Whose Exchange Rate Matters? Buyer Power and the Dominant Currency Paradigm

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October 2026

Abstract

Under the dominant currency paradigm (DCP), export prices are sticky in dollars and respond only to the exporter's own exchange rate against the dollar. We show that this holds only where exporters set prices unilaterally. Using Colombian customs records that identify both the exporter and the foreign buyer in every transaction, we construct bilateral measures of bargaining power and show that the DCP's central prediction is conditional on who holds it. We replicate the standard DCP benchmark, then show that seller power amplifies pass-through of the peso–dollar rate, while buyer power activates a channel the DCP rules out entirely: the exporter's peso price responds to the importer's exchange rate against the dollar, but only when the buyer is powerful. Where the buyer accounts for all of the exporter's sales to the destination, a 10 percent depreciation of the importer's currency against the dollar lowers the peso price by about 1 percent. Both results are robust to alternative measures of bargaining power and to fixed effects that hold either side of the relationship fixed. We rationalize these findings with a model in which the dollar price is set by bargaining rather than posted by the exporter, and in which the dominant currency paradigm emerges as the special case with no buyer power. Pass-through is thus governed jointly by both exchange rates, with bargaining power determining how much each one passes through rather than which one does.

JEL: F31, F14, F41, L14.
Keywords: dominant currency paradigm; exchange rate pass-through; buyer power; firm-to-firm trade; bargaining.

1 Introduction

Whether a nominal depreciation restores external competitiveness is one of the oldest questions in open-economy macroeconomics, and the answer depends on the currency in which international prices are sticky. If prices are sticky in the producer's currency, a depreciation mechanically lowers the destination-currency price of exports, and expenditure switching does the rest (Mundell, 1963; Fleming, 1962). If they are sticky in the destination's currency, the price that foreign demand responds to does not move, and a devaluation fails to restore competitiveness (Devereux and Engel, 2003). Neither paradigm, however, describes the data. Most world trade is invoiced in a single dominant currency, the US dollar, regardless of who is exporting and who is importing. Under this dominant currency paradigm (DCP), the bilateral exchange rate between exporter and importer is close to irrelevant for prices; what matters is the seller's exchange rate against the dollar, since export prices are set and sticky in dollars (Gopinath et al., 2020). Evidence on invoicing points the same way: pass-through follows the vehicle currency in which a transaction is invoiced rather than the bilateral rate, which under dollar invoicing again comes down to the seller's dollar exchange rate (Chen et al., 2022). In each of these paradigms only one side of the transaction determines the price — the producer's currency, the destination's currency, or the seller's dollar rate — and the other party's exchange rate is, by assumption, irrelevant. This paper shows that both sides' dollar exchange rates matter: pass-through splits between the buyer's and the seller's exchange rate against the dollar, and the split is governed by their relative bargaining power.

The DCP has become the dominant benchmark for open-economy models and for policy analysis, but it rests on the assumption that the exporter is the party setting the price. Firms choose an invoicing currency, set a price in that currency, and adjust it infrequently. The relevant exchange rate for the exporter's domestic-currency price is then the dollar–exporter rate, because that is the rate that translates a sticky dollar price into pesos. If the dollar price is instead the outcome of bargaining between exporter and importer, the exporter's exchange rate against the dollar need not be the only one that matters. Yet a growing body of evidence indicates that prices in firm-to-firm trade are not posted by sellers but negotiated bilaterally, and that buyers often hold the stronger hand (Alviarez et al., 2025; Juárez, 2025; Devereux et al., 2017).

We test this using the universe of Colombian export transactions from customs records (DIAN), which identify both the Colombian exporter and the foreign buyer in every shipment at the HS10 product level. Colombia is a small open economy, and roughly 98%

of its exports are invoiced in US dollars, so the dominant currency benchmark applies. The buyer identifier lets us construct bargaining power measures on both sides of each transaction. The DCP literature typically observes only the exporter, and the exchange rate pass-through literature, where it allows for market power, measures it at the level of the market rather than within the buyer–seller pair. Our working sample contains roughly 640,000 exporter–buyer–product–destination–year observations.

We measure bargaining power through bilateral dependence. Seller power is the share of the buyer's purchases from Colombia that comes from a given exporter: a buyer that sources most of its Colombian inputs from one seller has few alternatives and little leverage against it. Buyer power is the share of the exporter's sales to the destination that goes to a given buyer: an exporter that concentrates its sales in one buyer is in the same position. Each measure captures the power of the other side of the relationship. We complement them with five alternatives: the same dependence shares computed within each HS10 product; normalized versions of the total and of the product-level shares, in which the two sides' shares sum to one; the seller's and the buyer's market shares in the destination–product–year market, which capture concentration in the market rather than dependence within the pair; and a version of buyer power measured over the exporter's total exports to all destinations. The restriction of seller power to purchases from Colombia is imposed by the data, since customs records cover all of an exporter's sales but only the part of a buyer's purchases that originates in Colombia; the resulting share is also the object our model requires.

Our results are as follows. First, the DCP holds strongly in Colombia. Replicating the specification of Gopinath et al. (2020), we find that pass-through to the peso–dollar rate is high, while the bilateral exporter–importer rate adds essentially nothing once the peso–dollar rate is included alongside it. Splitting the sample into dollarized and non-dollarized destinations, as they do, we recover a similarly high dollar pass-through in both groups. In non-dollarized destinations, the bilateral rate matters on its own, but its pass-through collapses once the peso–dollar rate is included, while the dollar coefficient is essentially unchanged. These magnitudes are close to those Gopinath et al. (2020) report for other countries. Our sample therefore reproduces the standard DCP benchmark, and the results that follow are departures from it.

Second, seller power amplifies the dominant-currency channel: exporters with more leverage over their buyers transmit dollar movements into their peso prices more completely, keeping more of the dollar-cost reduction that a peso depreciation generates as markup. Third, and central to the paper, buyer power activates a channel that the DCP rules out.

The exporter's peso price responds to the importer's exchange rate against the dollar, but only when the buyer is powerful; on its own, the importer's rate has no effect, as the DCP predicts. This buyer channel holds regardless of how we measure bargaining power, whether by the buyer's share in the exporter's sales to the destination, a normalized version of that share, or the buyer's market share in the destination–product market.

The buyer channel is identified off movements in the importer's currency against the dollar, therefore it can only be tested where that currency moves. Forty-six percent of Colombian export value goes to destinations that are dollarized or hard-pegged, where the exchange rate is fixed by construction. Following the dollarized/non-dollarized partition of Gopinath et al. (2020), we restrict the test to flexible-rate destinations, which still retain the major Latin American, euro area, UK and Asian markets.

Fourth, the strongest version of the hypothesis fails. If bargaining power simply selected which exchange rate is relevant, a transaction-specific "relevant" rate (the dollar–importer rate where the buyer dominates, the dollar–exporter rate where the seller does) should absorb all pass-through. It does unconditionally, but once the peso–dollar rate is included it collapses to zero while the peso–dollar rate retains its full coefficient: the two are correlated, and the apparent selection is largely that correlation. The data support a modified DCP rather than a substitution of one exchange rate for another: the dominant currency channel remains primary, and a secondary importer-currency channel opens where buyers hold bargaining power.

Our findings do not depend on a particular fixed effect structure. Because the power measures could proxy for unobserved cost or demand shocks correlated with the exchange rates, we estimate the two-channel specification under two complementary designs. The first holds the exporter fixed and compares the buyers it sells to; the second is its mirror image, holding the buyer fixed and comparing the exporters that supply it. Both absorb product × year shocks. The importer-currency interaction is positive and significant throughout. The dollar-channel interaction is positive and significant once product × year shocks are absorbed, and indistinguishable from zero without them.

To interpret these findings, we propose a model in which the exporter and the buyer agree, at the start of their relationship, on a rule that sets the invoiced dollar price. Each period the price maximizes a weighted sum of the exporter's profit, counted in dollars, and the buyer's profit, counted in its own currency, with a weight that rises with the buyer's bargaining power and does not change when exchange rates move. Because part of the exporter's costs are in pesos and the buyer's profits are in its own currency, an exchange rate movement does not only shift the price; it shifts the division of surplus. A peso

depreciation lowers the dollar costs of all Colombian suppliers, making them cheaper relative to foreign ones, and as Colombia gains weight in the buyer's purchases, demand becomes less elastic for exporters with a large share of those purchases. These exporters keep more of the cost reduction as markup, so their dollar price falls less and their peso price rises more. A buyer with bargaining power, in turn, pushes part of the cost of its own currency's depreciation back onto the exporter through the dollar price, so the exporter's peso price inherits a shock that, under the DCP, should never have reached it. The model thus nests the dominant currency paradigm: without buyer power, the importer's exchange rate drops out and only the peso–dollar rate matters.

The model generates a weighted rather than a switching structure: the peso–dollar rate enters every relationship, with pass-through rising in seller power, and the importer's rate enters wherever the buyer has bargaining power, with pass-through rising in that power. This is the pattern in the data,and it is consistent with the failure of a single constructed "relevant" rate once the peso–dollar rate is controlled for. The model also delivers our estimating equation as a log-linearization of the pricing rule, so that the two interaction terms are the slopes of pass-through in seller and buyer power rather than coefficients of a free-standing regression.

Whether a devaluation lowers the price foreign buyers pay is therefore not a property of the exchange rate regime alone; it also depends on who sets the price within each exporting relationship. Where Colombian exporters hold the stronger hand, a peso depreciation passes through close to fully, as the DCP predicts. Where buyers hold it, the exporter's peso price also moves with the buyer's own exchange rate against the dollar, so export prices respond to the currencies of their buyers unevenly across exporters, depending on who they sell to. A policy that treats exchange rate pass-through as fixed by the currency of invoicing, rather than by the bargaining structure of the relationships behind it, will overstate the reach of a devaluation wherever buyers are concentrated. The same qualification applies to the dollar's role more broadly: dominant currency pricing describes how exporters set prices, not how those prices are set, and the difference matters wherever trade is not seller-dominated. For small open economies whose exporters sell disproportionately to a handful of large foreign buyers, this means that export prices are exposed to those buyers' currencies, and points to export diversification across buyers, not only across products or destinations, as a way to reduce that exposure.

