michigan World Tax Database. Robust standard errors noted below each coefficient. Coefficients for product fixed effects are suppressed. ***, **, and * represent statistical significance at the 1%, 5% and 10% levels, respectively. [a]Coefficients and standard errors for exporters per product-country have been multiplied by 100 to increase readability.

Table 7: Firms, Countries and the Price Wedge

	Price Wedge	Price Wedge
Exporters per Product-Country[a]	-0.014 ***	-0.015 ***
	0.000	0.000
Tax Rate (WTD)	-0.588 ***	
	0.048	
Tax Rate (BEA)		-0.351 ***
		0.025
Tariff Rate	0.544 ***	0.480 ***
	0.021	0.021
Ln RER_m	-0.741 ***	-0.753 ***
	0.051	0.051
Ln RER_{m-1}	0.610 ***	0.599 ***
	0.077	0.077
Ln RER_{m-2}	0.121 **	0.147 **
	0.058	0.058
Long Run RER Elasticity	-0.88	-0.92
Fixed Effects	Product	Product
R-Squared	0.17	0.17
Observations	1,271,803	1,271,803

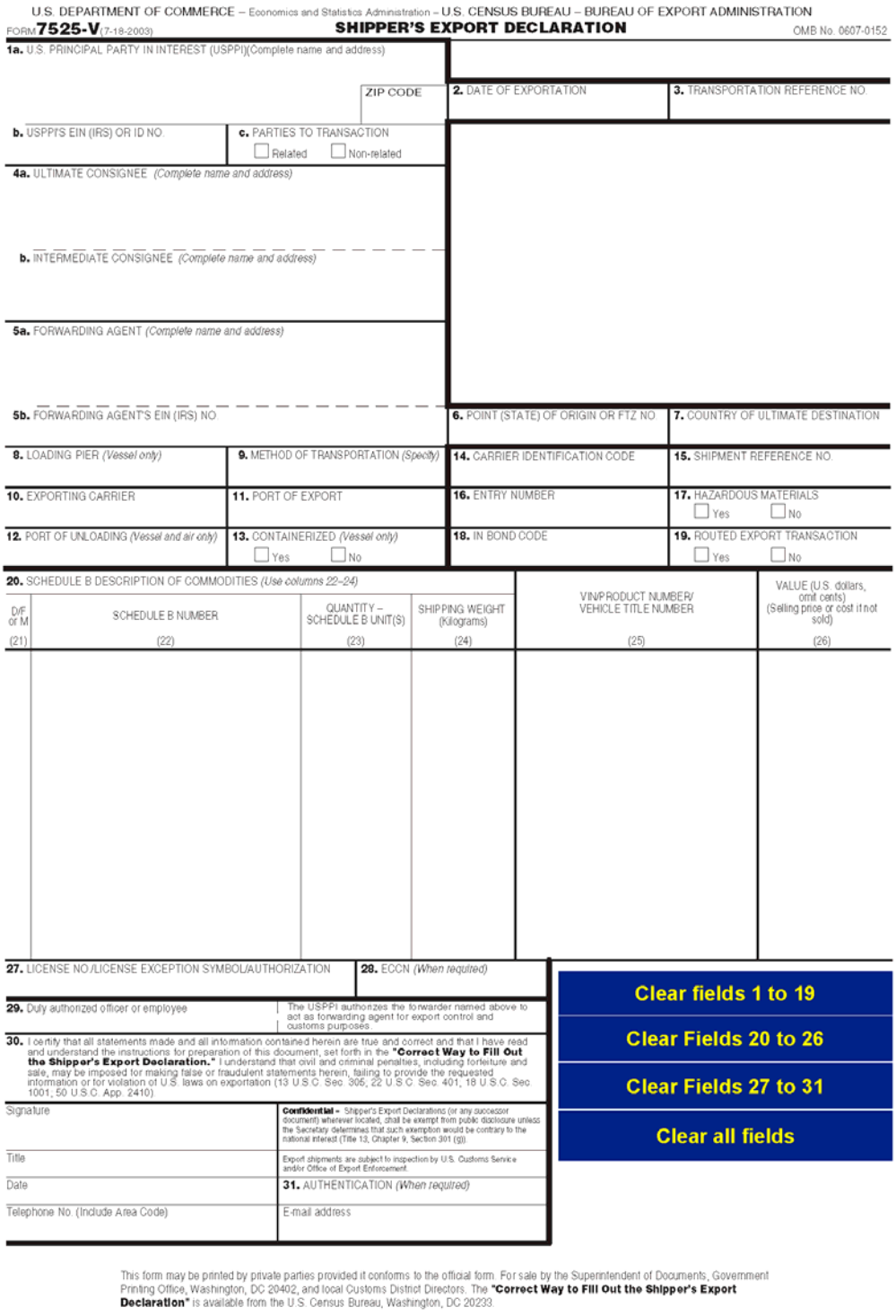
Notes: Table reports OLS regression results of log difference in firms' arm's length and related party prices on noted covariates. First tax rate is the statutory maximum rate from the Michigan World Tax Database. Second tax rates is the effective tax rate according to BEA data. Robust standard errors noted below each coefficient. Coefficients for product fixed effects as well as regression constant are suppressed. ***, **, and * represent statistical significance at the 1%, 5% and 10% levels, respectively. Long-run real exchange rate elasticity is the percent change in the wedge induced by a permanent one-percent appreciation of the dollar. [a]Coefficients and standard errors for first covariate have been multiplied by 100 to increase readability.