Literature Review. We contribute to three literatures. To the dominant currency literature (Gopinath et al., 2020; Chen et al., 2022), we provide, to our knowledge, the first evidence

that the DCP's central prediction is conditional on which side of the transaction holds bargaining power. The DCP describes the average transaction well, but it is a statement about seller-dominated trade, and much of world trade is not seller-dominated. To the literature on two-sided market power in firm-to-firm trade (Alviarez et al., 2025; Juárez, 2025), we show that bargaining power governs not only the magnitude of pass-through but its currency composition. To the literature on exchange rate pass-through and market structure (Amiti et al., 2014; Atkeson and Burstein, 2008), we add buyer-side heterogeneity to a body of work that has focused largely on exporter characteristics and market-level concentration.

Under the standard DCP, an exporter's domestic-currency price responds only to its own currency's exchange rate against the dollar. Our results imply that this holds where Colombian exporters have bargaining power, but not where they depend on their buyers; there, the buyer's exchange rate against the dollar also moves the exporter's price. Two economies with identical exchange rate regimes and identical export baskets can therefore see different price adjustment, depending on how much bargaining power their foreign buyers hold. Assessments of whether a devaluation restores competitiveness need to condition on the buyer-side structure of export relationships, which is not currently standard practice. Section 2 describes the Colombian customs data and the construction of our bargaining power measures. Section 3 replicates the DCP baseline and presents the two-channel results. Section 4 develops the model. Section 5 concludes.

2 Data and bargaining power measures

2.1 Buyer–seller customs data

We use the universe of export transactions recorded by Colombian customs (DIAN, *Dirección de Impuestos y Aduanas Nacionales*) between 2007 and 2020. For each transaction, DIAN reports the FOB value in US dollars, the quantity and unit of measure, the invoicing currency, the destination country and the product at the 10-digit level of the Harmonized System (HS10). Roughly 98% of transactions are invoiced in US dollars. The feature of the data that matters for this paper is that each record identifies both the Colombian exporter and the foreign buyer. Observing the two sides of every transaction is what allows us to measure bargaining power within each buyer–seller relationship, rather than at the level of the market. Following Amiti et al. (2014), we proxy transaction-level prices using unit values, calculated as the FOB value of the shipment divided by the quantity shipped.

We combine the customs records with nominal exchange rates from the IMF's International Financial Statistics, monthly series of local currency per US dollar averaged to the annual frequency. We use the peso–dollar rate to convert dollar unit values into pesos. From the same source we construct the two exchange rate changes that enter our analysis: (i) Δe, the log change in pesos per dollar, and (ii) Δu, the log change in dollars per unit of the importer's currency.

2.2 Sample: flexible-rate destinations

Over 2007–2020 the customs records cover 56,090 exporters, 7,062 HS10 products and 190 destinations, of which the ten largest account for 69% of export value (Panel A of Table 1). The buyer-power mechanism we introduce in this paper implies that the importer's own exchange rate can affect the exporter's price, so the channel is identified from variation in the importer's currency against the dollar. In destinations that use the dollar or peg to it, Δu is zero by construction and the channel cannot be estimated. Following Gopinath et al. (2020), we therefore exclude dollarized economies and countries with a hard peg to the dollar, and estimate on the remaining destinations, which we refer to as the flexible-rate sample.

Panel B of Table 1 reports the size of the two samples. The flexible-rate sample retains the major Latin American markets, the euro area, the United Kingdom and Asia, and contains 333,998 exporter–buyer–HS10–destination–year observations, 63% of the export value in the sample, with about 2,400 exporters and 8,400 foreign buyers in an average year. Close to 1,500 exporters a year sell to both groups of destinations, so the restriction changes the set of markets, not the set of firms.

2.3 Measuring bilateral bargaining power

We characterize bilateral bargaining positions using two measures of relationship dependence: the share of each party's trade accounted for by its counterpart. These measures capture the extent to which each side depends on the relationship and, correspondingly, the strength of its outside options.[1] For a Colombian exporter i selling to a foreign buyer j

[1] Related measures of bilateral dependence arise as sufficient statistics for bargaining power in Alviarez et al. (2025).

Table 1: Data coverage and estimation sample

	Flexible-rate	Dollarized/pegged	Total
Panel A. Customs data, 2007–2020			
Exporters	37,189	31,463	56,089
Foreign buyers	155,251	95,123	250,374
HS10 products	6,700	6,448	7,062
Destinations	163	28	190
Share of export value (%)	54.3	45.7	100.0
Share invoiced in US dollars (%)	98.1	99.5	98.7
Panel B. Estimation sample, 2008–2020			
Observations	333,998	305,206	639,204
Exporters per year	2,402	2,948	3,856
Foreign buyers per year	8,402	5,500	13,902
Share of export value (%)	62.9	37.1	100.0

Notes: Panel A covers all export transactions in the customs records; regime classification follows Gopinath et al. (2020). Panel B counts exporter–buyer–HS10–destination–year observations with a valid annual price change after the filters of Section 2.1. Exporters and buyers per year are averages over 2008–2020. An exporter selling to both groups of destinations is counted in each column and once in the total; buyers belong to a single destination.

in destination k in year t, we define

$$s_{ijt} = \frac{\sum_h p_{ijht}\, q_{ijht}}{\sum_{l \in \text{Col}} \sum_h p_{ljht}\, q_{ljht}}, \qquad x_{ijt} = \frac{\sum_h p_{ijht}\, q_{ijht}}{\sum_{b \in k} \sum_h p_{ibht}\, q_{ibht}}, \tag{1}$$

where h indexes HS10 products. The first share, s, is the fraction of the buyer's purchases from Colombia that comes from exporter i; the denominator is restricted to Colombian suppliers because customs records cover only the part of a buyer's purchases that originates in Colombia. A buyer that sources most of its Colombian inputs from a single exporter has few alternatives, so s measures the exporter's leverage over the buyer; we refer to it as seller power. The second share, x, is the fraction of exporter i's sales to destination k that goes to buyer j.[2] An exporter that concentrates its sales to a destination in one buyer is in the symmetric position, so x measures the buyer's leverage over the exporter; we refer to it as buyer power. Both shares are computed over all products traded by the pair and are lagged one year when they enter the regressions.

Because an exporter often sells several products to the same buyer, we also compute both shares within each HS10 product, replacing the sums over h in (1) by the flows of product h alone. For robustness, Section 3.4 also uses normalized versions of the total

[2]Section B reports results with x computed over the exporter's sales to all destinations rather than to destination k.

and the product-level shares, in which the two sides' shares sum to one, and each party's market share in the destination–product–year market, which captures concentration in the market rather than dependence within the pair.

Table 2: Bilateral bargaining power in the estimation sample

Panel A. Dependence shares	Mean	SD	p25	p50	p75
Supplier share in buyer, all products	0.68	0.39	0.28	0.98	1.00
Supplier share in buyer, within HS10	0.84	0.32	0.95	1.00	1.00
Buyer share in supplier, all products	0.59	0.39	0.17	0.66	1.00
Buyer share in supplier, within HS10	0.65	0.40	0.22	0.89	1.00

Panel B. Relative bargaining power (%)	Seller > buyer	Equal	Buyer > seller
Share of observations	48.3	17.0	34.7
Share of export value	48.2	24.7	27.1

Notes: Estimation sample (flexible-rate destinations), 320,839 observations. s is the exporter's share in the buyer's purchases from Colombia and x the buyer's share in the exporter's sales to the destination, as in equation (1). Within-product versions use the flows of the HS10 product alone. Panel B classifies observations by the relative size of the two shares.

Table 2 describes the two measures in the estimation sample. Panel A shows that buyers concentrate their Colombian purchases: in half of the relationships, the exporter accounts for at least 98% of what the buyer sources from Colombia, and within a product the median share is one. High seller power does not imply that the buyer has no leverage, however. The same buyers account on average for 59% of the exporter's sales to the destination, and for two thirds in the median relationship, so the exporter depends on them as well and buyers can exert non-negligible power over the terms of the relationship. Panel B classifies each relationship by which side has more bargaining power. The seller holds the stronger position in about half of the observations (48%), but the buyer does in a substantial share (35%, or 27% of export value), and in the remaining 17% the two shares are equal.

3 Exchange rate pass-through and bilateral bargaining power

In this section we first estimate the baseline DCP regression of Gopinath et al. (2020), since our hypothesis is a departure from it (Section 3.1). We then restrict the sample to flexible-rate destinations, which are neither dollarized nor pegged to the US dollar, and estimate the two-channel specification, in which each exchange rate is interacted with a

measure of the bargaining power of one side of the relationship (Sections 3.2 and 3.3). Finally, we check robustness by measuring bilateral bargaining power between seller and buyer in alternative ways (Section 3.4).

3.1 The DCP baseline

We start by documenting the dominant currency paradigm in Colombian export data. Following Gopinath et al. (2020), we estimate

$$\Delta \ln p_{ihkt}^{COP} = \beta^{USD} \Delta e_t + \beta^{B} \Delta b_{kt} + \phi_{ihk} + \varepsilon_{ihkt}, \tag{2}$$

where p_{ihkt}^{COP} is the peso price of exporter i's shipments of HS10 product h to destination k in year t, e_t is the log peso–dollar rate defined in Section 2.1, and b_{kt} is the log bilateral rate between the peso and the currency of destination k. The fixed effects ϕ_{ihk} are at the exporter × HS10 × destination level and absorb differences in average price growth across exporter-product-destination cells. Year fixed effects are excluded because they would be collinear with the peso–dollar rate, which varies only by year. We estimate (2) on three samples: all destinations, dollarized destinations, and flexible-rate destinations, which exclude dollarized economies and hard pegs to the dollar. Unlike Gopinath et al. (2020), whose sample is limited to manufactures, we keep all HS10 products.[3]

Table 3: Dominant currency pricing in Colombian exports

	All destinations			Dollarized/pegged	Flexible-rate		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Δe_t		0.736***	0.675***	0.796***		0.678***	0.665***
		(0.086)	(0.067)	(0.159)		(0.036)	(0.067)
Δb_{kt}	0.721***		0.074		0.621***		0.021
	(0.103)		(0.105)		(0.060)		(0.074)
Observations	592,007	592,007	592,007	286,816	305,191	305,191	305,191