Table 8: Exchange Rates and the Price Wedge

	Price Wedge	Price Wedge	Price Wedge	Price Wedge	Price Wedge	Price Wedge
Exporters per Product-Country[a]	-0.015 ***	-0.015 ***	-0.017 ***	-0.017 ***	-0.017 ***	-0.017 ***
	0.001	0.001	0.001	0.001	0.001	0.001
Tax Rate (WTD)	-0.378 ***		-0.424 ***		-0.430 ***	
	0.061		0.057		0.058	
Tax Rate (BEA)		-0.388 ***		-0.762 ***		-0.773 ***
		0.027		0.036		0.036
Tariff Rate	0.553 ***	0.472 ***	0.991 ***	0.928 ***	1.000 ***	0.947 ***
	0.023	0.022	0.036	0.035	0.036	0.036
Ln RER_m	-0.792 ***	-0.803 ***	-0.587 ***	-0.571 ***	-0.583 ***	-0.568 ***
	0.051	0.051	0.057	0.057	0.057	0.057
Ln RER_{m-1}	0.664 ***	0.653 ***	0.428 ***	0.439 ***	0.429 ***	0.441 ***
	0.077	0.077	0.084	0.084	0.084	0.084
Ln RER_{m-2}	0.116 **	0.141 **	0.116 *	0.088	0.113 *	0.084
	0.058	0.058	0.066	0.066	0.066	0.066
Ln PCGDP	-0.023 ***	-0.019 ***				
	0.007	0.007				
Corruption Index (WB)			-0.024 ***	-0.009 **		
			0.004	0.004		
WB Rule of Law Index (WB)					-0.023 ***	-0.005
					0.004	0.004
1995 Fixed Effect	0.028 ***	0.051 ***	0.031 ***	0.084 ***	0.032 ***	0.085 ***
	0.004	0.004	0.004	0.005	0.004	0.005
1996 Fixed Effect	0.035 ***	0.055 ***	0.054 ***	0.103 ***	0.054 ***	0.104 ***
	0.005	0.005	0.005	0.005	0.005	0.005
1997 Fixed Effect	0.072 ***	0.093 ***	0.075 ***	0.125 ***	0.076 ***	0.127 ***
	0.005	0.005	0.005	0.005	0.005	0.005
1998 Fixed Effect	0.117 ***	0.147 ***	0.126 ***	0.166 ***	0.127 ***	0.169 ***
	0.006	0.006	0.006	0.007	0.006	0.007
Long-Run RER Elasticity	-0.93	-0.96	-0.79	-0.75	-0.78	-0.74
Fixed Effects	Product	Product	Product	Product	Product	Product
R-Squared	0.18	0.18	0.18	0.17	0.17	0.18
Observations	1,271,803	1,271,803	1,109,403	1,109,404	1,109,405	1,109,406

Notes: Table reports OLS regression results of log difference in firms' arm's length and related party prices on noted covariates. First tax rate is the statutory maximum rate from the Michigan World Tax Database. Second tax rates is the effective tax rate according to BEA data. Robust standard errors noted below each coefficient. Coefficients for product fixed effects as well as regression constant are suppressed. ***, **, and * represent statistical significance at the 1%, 5% and 10% levels, respectively. Long-run real exchange rate elasticity is the percent change in the wedge induced by a permanent one-percent appreciation of the dollar. [a]Coefficients and standard errors for first covariate have been multiplied by 100 to increase readability.