Notes: Estimates of equation (2). Dependent variable $\Delta \ln p_{ihkt}^{COP}$. e_t is the log peso–dollar rate and b_{kt} the log bilateral rate between the peso and the importer's currency. All columns include exporter × HS10 × destination fixed effects and no time effects, and use all HS10 products. Flexible-rate destinations exclude dollarized economies and hard pegs. Observations differ from Table 1 because singletons are dropped. Standard errors clustered by destination × year in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3 reports the estimates of (2). Estimated separately, the bilateral and the peso–dollar rates have pass-through coefficients of 0.72 and 0.74 (columns 1 and 2). When

[3] Restricting the sample to manufactures, excluding petrochemicals and basic metals as in Gopinath et al. (2020), yields very similar estimates.

the peso–dollar rate is included alongside the bilateral rate, the bilateral coefficient falls to 0.07 and is no longer statistically significant, while the coefficient on the peso–dollar rate is 0.68 (column 3), as the DCP predicts. In dollarized destinations, pass-through of the peso–dollar rate is 0.79 (column 4). The last three columns are the most relevant for our purposes, since flexible-rate destinations constitute the sample on which we test our hypothesis. The same pattern holds there: the bilateral coefficient is 0.62 when estimated alone (column 5) and falls to 0.02 once the peso–dollar rate is included (column 7), while the coefficient on the peso–dollar rate is virtually unchanged relative to column (6). These magnitudes are close to the annual estimates in Table 6 of Gopinath et al. (2020). This evidence is consistent with Colombian exporters setting their prices in dollars: their prices respond strongly to the peso–dollar rate and not to the bilateral exchange rate once the peso–dollar rate is controlled for. The rest of the section builds on this result to ask whether the DCP, which treats the exporter as the party setting the dollar price, conceals a role for the buyer. In particular, where buyers hold bargaining power, the dollar price may also respond to the importer's currency against the dollar, an exchange rate that has no role in the DCP.

3.2 The two-channel specification

Under the dominant currency paradigm, exporters set their prices in dollars, so the exporter's domestic-currency price responds only to the peso–dollar rate and the importer's exchange rate has no channel through which to affect it. The assumption behind this result is that one party sets the price. Our hypothesis does not concern the role of the dollar, which Section 3.1 confirms; it concerns who sets the dollar price. We hypothesize that dollar prices are set through bargaining between exporters and buyers, so that the importer can also influence them. This view builds on a growing literature in which prices in firm-to-firm trade are specific to each relationship and depend on the market power of both parties (Dhyne et al., 2022; Cajal-Grossi et al., 2023; Alviarez et al., 2025), and in which the exporter and the importer bargain over the terms of the transaction, including the price and its currency of invoicing (Goldberg and Tille, 2016). Section 4 develops a model that formalizes this hypothesis, in which the two parties agree at the start of their relationship on how the dollar price responds to subsequent shocks.

When the buyer holds bargaining power, the dollar price also responds to the buyer's currency. A depreciation of the importer's currency against the dollar raises the cost of each dollar of the price in the buyer's own currency, and a buyer on whom the exporter

depends obtains a lower dollar price in response; with the peso–dollar rate unchanged, the peso price falls as well. Because the price is denominated in dollars, what matters for the buyer is its own exchange rate against the dollar rather than the bilateral rate, and this pass-through rises with the buyer's bargaining power. Seller power operates in the same way on the dollar channel: a seller on whom its buyer depends keeps a larger share of the dollar-cost reduction that a peso depreciation brings, so its peso price rises more. Both parties can hold bargaining power at the same time, so the buyer can move the dollar price in its favor even when the seller is the stronger party. Bargaining power on each side thus amplifies the pass-through of that side's currency against the dollar into the peso price, which is the structure we take to the data. When the buyer has no bargaining power, the importer-currency channel disappears and the DCP is recovered as a special case.

We estimate the specification derived in Section 4:

$$\begin{aligned}\Delta \ln p^{COP}_{ijhkt} = \beta_0 \, \Delta e_t + \gamma_0 \, \Delta u_{kt} + \beta_1 \left(\Delta e_t \times s_{ij,t-1}\right) + \gamma_1 \left(\Delta u_{kt} \times x_{ij,t-1}\right) \\ + \delta_s \, s_{ij,t-1} + \delta_x \, x_{ij,t-1} + \text{FE} + \varepsilon_{ijhkt},\end{aligned} \tag{3}$$

where i indexes the exporter, j the buyer, h the HS10 product, k the destination and t the year. As in Section 3.1, e_t is the log of pesos per dollar, so that $\Delta e_t > 0$ is a depreciation of the peso. The new variable is u_{kt}, the log of dollars per unit of the importer's currency (impo/USD), so that $\Delta u_{kt} > 0$ is an appreciation of the importer's currency against the dollar.

Seller power $s_{ij,t-1}$ and buyer power $x_{ij,t-1}$ are the dependence shares defined in (1), summed across HS10 products rather than computed product by product: s is the exporter's share in the buyer's purchases from Colombia, and x is the buyer's share in the exporter's sales to the destination. Both enter lagged one year to mitigate endogeneity. Contemporaneous shares would be correlated with the dependent variable for two reasons: they are computed from the value of the pair's trade, which includes the current price, and they respond to the same exchange rate movements as the price. Their levels enter as controls, so that the interactions do not pick up differences in average price growth across relationships with different bargaining positions.

Each coefficient of (3) has a direct interpretation. The coefficient β_0 is the standard DCP channel, the pass-through of the peso–dollar rate when the buyer does not depend on the exporter ($s = 0$). With the price set in dollars, a peso depreciation raises the peso price, but it also lowers the dollar value of the exporter's peso-denominated costs, part of which is passed on as a lower dollar price; pass-through into the peso price is therefore below one, by

an amount that depends on the currency composition of the exporter's marginal cost (Amiti et al., 2014). The coefficient β_1 is the additional pass-through generated by seller power: an exporter on whom the buyer depends faces less elastic demand and keeps a larger share of the cost reduction as markup, the bilateral counterpart of the variable-markup channel through which pass-through varies with the exporter's market position (Atkeson and Burstein, 2008; Amiti et al., 2014). The coefficient γ_0 is the pass-through of the importer's rate when the exporter does not depend on the buyer ($x = 0$); since the importer's rate reaches the price only through the buyer's bargaining power, it should be zero. The coefficient γ_1 captures the buyer channel: the importer's rate passes through only where the buyer holds bargaining power, and more so the greater that power.

3.3 Main results

Table 4 reports estimates of (3) with bargaining power measured by the dependence shares s and x, computed from the pair's total trade across all HS10 products. The table reports five fixed effect structures, each of which defines the comparison that identifies the interactions. Columns (1) to (3) are nested and hold the exporter fixed in a product and destination. Column (1) includes only exporter × HS10 × destination effects, the specification of Table 3: it compares the buyers of a given exporter in a product and destination across all years, and is the only column that identifies the level of the peso–dollar channel. Column (2) adds HS10 × year effects, which absorb Δe_t and any shock common to a product in a given year, such as movements in world prices; the comparison is now restricted to relationships trading the same product in the same year. This corresponds to the specification in Table 2, column 3 of Juárez (2025). Column (3) adds destination × year effects, which absorb Δu_{kt} and every other shock to the destination in a given year; the comparison is among relationships that face the same exchange rate movement in the same destination and year. Because these effects absorb the importer's rate, the level coefficient γ_0 is identified only in columns (1) and (2). Columns (4) and (5) keep the HS10 × year and destination × year effects of column (3) but change the unit held fixed. Column (4) is the mirror design: buyer × HS10 effects compare the Colombian exporters that supply a given buyer in a product. Column (5) uses exporter × buyer effects: each relationship is measured relative to its own average price growth across the products it trades, and compared with other relationships facing the same product-year and destination-year shocks.

Table 4 delivers three results. First, the peso–dollar rate remains the main channel of pass-through. In column (1), the only specification that identifies its level, β_0 is 0.75;

Table 4: Exchange rate pass-through and bilateral bargaining power

	(1)	(2)	(3)	(4)	(5)
Δe_t	0.748***				
	(0.066)				
Δu_{kt}	-0.037	0.022			
	(0.082)	(0.027)			
$\Delta e_t \times s_{ij,t-1}$	-0.089	0.073***	0.075***	0.065*	0.086**
	(0.055)	(0.027)	(0.028)	(0.033)	(0.035)
$\Delta u_{kt} \times x_{ij,t-1}$	0.128*	0.089**	0.106**	0.101**	0.131**
	(0.067)	(0.038)	(0.046)	(0.051)	(0.052)
Seller × HS10 × destination FE	Yes	Yes	Yes		
Buyer × HS10 FE				Yes	
Seller × buyer FE					Yes
HS10 × year FE		Yes	Yes	Yes	Yes
Destination × year FE			Yes	Yes	Yes
Observations	305,191	298,491	298,319	281,744	304,865

Notes: Estimates of equation (3) on flexible-rate destinations. Dependent variable $\Delta \ln p^{COP}_{ijhkt}$. $\Delta e_t > 0$ is a peso depreciation against the dollar; $\Delta u_{kt} > 0$ is an appreciation of the importer's currency against the dollar (impo/USD). Seller power s is the seller's share in the buyer's purchases from Colombia; buyer power x is the buyer's share in the seller's sales to the destination; both are computed over all products traded by the pair. Both are lagged one year, lie in $[0, 1]$, and enter in levels. HS10 × year effects absorb Δe_t and destination × year effects absorb Δu_{kt}. Standard errors clustered by destination × year in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

evaluated at the mean of seller power, the implied pass-through is 0.69, in line with the estimate for flexible-rate destinations in Table 3. Second, the importer's rate does not pass through on its own: γ_0 is small and statistically indistinguishable from zero in the two columns that identify it. Its interaction with buyer power, however, is positive in every column and stable across them, between 0.09 and 0.13, and significant at the 5 percent level in columns (2) to (5). The importer's exchange rate thus reaches the exporter's price through the buyer's bargaining power, a channel absent from the DCP. Third, the interaction of the peso–dollar rate with seller power is not significant in column (1), but becomes positive and significant once HS10 × year effects absorb product-level shocks common to all relationships in a given year, with estimates between 0.07 and 0.09 in columns (2) to (5). The estimates are similar whether the exporter or the buyer is held fixed, and under exporter × buyer effects, so the results do not depend on which side of the relationship provides the comparison.

These coefficients imply that the pass-through of each exchange rate differs across relationships with different bargaining positions. We illustrate the magnitudes with column (3). Since γ_0 is statistically indistinguishable from zero, the pass-through of the importer's rate is given by $\gamma_1 x$. A 10 percent depreciation of the importer's currency against the dollar leaves the peso price unchanged where the exporter does not depend on the buyer ($x = 0$), as under the DCP. Where the buyer absorbs all of the exporter's sales to the destination ($x = 1$), as in at least a quarter of relationships, the same depreciation lowers the peso price by about 1.1 percent, and by about 0.9 percentage points more than in a relationship at the 25th percentile of buyer power ($x = 0.17$). On the dollar side, a 10 percent depreciation of the peso raises the peso price by about 0.5 percentage points more for an exporter with $s = 1$ than for one at the 25th percentile of seller power ($s = 0.28$). Under the DCP, the first of these differences should be zero, since the importer's exchange rate has no channel through which to affect the exporter's price. In the data, it is of the same order as the heterogeneity in dollar pass-through generated by seller power.

An alternative to (3) is to assign each relationship a single "relevant" exchange rate, the importer's rate against the dollar where the buyer holds more bargaining power and the peso–dollar rate where the seller does, which presumes that bargaining power selects which rate governs the price. Appendix B.1 shows that this rate passes through strongly on its own, but that its coefficient falls to zero once the peso–dollar rate is included, while the peso–dollar rate passes through as in the DCP baseline. Together with Table 4, this points to a weighted rather than a switching structure: bargaining power governs how much each exchange rate passes through rather than which one does.

Appendix B.2 reports Table 4 with buyer power measured as the buyer's share in the exporter's total sales rather than its sales to the destination; the results are similar. Section 3.4 examines how these results depend on the measure of bargaining power.

3.4 Alternative measures of bargaining power

This section examines whether the results hold under four alternative measures. The first computes the same dependence shares within each HS10 product, so that seller power is the exporter's share in the buyer's Colombian purchases of that product and buyer power is the buyer's share in the exporter's sales of that product to the destination. The second replaces dependence with each party's share in the destination × HS10 × year market, a measure of market position rather than of the relationship itself. The third and fourth normalize the total and the product-level shares so that the two sides sum to one, defining seller power as $s/(s+x)$ and buyer power as its complement. The unnormalized shares measure how much each party depends on the other, and both can be high at once; the normalized versions instead measure the position of each party relative to the other, as a bargaining weight would. Table 5 reports estimates of (3).

Table 5: Exchange rate pass-through and bilateral bargaining power: alternative measures

	Product dep.		Market share		Norm. dep.		Norm. prod. dep.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δu_{kt}	0.036		0.037		0.020		0.039	
	(0.029)		(0.026)		(0.028)		(0.028)	
$\Delta e_t \times$ Seller power	0.116***	0.116***	0.124***	0.117***	0.112**	0.114**	0.130**	0.137**
	(0.038)	(0.038)	(0.032)	(0.033)	(0.047)	(0.049)	(0.052)	(0.054)
$\Delta u_{kt} \times$ Buyer power	0.056	0.065	0.103**	0.124***	0.117**	0.132**	0.079	0.087
	(0.037)	(0.043)	(0.041)	(0.048)	(0.057)	(0.061)	(0.057)	(0.061)
Seller × HS10 × dest. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HS10 × year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dest. × year FE		Yes		Yes		Yes		Yes
Observations	298,491	298,319	298,491	298,319	298,491	298,319	298,491	298,319

Notes: Estimates of equation (3) on flexible-rate destinations with alternative measures of bargaining power, all lagged one year. Product dependence computes s and x with the flows of the HS10 product alone. Market share is each party's share in the destination × HS10 × year market. Normalized measures divide each party's measure by the sum of both, so seller and buyer power add up to one and only one level is included. HS10 × year effects absorb Δe_t and destination × year effects absorb Δu_{kt}. Standard errors clustered by destination × year in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The seller channel is robust to every measure. The interaction of the peso–dollar rate with seller power is positive and significant in all eight columns, with estimates between

0.11 and 0.14, at least as large as in Table 4, although the coefficients are not directly comparable across measures with different distributions. The level of the importer's rate, γ_0, is statistically indistinguishable from zero in every column that identifies it, as in the baseline. The buyer channel depends on the level at which bargaining power is measured. With normalized total dependence, the interaction of the importer's rate with buyer power is 0.12 to 0.13 and significant, close to the baseline estimates, and it is also positive and significant with market shares, between 0.10 and 0.12. With the two product-level measures, the estimates keep their sign but are smaller, between 0.06 and 0.09, and not statistically significant.

Where both channels are significant, the implied magnitudes are economically meaningful, although they are not directly comparable to those in Section 3.3 because each measure has a different distribution. With normalized total dependence, a 10 percent depreciation of the importer's currency against the dollar lowers the peso price by about 0.4 percentage points more in a relationship at the 75th percentile of buyer power than in one at the 25th percentile. Likewise, a 10 percent depreciation of the peso raises the peso price by about 0.4 percentage points more for an exporter at the 75th percentile of seller power than for one at the 25th percentile. With market shares, the implied effects are larger. A 10 percent depreciation of the importer's currency against the dollar lowers the peso price by about 0.5 percentage points more at the 75th percentile of the buyer's market share than at the 25th, and a 10 percent depreciation of the peso raises it by about 1.1 percentage points more at the 75th percentile of the seller's market share than at the 25th. Under both measures, then, the channel that the DCP rules out moves prices by an economically meaningful amount, between about half and the full size of the additional dollar pass-through that seller power generates.

The alternative measures confirm the two channels documented in Section 3.3. Seller power amplifies the pass-through of the peso–dollar rate under every measure, and the importer's rate does not pass through on its own. The importer's rate does pass through where the buyer holds bargaining power, whether that power is measured by dependence, normalized dependence or market shares. The exception is dependence measured product by product, where the buyer estimates keep their sign but are smaller and not significant. This pattern is consistent with bargaining taking place at the level of the relationship. A buyer that purchases several products from the same exporter is unlikely to bargain from a strong position in some of them and a weak one in others; it negotiates with the weight of everything the pair trades, and what gives it leverage is how much of the exporter's sales depend on it overall. The buyer channel is therefore a property of the relationship as a

whole, and it is at that level that the importer's exchange rate enters the exporter's price.

4 A model of bargaining over the pricing rule

This section develops a model that rationalizes our results and delivers the estimating equation (3). At the start of their relationship, the two parties agree on how the invoiced dollar price will be set: in each period it maximizes a weighted sum of the exporter's dollar profit and the buyer's own-currency profit, with a weight that reflects the buyer's bargaining power and does not change with exchange rates. Prices are flexible. The model predicts the signs we find in the data.

4.1 Environment

A Colombian exporter i sells an input to a foreign buyer j in destination k, and the price is invoiced in dollars. Let P be the dollar price and $p = \ln P$. As in Section 2.1, e is the log of pesos per dollar and u the log of dollars per unit of the importer's currency, so that one dollar costs the buyer $\exp(-u)$ units of its own currency. An increase in e is a depreciation of the peso against the dollar, and a decrease in u is a depreciation of the importer's currency against the dollar. Since the price is invoiced in dollars, the peso price is $p^{COP} = e + p$, so for a given dollar price a peso depreciation raises the peso price one for one. All suppliers invoice in dollars, and the dollar prices of non-Colombian suppliers do not respond to e. The dollar price is reset every period at current exchange rates: the weight in the rule is fixed within the relationship, but the price is not, so dominant currency pricing in the model does not rely on price rigidity.

The buyer. The buyer is a firm in the destination that uses the good as an input. It combines its Colombian purchases into a bundle X_C, and this bundle with its purchases from the rest of the world, X_F, into the product X:

$$X_C = \Big[\sum_{l \in \text{Col}} q_l^{\frac{\rho-1}{\rho}} \Big]^{\frac{\rho}{\rho-1}}, \qquad X = \Big[X_C^{\frac{\eta-1}{\eta}} + X_F^{\frac{\eta-1}{\eta}} \Big]^{\frac{\eta}{\eta-1}}. \tag{4}$$

It pays $\exp(-u)P_X$ in its own currency for each unit of X, with P_X the dollar price index of the product, and sells its output in the destination. Profit maximization gives a demand for the product with constant elasticity σ with respect to its own-currency price,

$X = \tilde{A}\,[\exp(-u)P_X]^{-\sigma}$, where $\tilde{A}$ measures the size of its market (Section A.1). We assume $\rho > \eta > \sigma > 1$: switching between Colombian suppliers is easier than leaving Colombia, and leaving Colombia is easier than buying less of the product. Given X, buying it at minimum cost at the two levels gives the demand for exporter i,

$$q_i = \left(\frac{P_i}{P_C}\right)^{-\rho}\left(\frac{P_C}{P_X}\right)^{-\eta} A\,P_X^{-\sigma}, \qquad A \equiv \tilde{A}\exp(\sigma u), \tag{5}$$

where P_C is the price index of the buyer's Colombian purchases (Section A.1). Two shares summarize the buyer's purchases. The first, $s = (P_i/P_C)^{1-\rho}$, is exporter i's share in the buyer's purchases from Colombia, the seller power measure of equation (1).[4] The second, $C = (P_C/P_X)^{1-\eta}$, is Colombia's share in the buyer's purchases of the product. Since all suppliers invoice in dollars, the importer's currency enters (5) only through A: for given dollar prices, an appreciation makes every supplier cheaper for the buyer in the same proportion, so it scales demand without changing C or the elasticity the exporter faces.[5]

The elasticity the exporter faces. Each buyer purchases from a finite number of Colombian exporters. The price of each relationship is set taking as given the prices of the buyer's other Colombian suppliers and the dollar price index of its non-Colombian purchases, P_F. Unlike under monopolistic competition, the exporter internalizes the effect of its price on the buyer's price indices, as in Atkeson and Burstein (2008): given its share s in the buyer's Colombian purchases, a 1 percent increase in P_i raises P_C by s percent and, through it, P_X by Cs percent. The elasticity of (5) with respect to the exporter's own price is therefore (Section A.2)

$$\varepsilon(s) = \rho\,(1-s) + s\,\bar{\eta}, \qquad \bar{\eta} \equiv \eta\,(1-C) + \sigma\,C. \tag{6}$$

It is a weighted average of the elasticity of substitution across Colombian suppliers, ρ, and an effective elasticity for Colombia as a whole, $\bar{\eta}$, with weights $1-s$ and s. In turn, $\bar{\eta}$ averages substitution away from Colombia, η, and the contraction of the buyer's purchases of the product, σ, with weights $1-C$ and C. Since $\rho > \bar{\eta}$, the elasticity falls with s: an exporter with a larger share loses fewer sales when it raises its price, because it raises the Colombian index with it. Because $\bar{\eta}$ depends on C, a peso depreciation that makes Colombian suppliers cheaper also changes the elasticity the exporter faces, more so the

[4] The model has a single product, so s is the exporter's share within the product. Section 3.4 compares measures computed within products with those computed over all products traded by the pair.