Table 9: Robustness of Results



U.S. DEPARTMENT OF COMMERCE – Economics and Statistics Administration – U.S. CENSUS BUREAU – BUREAU OF EXPORT ADMINISTRATION

FORM **7525-V** (7-18-2003) **SHIPPER'S EXPORT DECLARATION** OMB No. 0607-0152

1a. U.S. PRINCIPAL PARTY IN INTEREST (USPPI)(Complete name and address)

ZIP CODE

2. DATE OF EXPORTATION

3. TRANSPORTATION REFERENCE NO.

b. USPPI'S EIN (IRS) OR ID NO.

c. PARTIES TO TRANSACTION ☐ Related ☐ Non-related

4a. ULTIMATE CONSIGNEE *(Complete name and address)*

b. INTERMEDIATE CONSIGNEE *(Complete name and address)*

5a. FORWARDING AGENT *(Complete name and address)*

5b. FORWARDING AGENT'S EIN (IRS) NO.

6. POINT (STATE) OF ORIGIN OR FTZ NO.

7. COUNTRY OF ULTIMATE DESTINATION

8. LOADING PIER *(Vessel only)*

9. METHOD OF TRANSPORTATION *(Specify)*

14. CARRIER IDENTIFICATION CODE

15. SHIPMENT REFERENCE NO.

10. EXPORTING CARRIER

11. PORT OF EXPORT

16. ENTRY NUMBER

17. HAZARDOUS MATERIALS ☐ Yes ☐ No

12. PORT OF UNLOADING *(Vessel and air only)*

13. CONTAINERIZED *(Vessel only)* ☐ Yes ☐ No

18. IN BOND CODE

19. ROUTED EXPORT TRANSACTION ☐ Yes ☐ No

20. SCHEDULE B DESCRIPTION OF COMMODITIES *(Use columns 22–24)*

D/F or M (21)	SCHEDULE B NUMBER (22)	QUANTITY – SCHEDULE B UNIT(S) (23)	SHIPPING WEIGHT (Kilograms) (24)	VIN/PRODUCT NUMBER/ VEHICLE TITLE NUMBER (25)	VALUE (U.S. dollars, omit cents) (Selling price or cost if not sold) (26)

27. LICENSE NO./LICENSE EXCEPTION SYMBOL/AUTHORIZATION

28. ECCN *(When required)*

29. Duly authorized officer or employee

The USPPI authorizes the forwarder named above to act as forwarding agent for export control and customs purposes.

30. I certify that all statements made and all information contained herein are true and correct and that I have read and understand the instructions for preparation of this document, set forth in the **"Correct Way to Fill Out the Shipper's Export Declaration."** I understand that civil and criminal penalties, including forfeiture and sale, may be imposed for making false or fraudulent statements herein, failing to provide the requested information or for violation of U.S. laws on exportation (13 U.S.C. Sec. 305, 22 U.S.C. Sec. 401, 18 U.S.C. Sec. 1001, 50 U.S.C. App. 2410).

Signature

Confidential – Shipper's Export Declarations (or any successor document) wherever located, shall be exempt from public disclosure unless the Secretary determines that such exemption would be contrary to the national interest (Title 13, Chapter 9, Section 301 (g)).

Title

Export shipments are subject to inspection by U.S. Customs Service and/or Office of Export Enforcement.

Date

31. AUTHENTICATION *(When required)*

Telephone No. (Include Area Code)

E-mail address

Clear fields 1 to 19

Clear Fields 20 to 26

Clear Fields 27 to 31

Clear all fields

This form may be printed by private parties provided it conforms to the official form. For sale by the Superintendent of Documents, Government Printing Office, Washington, DC 20402, and local Customs District Directors. The **"Correct Way to Fill Out the Shipper's Export Declaration"** is available from the U.S. Census Bureau, Washington, DC 20233.

Figure 1: Shipper's Export Declaration Form