[5] If some of the buyer's other suppliers priced in its own currency, an appreciation would make them more expensive in dollars, raise C, and raise the exporter's markup in proportion to s, as a depreciation of the peso does.

larger is s (Section 4.3).

Costs. The exporter's marginal cost is constant in quantity. A fraction κ of it is incurred in pesos and the rest in dollars, for instance through imported inputs as in Amiti et al. (2014):

$$\ln MC = \kappa\,(c^{COP} - e) + (1-\kappa)\,c^{USD}, \tag{7}$$

where c^{COP} and c^{USD} are log costs in each currency. A 1 percent peso depreciation lowers the dollar marginal cost by κ percent. The exporter can sell to several buyers in destination k, and x is buyer j's share in those sales, the buyer power measure of equation (1). Since marginal cost is constant, the price the exporter charges one buyer does not depend on how much it sells to the others, so x affects the price only through the buyer's weight in the pricing rule (Section 4.2).

4.2 The pricing rule

When the relationship starts, the two parties agree on a rule: each period the dollar price solves

$$\max_{P}\ (1-\omega)\ \underbrace{(P - MC)\,q(P)}_{\pi(P)\text{: exporter, in dollars}}\ +\ \omega\ \underbrace{\Pi_B(P)}_{\text{buyer, in its currency}}, \tag{8}$$

where $\Pi_B(P)$ is the buyer's profit when it chooses its purchases optimally given P, and $\omega(s,x)$ is the buyer's weight in the rule. The weight summarizes what each party stands to lose if the relationship breaks. A buyer the exporter does not depend on carries no weight, $\omega(s,0) = 0$. The weight rises with the exporter's dependence on the buyer, $\omega_x > 0$, and falls with the buyer's dependence on the exporter, $\omega_s \leq 0$: the larger the share of its Colombian purchases that comes from this exporter, the more the buyer loses by walking away, and the less it can extract. Note that without buyer power, $x = 0$, the rule reduces to the exporter's Bertrand pricing problem, with the prices of the buyer's other suppliers taken as given. The weight is fixed when the rule is agreed and does not respond to exchange rates. In Appendix **??** we derive these properties from a Nash bargain over the rule, negotiated before exchange rates are realized, with outside options given by profits with the other partners as in Alviarez et al. (2025).

The two parties count their profits in different currencies. The buyer sells its output in the destination, so its profit is in its own currency, and it pays its suppliers in dollars. The exporter invoices and is paid in dollars and incurs part of its costs in dollars, so we

take the dollar as its unit of account in the relationship, consistent with the link between dollar invoicing and dollar financing in Gopinath and Stein (2021). A dollar of price is worth one dollar to the exporter and $\exp(-u)$ units of its own currency to the buyer. Since the two profits are in different currencies, ω carries the conversion between them: we normalize $u = 0$ at the rate at which the rule is agreed, so that ω is the buyer's weight at that rate and $\exp(-u)$ measures how far the importer's currency has moved since. By the envelope theorem, reallocating its purchases has no first-order effect on the buyer's profit, so a one-dollar increase in P costs it $\exp(-u)\, q$ units of its own currency. The first-order condition of (8) is (Section A.3)

$$(1-\omega)\left[q + (P - MC)\, q'\right] = \omega\, \exp(-u)\, q. \tag{9}$$

The left-hand side is the exporter's gain from raising the price by one dollar: it earns one more dollar on each of the q units it sells, and loses the margin $P - MC$ on the $-q'$ units the buyer no longer buys. The right-hand side is the buyer's loss: it pays q more dollars, each of which costs it $\exp(-u)$ units of its own currency. Without buyer power, $\omega = 0$, the price sets the exporter's marginal gain to zero, as in Bertrand pricing. With $\omega > 0$, the price is set where the exporter's marginal gain is still positive, so it is lower than the exporter would set alone, and it is lower the weaker the buyer's currency, since a higher $\exp(-u)$ raises the buyer's loss from each dollar. Define $\Omega \equiv \omega/(1-\omega)$, the buyer's weight relative to the exporter's. Since $\varepsilon(s) = -q'P/q$, the first-order condition gives the price (Section A.3)

$$P = \frac{M(s)}{D}\, MC, \qquad M(s) = \frac{\varepsilon(s)}{\varepsilon(s) - 1}, \qquad D = 1 + \frac{\Omega \exp(-u)}{\varepsilon(s) - 1}. \tag{10}$$

Without buyer power, $\Omega = 0$ and $D = 1$, and the exporter charges the Bertrand markup $M(s)$ over marginal cost. Buyer power adds a markdown $D \geq 1$ on top of it: the exporter concedes part of its margin over cost to the buyer. The markdown is larger the more weight the buyer has and the weaker its currency. In logs, the dollar price is cost plus markup minus markdown,

$$p = \ln MC + \ln M(s) - \ln D. \tag{11}$$

Remark 1 (Nash over the rule). When the relationship starts, the parties agree on how the dollar price will respond to shocks, as in the ex-ante agreements of Goldberg and Tille (2013), where the parties preset the price and its exposure to the exchange rate. The weight ω is not something the parties negotiate directly: it is a compact way to summarize the

agreement they reach and the relative bargaining positions behind it. Bargaining over such an agreement is equivalent to the rule in (8) with a fixed weight, which determines how the parties share the effects of exchange rate movements.

4.3 The seller channel

Consider first a buyer without bargaining power ($x = 0$, so $\omega = 0$ and $D = 1$). The exporter sets $P = M(s)\,MC$ taking other suppliers' prices as given, and its markup rises with s, since the elasticity it faces falls. A peso depreciation lowers the dollar marginal cost of every Colombian supplier by κ percent. We assume that the dollar prices of the buyer's Colombian suppliers respond to e in the same proportion, so that s does not change.[6] Colombia becomes cheaper relative to foreign suppliers, and since $\eta > 1$ the buyer spends a larger share on Colombian goods: C rises. A higher C lowers $\bar{\eta}$. When Colombian prices rise, the buyer responds in two ways: it switches to foreign suppliers, with elasticity η, and it buys less of the product, with elasticity σ, because Colombian prices raise the price of the product as a whole. The larger Colombia's share, the more a rise in its prices raises the price of the product, and the more the buyer's response takes the second form. Since $\eta > \sigma$, the buyer's purchases from Colombia become less elastic. The elasticity (6) falls, and more so the larger is s, since $\bar{\eta}$ enters it with weight s: the effect is small for an exporter with a small share, whose elasticity is close to ρ, and larger for one with a large share, whose elasticity is closer to $\bar{\eta}$. The markup rises by

$$d\ln M = \Lambda(s)\,(-dp_C), \qquad \Lambda(s) \equiv \frac{s\,(\eta-\sigma)(\eta-1)\,C(1-C)}{\varepsilon(s)\,\big(\varepsilon(s)-1\big)}, \tag{12}$$

where $-dp_C$ is the percentage fall in Colombian dollar prices and $\Lambda(s)$ the percentage rise in the markup for each percent they fall. $\Lambda(0) = 0$ and Λ increases with s. By (11), with $D = 1$, the change in the dollar price is the change in the marginal cost plus the change in the markup. By (7), a change de changes the log of the dollar marginal cost by $-\kappa\,de$. Since the dollar prices of Colombian suppliers move together, they fall as much as the exporter's own, $dp_C = dp$, and with (12)

$$dp = \underbrace{-\kappa\,de}_{\text{marginal cost}} + \underbrace{\Lambda(s)(-dp)}_{\text{markup}}.$$

[6] If a large supplier passed less of the cost reduction into its price than its smaller rivals, it would lose share, the elasticity it faces would rise and its markup would fall. This works against the seller channel, so the pass-through in Proposition 1 is an upper bound on it; its sign does not depend on the assumption.

The dollar price appears on both sides because the markup depends on Colombia's share in the buyer's purchases, C, which rises when Colombian dollar prices fall relative to those of foreign suppliers. Solving for dp and using $p^{COP} = e + p$ gives the pass-through into the peso price.

Proposition 1 (Seller channel)**.** *With $x = 0$ and at a given share C, the pass-through of the peso–dollar rate into the exporter's peso price is*

$$\beta(s) \equiv \frac{dp^{COP}}{de} = 1 - \frac{\kappa}{1 + \Lambda(s)}, \tag{13}$$

with $\beta(0) = 1 - \kappa \in (0, 1)$ and $\beta'(s) > 0$.

Proof. Section A.4.

An exporter with no seller power passes the whole cost reduction into its dollar price, and pass-through into the peso price is $1 - \kappa$. An exporter with seller power keeps a fraction $\Lambda/(1 + \Lambda)$ of the reduction as markup, so its dollar price falls less and its peso price rises more.

4.4 The buyer channel

The importer's exchange rate does not enter the exporter's own pricing. It does not change the exporter's dollar cost, and it does not change the elasticity the exporter faces: because every supplier invoices in dollars, a change in u changes the cost of all of them to the buyer in the same proportion, so it scales the buyer's purchases through A without changing relative prices. It enters only through the joint maximization, in the buyer's term. The exporter counts in dollars, so a dollar is worth the same to it in every state; the buyer counts in its own currency, in which each dollar costs $\exp(-u)$. When the buyer's currency depreciates, each dollar of the price costs it more, its loss from a higher price weighs more in the rule, and the rule sets a lower dollar price: the markdown rises. We first hold the markup fixed; Section 4.5 adds its response. Differentiating (10) at $u = 0$,

$$\gamma(s, x) \equiv -\frac{\partial \ln D}{\partial u}\Big|_{u=0} = 1 - \frac{1}{D(s, x)}, \qquad D(s, x) = 1 + \frac{\Omega(s, x)}{\varepsilon(s) - 1}. \tag{14}$$

Proposition 2 (Buyer channel)**.** *Holding the markup fixed, the response of the exporter's dollar price to the importer's exchange rate against the dollar is $\gamma(s, x)$ in (14), with $\gamma(s, 0) = 0$ for all s and $\partial\gamma/\partial x > 0$.*

Proof. Appendix A.5.

The buyer channel works as partial insurance: a buyer on which the exporter depends shifts part of its own currency risk onto the exporter. The dollar price falls, and with the peso–dollar rate unchanged so does the peso price. Without buyer power the markdown is zero whatever the exporter's power, so the importer's rate has no effect, as the DCP predicts. The response rises with x because the buyer's weight does.

4.5 From the pricing rule to the estimating equation

By (11), the dollar price is cost plus markup minus markdown. Differentiating,

$$dp = d\ln MC + d\ln M - d\ln D. \tag{15}$$

The cost responds to the peso–dollar rate alone: by (7),

$$d\ln MC = -\kappa\, de. \tag{16}$$

The markup responds to Colombia's share in the buyer's purchases, which moves with Colombian dollar prices relative to foreign ones whichever exchange rate moves them. With the dollar prices of Colombian suppliers moving together, $dp_C = dp$, and (12) gives

$$d\ln M = -\Lambda(s)\, dp. \tag{17}$$

The markdown responds to the importer's rate, by (14), and to the markup: by (10) it is a fraction $\Omega\exp(-u)$ of the margin $1/(\varepsilon-1)$, so when the elasticity falls and the markup rises, the markdown rises with it. Since $d\varepsilon = \varepsilon(\varepsilon-1)\Lambda(s)\, dp$ (Section A.6),

$$d\ln D = -\gamma(s,x)\, du - \varepsilon(s)\,\gamma(s,x)\,\Lambda(s)\, dp. \tag{18}$$

Substituting (16)–(18) into (15) and solving for dp,

$$dp = \frac{-\kappa\, de + \gamma(s,x)\, du}{1 + \Lambda(s)\big(1 - \varepsilon(s)\,\gamma(s,x)\big)}. \tag{19}$$

With $x = 0$, $\gamma = 0$ and (19) is Proposition 1; with $s = 0$, $\Lambda = 0$ and the response to u is Proposition 2. Since $p^{COP} = e + p$, $dp^{COP} = de + dp$; substituting (19) and collecting the

coefficients on de and du,

$$\begin{aligned} \Delta p^{COP} &= \zeta + \beta(s,x)\,\Delta e + \Gamma(s,x)\,\Delta u, \\ \beta(s,x) &= 1 - \frac{\kappa}{1+\Lambda(s)\big(1-\varepsilon(s)\,\gamma(s,x)\big)}, \qquad \Gamma(s,x) = \frac{\gamma(s,x)}{1+\Lambda(s)\big(1-\varepsilon(s)\,\gamma(s,x)\big)}, \end{aligned} \tag{20}$$

where ζ collects changes in costs not driven by exchange rates.

The estimating equation is the first-order approximation of (20) in (s,x) around $(0,0)$:

$$\Delta p^{COP} \approx \zeta + \beta_0\,\Delta e + \gamma_0\,\Delta u + \beta_1\,(\Delta e \times s) + \gamma_1\,(\Delta u \times x), \tag{21}$$

with

$$\begin{aligned} \beta_0 &= \beta(0,0) = 1-\kappa, & \beta_1 &= \frac{\partial \beta}{\partial s}(0,0) = \frac{\kappa\,(\eta-\sigma)(\eta-1)\,C(1-C)}{\rho\,(\rho-1)} > 0, \\ \gamma_0 &= \Gamma(0,0) = 0, & \gamma_1 &= \frac{\partial \Gamma}{\partial x}(0,0) = \frac{\omega_x(0,0)}{\rho-1} > 0. \end{aligned} \tag{22}$$

Each coefficient is one of the three responses in (15). β_0 is the cost: without bargaining power on either side, the dollar price falls with the exporter's dollar cost and the peso price rises by $1-\kappa$. β_1 is the markup of Section 4.3, which does not respond to the peso without seller power, $\Lambda(0)=0$, and responds more the larger is s. γ_0 is zero because without buyer power there is no markdown. γ_1 is the markdown of Section 4.4, which responds more to the importer's rate the larger is x.

No other term appears at first order. At $s=0$, $\Lambda=0$ and $\beta(0,x)=1-\kappa$ for every x; at $x=0$, $\gamma=0$ and $\Gamma(s,0)=0$ for every s. The two cross terms, $\Delta e \times x$ and $\Delta u \times s$, are therefore of second order in (s,x) (Section A.6). Equation (21) is the specification (3) we estimate.

The model thus generates the weighted rather than switching structure documented in Section 3.3: bargaining power changes how much each rate passes through, not which one does.

Corollary 1 (The DCP limit)**.** *As $x \to 0$, the importer's exchange rate drops out of the exporter's price: $\Gamma(s,0)=0$ for all s, and the peso price responds only to the peso–dollar rate, with pass-through $\beta(s,0)$.*

Without buyer power, the model reproduces the dominant currency paradigm whatever the exporter's power: only the exporter's rate against the dollar matters, and seller power

changes how much of it passes through.

5 Conclusion

Under the dominant currency paradigm, the exporter sets its price in dollars, and the only exchange rate that moves that price is the exporter's currency against the dollar. This paper provides evidence that in firm-to-firm trade the dollar price is set through bilateral bargaining rather than unilaterally by the exporter. This changes how exchange rates pass through to export prices. Using Colombian customs records that identify the exporter and the importer in every transaction, we find that the importer's exchange rate against the dollar passes through to the exporter's peso price when the exporter depends on its buyer, and more strongly the greater that dependence. When the buyer accounts for all of the exporter's sales to the destination, a 10 percent depreciation of the importer's currency against the dollar lowers the peso price by about 1 percent; when the exporter does not depend on its buyer, the importer's rate has no effect. The DCP is therefore the limiting case of a relationship in which the buyer has no power, rather than a description of all relationships. Seller power acts on the other channel: it raises the pass-through of the peso–dollar rate to the peso price. Because the two rates enter jointly, bargaining power determines how much each one passes through, not which one is relevant.

We rationalize these findings with a model in which the exporter and the importer bargain over a pricing rule before exchange rates are realized. Under this rule, the dollar price includes a markdown relative to the Bertrand price, and the markdown increases with the exporter's dependence on the buyer. Because the importer values its profit in its own currency, the markdown widens when the importer's currency depreciates against the dollar, and the model reduces to the DCP when the exporter does not depend on its buyer.

These results imply that the invoicing currency alone does not determine how exchange rates move export prices. Even with nearly all trade invoiced in dollars, the pass-through of each exchange rate varies across relationships with the distribution of bargaining power. Two economies that invoice in the same currency and export the same goods can therefore see their export prices respond differently to the same exchange rate movements if their exporters differ in the power they hold over their foreign buyers or in their dependence on them. Predicting how a country's export prices respond to exchange rate movements thus requires knowing not only the currency in which its trade is invoiced but also the structure of the relationships through which those prices are set.

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A Model: derivations and microfoundation

A.1 The buyer's problem

The buyer's profit in its own currency is

$$\Pi_B = \max_{\{q_l\},\, X_F} \; B\, X^{\frac{\sigma-1}{\sigma}} - \exp(-u)\Big[\sum_{l\in \text{Col}} P_l\, q_l + P_F\, X_F\Big],$$

with X given by (4) and P_F the dollar price index of its non-Colombian purchases. Since both aggregators are homothetic, the problem separates into three steps.

Step 1: Colombian purchases. For given X_C,

$$\min_{\{q_l\}} \sum_l P_l\, q_l \quad \text{s.t.} \quad \Big[\sum_l q_l^{\frac{\rho-1}{\rho}}\Big]^{\frac{\rho}{\rho-1}} = X_C.$$

The first-order conditions, with multiplier λ_C, are

$$P_l = \lambda_C\, X_C^{\frac{1}{\rho}}\, q_l^{-\frac{1}{\rho}} \quad \Longrightarrow \quad q_l = \Big(\frac{P_l}{\lambda_C}\Big)^{-\rho} X_C.$$

Substituting into the constraint,

$$\lambda_C = \Big[\sum_l P_l^{1-\rho}\Big]^{\frac{1}{1-\rho}} \equiv P_C, \qquad \sum_l P_l\, q_l = P_C\, X_C.$$

Step 2: Colombia and the rest of the world. For given X,

$$\min_{X_C, X_F} \; P_C\, X_C + P_F\, X_F \quad \text{s.t.} \quad \Big[X_C^{\frac{\eta-1}{\eta}} + X_F^{\frac{\eta-1}{\eta}}\Big]^{\frac{\eta}{\eta-1}} = X.$$

The same steps give

$$X_C = \Big(\frac{P_C}{P_X}\Big)^{-\eta} X, \qquad X_F = \Big(\frac{P_F}{P_X}\Big)^{-\eta} X, \qquad P_X = \big[P_C^{1-\eta} + P_F^{1-\eta}\big]^{\frac{1}{1-\eta}},$$

and $P_C\, X_C + P_F\, X_F = P_X\, X$.

Step 3: quantity. For given P_X,

$$\max_X \; B\, X^{\frac{\sigma-1}{\sigma}} - \exp(-u) P_X\, X \quad \Longrightarrow \quad \frac{\sigma-1}{\sigma}\, B\, X^{-\frac{1}{\sigma}} = \exp(-u) P_X,$$

so

$$X = \tilde{A}\left[\exp(-u)P_X\right]^{-\sigma}, \qquad \tilde{A} \equiv \left[\frac{\sigma-1}{\sigma}\,B\right]^{\sigma}.$$

Demand. Combining the three steps,

$$q_i = \left(\frac{P_i}{P_C}\right)^{-\rho}\left(\frac{P_C}{P_X}\right)^{-\eta}\tilde{A}\exp(\sigma u)\,P_X^{-\sigma},$$

which is (5) with $A \equiv \tilde{A}\exp(\sigma u)$.

Shares and indices.

$$s = \frac{P_i\,q_i}{P_C\,X_C} = \left(\frac{P_i}{P_C}\right)^{1-\rho}, \qquad C = \frac{P_C\,X_C}{P_X\,X} = \left(\frac{P_C}{P_X}\right)^{1-\eta}.$$

From $(1-\rho)\ln P_C = \ln\sum_l P_l^{1-\rho}$ and $(1-\eta)\ln P_X = \ln\left(P_C^{1-\eta} + P_F^{1-\eta}\right)$,

$$\frac{\partial \ln P_C}{\partial \ln P_i} = \frac{P_i^{1-\rho}}{\sum_l P_l^{1-\rho}} = s, \qquad \frac{\partial \ln P_X}{\partial \ln P_C} = \frac{P_C^{1-\eta}}{P_C^{1-\eta} + P_F^{1-\eta}} = C.$$

Profit at the optimum. By the first-order condition in Step 3, $B\,X^{\frac{\sigma-1}{\sigma}} = \frac{\sigma}{\sigma-1}\exp(-u)P_X\,X$, so

$$\Pi_B = \frac{\exp(-u)\,P_X\,X}{\sigma-1} = \frac{\tilde{A}}{\sigma-1}\exp\left((\sigma-1)u\right)P_X^{1-\sigma}.$$

For given dollar prices, u multiplies q_i by $\exp(\sigma u)$ and Π_B by $\exp((\sigma-1)u)$, and s and C do not depend on u.

A.2 The elasticity the exporter faces

In logs, the demand (5) is

$$\ln q_i = -\rho\ln P_i + (\rho-\eta)\ln P_C + (\eta-\sigma)\ln P_X + \ln A.$$

Holding the prices of the buyer's other suppliers fixed, A does not depend on P_i and, by Section A.1,

$$\frac{\partial \ln P_C}{\partial \ln P_i} = s, \qquad \frac{\partial \ln P_X}{\partial \ln P_i} = \frac{\partial \ln P_X}{\partial \ln P_C}\,\frac{\partial \ln P_C}{\partial \ln P_i} = C\,s.$$

Hence

$$\varepsilon(s) \equiv -\frac{\partial \ln q_i}{\partial \ln P_i} = \rho - (\rho - \eta)\, s - (\eta - \sigma)\, C\, s = \rho\,(1 - s) + s\,\bar{\eta}, \qquad \bar{\eta} \equiv \eta\,(1 - C) + \sigma\, C,$$

which is (6).

Properties. For $C \in (0, 1)$ and $\rho > \eta > \sigma > 1$,

$$\sigma < \bar{\eta} < \eta < \rho \quad \Longrightarrow \quad \varepsilon'(s) = -(\rho - \bar{\eta}) < 0, \qquad 1 < \bar{\eta} \leq \varepsilon(s) \leq \rho.$$

The markup $M = \varepsilon/(\varepsilon - 1)$ is therefore finite and increasing in s:

$$\frac{d \ln M}{ds} = -\frac{\varepsilon'(s)}{\varepsilon(\varepsilon - 1)} = \frac{\rho - \bar{\eta}}{\varepsilon(\varepsilon - 1)} > 0.$$

A.3 The pricing rule

The joint problem. Let $q_i(P)$, $q_l(P)$ and $X_F(P)$ be the buyer's optimal purchases given the exporter's price P (Section A.1), and $R(\cdot) = B\, X^{\frac{\sigma-1}{\sigma}}$ its revenue. The buyer's profit, in its own currency, is

$$\Pi_B(P) = R\big(q_i(P), \{q_l(P)\}_{l \neq i}, X_F(P)\big) - \exp(-u)\Big[P\, q_i(P) + \sum_{l \neq i} P_l\, q_l(P) + P_F\, X_F(P)\Big],$$

and the rule (8) is

$$\max_P\ (1 - \omega)\,(P - MC)\, q_i(P) \ + \ \omega\, \Pi_B(P).$$

The buyer's marginal loss. Differentiating Π_B with respect to P,

$$\Pi_B'(P) = \Big[\frac{\partial R}{\partial q_i} - \exp(-u)P\Big] q_i' + \sum_{l \neq i} \Big[\frac{\partial R}{\partial q_l} - \exp(-u)P_l\Big] q_l' + \Big[\frac{\partial R}{\partial X_F} - \exp(-u)P_F\Big] X_F' - \exp(-u)\, q_i.$$

The buyer chooses its purchases optimally, so each term in brackets is zero by its first-order conditions:

$$\frac{\partial R}{\partial q_i} = \exp(-u)P, \qquad \frac{\partial R}{\partial q_l} = \exp(-u)P_l, \qquad \frac{\partial R}{\partial X_F} = \exp(-u)P_F.$$

Hence

$$\Pi_B'(P) = -\exp(-u)\, q_i :$$

a one-dollar increase in P costs the buyer q_i dollars, or $\exp(-u)\, q_i$ units of its own currency.

First-order condition. The derivative of the exporter's profit is $\pi'(P) = q_i + (P - MC)\, q_i'$. The first-order condition of the joint problem, $(1-\omega)\,\pi'(P) + \omega\,\Pi_B'(P) = 0$, is therefore

$$(1-\omega)\big[q_i + (P - MC)\, q_i'\big] = \omega \exp(-u)\, q_i,$$

which is (9).

Price. Dividing by $(1-\omega)\, q_i$, with $\Omega \equiv \omega/(1-\omega)$ and $q_i'/q_i = -\varepsilon/P$,

$$1 - \varepsilon\,\frac{P - MC}{P} = \Omega \exp(-u) \quad \Longrightarrow \quad \frac{P - MC}{P} = \frac{1 - \Omega \exp(-u)}{\varepsilon}.$$

Solving for P,

$$P = \frac{\varepsilon}{\varepsilon - 1 + \Omega \exp(-u)}\, MC = \frac{M(s)}{D}\, MC, \qquad M(s) = \frac{\varepsilon}{\varepsilon - 1}, \qquad D = 1 + \frac{\Omega \exp(-u)}{\varepsilon - 1},$$

which is (10).

Positive margin. By the expression for $(P - MC)/P$ above, the price exceeds marginal cost if and only if $\Omega \exp(-u) < 1$. If the buyer's effective weight were larger, the rule would set the price at or below marginal cost and the exporter would earn nothing from the relationship. We assume $\Omega \exp(-u) < 1$ over the support of u; at $u = 0$ this requires $\omega < 1/2$.

A.4 Proof of Proposition 1

Proof. Markup. From $M = \varepsilon/(\varepsilon - 1)$,

$$d \ln M = -\frac{d\varepsilon}{\varepsilon(\varepsilon - 1)}.$$

Elasticity. From (6), with $ds = 0$,

$$d\varepsilon = s\, d\bar{\eta} = -s\,(\eta - \sigma)\, dC.$$

Colombia's share. Let $p_C = \ln P_C$, $p_X = \ln P_X$ and $p_F = \ln P_F$. From $C = (P_C/P_X)^{1-\eta}$ and $P_X^{1-\eta} = P_C^{1-\eta} + P_F^{1-\eta}$, $dp_X = C\, dp_C + (1 - C)\, dp_F$. Foreign dollar prices do not respond to e,

so $dp_F = 0$ and

$$d\ln C = (1-\eta)(dp_C - dp_X) = (1-\eta)(1-C)\,dp_C, \qquad dC = (\eta-1)\,C(1-C)\,(-dp_C).$$

Markup response. Combining the three,

$$d\ln M = \frac{s\,(\eta-\sigma)(\eta-1)\,C(1-C)}{\varepsilon(\varepsilon-1)}\,(-dp_C) = \Lambda(s)\,(-dp_C),$$

which is (12).

Price. With $x = 0$, $D = 1$. From (11) and (7), holding c^{COP} and c^{USD} fixed, $dp = d\ln M - \kappa\,de$. Since the dollar prices of Colombian suppliers move together, $dp_C = dp$, so

$$dp = -\kappa\,de - \Lambda(s)\,dp \quad\Longrightarrow\quad \frac{dp}{de} = -\frac{\kappa}{1+\Lambda(s)}.$$

Since $p^{COP} = e + p$,

$$\beta(s) = 1 + \frac{dp}{de} = 1 - \frac{\kappa}{1+\Lambda(s)}.$$

Properties. At $s = 0$, $\Lambda = 0$, so $\beta(0) = 1-\kappa \in (0,1)$. For $0 < C < 1$, the numerator of Λ rises with s and its denominator falls, because $\varepsilon(s)$ falls from ρ toward $\bar{\eta}$. So Λ rises with s, and so does β. □

A.5 Proof of Proposition 2

Proof. Response to u. By (11), $p = \ln MC + \ln M - \ln D$, with $D = 1 + \Omega\exp(-u)/(\varepsilon-1)$ from (10). The importer's rate does not enter MC, it does not change ε, since it enters demand only through A, and it does not change Ω, which is fixed when the rule is agreed (Section 4.2); with the markup held fixed,

$$\frac{dp}{du} = -\frac{\partial \ln D}{\partial u} = \frac{\Omega\exp(-u)/(\varepsilon-1)}{1+\Omega\exp(-u)/(\varepsilon-1)} = \frac{D-1}{D}.$$

At $u = 0$ this is $1 - 1/D(s,x)$, which is (14).

No buyer power. Since $\Omega = \omega/(1-\omega)$ and $\omega(s,0) = 0$ (Section 4.2), $\Omega(s,0) = 0$, so $D(s,0) = 1$ and $\gamma(s,0) = 0$ for all s.

Buyer power. Since $\omega_x > 0$, $\Omega_x = \omega_x/(1-\omega)^2 > 0$. From (14),

$$\frac{\partial \gamma}{\partial x} = \frac{1}{D^2}\frac{\partial D}{\partial x} = \frac{1}{D^2}\frac{\Omega_x}{\varepsilon - 1} > 0,$$

since $\varepsilon > 1$. □

A.6 From the price equation to the estimating equation

Step 1: total differential. By (11),

$$dp = d\ln MC + d\ln M - d\ln D.$$

The weight Ω is fixed when the rule is agreed (Section 4.2), and s does not change because the dollar prices of Colombian suppliers move together (Section 4.3), so ε moves only through C. We take the three pieces in turn.

Step 2: cost. By (7), holding c^{COP} and c^{USD} fixed,

$$d\ln MC = -\kappa\, de.$$

Step 3: markup. From $M = \varepsilon/(\varepsilon - 1)$,

$$d\ln M = -\frac{d\varepsilon}{\varepsilon(\varepsilon - 1)}.$$

Step 4: markdown. From (10), $D = 1 + \Omega\exp(-u)/(\varepsilon - 1)$, so

$$\frac{\partial D}{\partial u} = -\frac{\Omega\exp(-u)}{\varepsilon - 1} = -(D-1), \qquad \frac{\partial D}{\partial \varepsilon} = -\frac{\Omega\exp(-u)}{(\varepsilon-1)^2} = -\frac{D-1}{\varepsilon - 1}.$$

Hence

$$d\ln D = \frac{1}{D}\left[\frac{\partial D}{\partial u}\,du + \frac{\partial D}{\partial \varepsilon}\,d\varepsilon\right] = -\frac{D-1}{D}\,du - \frac{D-1}{D}\,\frac{d\varepsilon}{\varepsilon - 1}.$$

At $u = 0$, $(D-1)/D = \gamma(s, x)$ by (14), so

$$d\ln D = -\gamma\, du - \gamma\,\frac{d\varepsilon}{\varepsilon - 1}.$$

The first term is the direct response of the markdown to the importer's rate (Section 4.4). The second is its response to the elasticity: the markdown is a fraction $\Omega\exp(-u)$ of the

margin $1/(\varepsilon-1)$, so when the elasticity falls and the margin rises, the markdown rises with it.

Step 5: adding the three pieces. Substituting Steps 2–4 into Step 1,

$$dp = -\kappa\, de + \gamma\, du - \frac{d\varepsilon}{\varepsilon(\varepsilon-1)} + \gamma\,\frac{d\varepsilon}{\varepsilon-1} = -\kappa\, de + \gamma\, du - \frac{d\varepsilon}{\varepsilon(\varepsilon-1)}\,(1-\varepsilon\gamma).$$

Of each percent the markup rises, the markdown takes back a share $\varepsilon\gamma$.

Step 6: the elasticity. From (6) with $ds = 0$, $d\varepsilon = -s\,(\eta-\sigma)\,dC$. From Section A.4, with the dollar prices of non-Colombian suppliers unchanged, $dC = (\eta-1)\,C(1-C)\,(-dp_C)$, and with those of Colombian suppliers moving together, $dp_C = dp$, whichever exchange rate moves them. Hence

$$d\varepsilon = s\,(\eta-\sigma)(\eta-1)\,C(1-C)\,dp = \Lambda(s)\,\varepsilon(\varepsilon-1)\,dp,$$

with $\Lambda(s)$ defined in (12).

Step 7: solving for dp. Substituting Step 6 into Step 5,

$$dp = -\kappa\, de + \gamma\, du - \Lambda(s)\,(1-\varepsilon\gamma)\,dp \quad\Longrightarrow\quad dp = \frac{-\kappa\, de + \gamma\, du}{1+\Lambda(s)\,(1-\varepsilon\gamma)}.$$

Since $\gamma = \Omega/(\varepsilon-1+\Omega)$ and $\varepsilon-1+\Omega = (\varepsilon-1)D$,

$$1-\varepsilon\gamma = \frac{\varepsilon-1+\Omega-\varepsilon\Omega}{\varepsilon-1+\Omega} = \frac{(\varepsilon-1)(1-\Omega)}{\varepsilon-1+\Omega} = \frac{1-\Omega}{D},$$

which gives (19) with

$$H(s,x) = 1 + \Lambda(s)\,\frac{1-\Omega(s,x)}{D(s,x)}.$$

By the positive-margin condition $\Omega < 1$ (Section A.3), $1 < H \le 1+\Lambda(s)$.

Step 8: the peso price. Since $p^{COP} = e + p$, $dp^{COP} = de + dp$, and by Step 7

$$dp^{COP} = \left(1-\frac{\kappa}{H}\right) de + \frac{\gamma}{H}\, du \equiv \beta(s,x)\, de + \Gamma(s,x)\, du,$$

which is (20); ζ collects the changes in c^{COP} and c^{USD} held fixed in Step 2, which enter with the same factor $1/H$.

Step 9: first-order approximation. Since $\Lambda(0) = 0$ and $\Omega(s, 0) = 0$,

$$H(0, x) = 1, \qquad H(s, 0) = 1 + \Lambda(s), \qquad \gamma(s, 0) = 0.$$

Hence $\beta(0, x) = 1 - \kappa$ for every x, so $\partial\beta/\partial x = 0$ at $(0, 0)$; and $\Gamma(s, 0) = 0$ for every s, so $\partial\Gamma/\partial s = 0$ at $(0, 0)$. The remaining two derivatives are

$$\frac{\partial\beta}{\partial s}(0, 0) = \kappa\,\Lambda'(0) = \frac{\kappa\,(\eta - \sigma)(\eta - 1)\,C(1 - C)}{\rho(\rho - 1)},$$

using $\varepsilon(0) = \rho$, and

$$\frac{\partial\Gamma}{\partial x}(0, 0) = \frac{\partial\gamma}{\partial x}(0, 0) = \frac{\Omega_x(0, 0)}{\rho - 1} = \frac{\omega_x(0, 0)}{\rho - 1},$$

using $D(0, 0) = 1$ and $\Omega_x = \omega_x/(1 - \omega)^2$ with $\omega(0, 0) = 0$ (Section A.5). Expanding β and Γ to first order around $(0, 0)$,

$$\Delta p^{COP} \approx \zeta + \beta(0, 0)\,\Delta e + \Gamma(0, 0)\,\Delta u + \frac{\partial\beta}{\partial s}(0, 0)\,(\Delta e \times s) + \frac{\partial\Gamma}{\partial x}(0, 0)\,(\Delta u \times x),$$

which is (21) with the coefficients in (22). The terms left out are of second order in (s, x).

B Additional tables

B.1 A single relevant exchange rate

Table 6 tests whether bargaining power selects a single exchange rate. Each relationship is assigned a "relevant" rate that follows the importer–dollar rate where the buyer holds bargaining power and the peso–dollar rate where the seller does. In the discrete version, columns (1) and (2), the relevant rate equals the importer–dollar rate Δu_{kt} when $x_{ij,t-1} > s_{ij,t-1}$ and the peso–dollar rate Δe_t otherwise. In the continuous version, columns (3) and (4), each rate is weighted by the relative bargaining power of its side, $(1 - w_{ij,t-1})\,\Delta e_t + w_{ij,t-1}\,\Delta u_{kt}$, with $w = x/(s + x)$. Within each version, the first column includes the relevant rate alone and the second adds the peso–dollar rate.

On its own, the relevant rate passes through at 0.43 in the discrete version and 0.70 in the continuous one (columns 1 and 3). Once the peso–dollar rate is included, however, the coefficient on the relevant rate falls to 0.01 and −0.01 and is statistically indistinguishable

from zero, while the peso–dollar rate passes through at 0.67 and 0.68 (columns 2 and 4). Exchange rates therefore do not enter the exporter's price through a single rate selected by bargaining power.

Table 6: Pass-through of a constructed relevant exchange rate

	Discrete relevant rate		Continuous relevant rate	
	(1)	(2)	(3)	(4)
Relevant rate	0.431***	0.014	0.695***	-0.005
	(0.031)	(0.023)	(0.059)	(0.048)
Δe_t		0.671***		0.680***
		(0.045)		(0.047)
Observations	305,191	305,191	305,191	305,191

Notes: Flexible-rate destinations. Dependent variable $\Delta \ln p^{COP}_{ijhkt}$. e_t is the log peso–dollar rate and u_{kt} the log rate between the dollar and the importer's currency, where an increase is an appreciation of the importer's currency. The discrete relevant rate equals Δu_{kt} when buyer power exceeds seller power, $x > s$, and Δe_t otherwise. The continuous relevant rate is $(1 - w)\,\Delta e_t + w\,\Delta u_{kt}$ with $w = x/(s + x)$. x and s are lagged one year. All columns include exporter × HS10 × destination fixed effects and no time effects. Standard errors clustered by destination × year in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

B.2 Buyer power over the exporter's total sales

Table 7 re-estimates (3) with buyer power measured as the buyer's share in the exporter's sales to all destinations, rather than to destination k alone. The two measures differ in the exporter's alternatives they take into account: x treats only the other buyers in the same destination as the exporter's outside options, while the global share also counts its sales elsewhere. Since the denominator is larger, the global share is smaller than x by construction, and its coefficients are not directly comparable to those in Table 4. The interaction of the importer's rate with buyer power is positive and significant in all five columns, between 0.28 and 0.50, while the estimates of seller power are virtually unchanged. The global share is concentrated near zero, with a median of 0.024, since it divides by the exporter's sales to all destinations. Over its interquartile range (0.005 to 0.097), the coefficients imply that a 10 percent depreciation of the importer's currency against the dollar lowers the peso price by between 0.25 and 0.46 percentage points more for the exporter with greater dependence, and by 0.31 points in column (3), about a third of the corresponding effect in Table 4. The buyer channel is therefore present under both measures, but it is stronger when buyer power is measured within the destination, consistent with the other buyers in that market being the exporter's relevant alternatives.

Table 7: Exchange rate pass-through and bilateral bargaining power: buyer share in total exports

	(1)	(2)	(3)	(4)	(5)
Δe_t	0.751***				
	(0.067)				
Δu_{kt}	−0.019	0.034			
	(0.065)	(0.022)			
$\Delta e_t \times s_{ij,t-1}$	−0.089	0.072***	0.075***	0.065*	0.083**
	(0.056)	(0.027)	(0.028)	(0.034)	(0.035)
$\Delta u_{kt} \times x_{ij,t-1}$	0.499***	0.381***	0.340***	0.314***	0.276**
	(0.187)	(0.110)	(0.111)	(0.104)	(0.118)
Seller × HS10 × destination FE	Yes	Yes	Yes		
Buyer × HS10 FE				Yes	
Seller × buyer FE					Yes
HS10 × year FE		Yes	Yes	Yes	Yes
Destination × year FE			Yes	Yes	Yes
Observations	305,191	298,491	298,319	281,744	304,865

Notes: Estimates of equation (3) on flexible-rate destinations. Dependent variable $\Delta \ln p^{COP}_{ijhkt}$. $\Delta e_t > 0$ is a peso depreciation against the dollar; $\Delta u_{kt} > 0$ is an appreciation of the importer's currency against the dollar (impo/USD). Seller power s is the seller's share in the buyer's purchases from Colombia; buyer power x is the buyer's share in the seller's total exports to all destinations. Both are lagged one year, lie in $[0, 1]$, and enter in levels. HS10 × year effects absorb Δe_t and destination × year effects absorb Δu_{kt}. Standard errors clustered by destination × year in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.