American Economic Review: Papers & Proceedings 100 (May 2010): 419–423
http://www.aeaweb.org/articles.php?doi=10.1257/aer.100.2.419

Facts and Figures on Intermediated Trade

By Bernardo S. Blum, Sebastian Claro, and Ignatius Horstmann*

Over the past several years, trade economists have begun exploring the role that intermediaries play in facilitating trade. Papers by James E. Rauch and Joel Watson (2004), Dimitra Petropoulou (2007) and Pol Antras and Arnaud Costinot (2009) model intermediaries as agents that facilitate matching between sellers/exporters and foreign buyers. These papers examine how improved intermediation (matching) technologies affect trade volumes and the gains from trade. Bernardo S. Blum, Sebastian Claro and Ignatius Horstmann (2009) embed a reduced-form matching model, inspired by Robert Townsend (1983), into a heterogeneous firm, trade model and examine how changes in the trading environment affect trade costs, export/import volumes and the extent of trade flowing through trade intermediaries.

A key modeling challenge for this literature is how to structure matching and intermediation technologies in trading environments. Blum, Claro and Horstmann (2009) provide certain facts for Chile-Colombia trade and use these facts to structure trading technologies. In this paper we provide a broader set of facts on trade intermediaries, using new datasets for Chile and for Chile-Argentina trade.[1] We think that these facts will prove particularly useful for future modeling of trade intermediaries.

I. The Data

To develop the facts that follow we analyze information from Chilean transaction-level import data between 2004 and 2008. For each transaction over this period, the dataset provides information on the identity of the importing agent—name and ID—the eight-digit Harmonized System code of the products imported, shipping country, and characteristics of the shipment such as weight, quantity, Free On Board and Cost, Insurance, and Freight values. Critically, for each importer we know its main line of business, as defined by the Chilean revenue agency (SII). For instance, seven importers have as their main line of business being a "wholesaler of machinery for working with textiles and leather," while 18 other importers are "manufacturers of machinery for processing food, beverages, or tobacco."

The dataset also contains information on the exporting parties with which each Chilean importer transacts in foreign markets. We combine this information with the information on Argentine exporters available in Argentina's customs data. This allows us to match Argentine exporters with their Chilean importers to create a dataset with bilateral and global trade information for each exporter/importer pair. We are able to match around 90 percent of all Argentine exporters to Chile, and around 95 percent of all Argentina export-Chilean import transactions between 2005 and 2007. Our matching procedure is less successful in 2004 and 2008. This is mainly due to the fact that some transactions that occurred in 2003 are recorded in the first months of 2004, and some transactions that occurred at the end of 2008 are recorded only in 2009. The analysis that follows restricts the sample to 2005–2007.

On average, 58 percent of all Chilean imports are done by manufacturers or service providers. Wholesalers account for 35 percent and retailers for 6 percent of Chilean imports. Typical manufacturing or service importers buy 11.9 different HS8-classified products and 3.9 different HS2-classified products per year from 3.2 countries. In contrast, importers that are wholesalers buy 18.1 different HS8-classified products and 5.2 different HS2-classified products from 3.6 countries. Retailers buy from fewer countries but

* Blum: Rotman School of Management, University of Toronto, 105 St. George Street, Toronto ON M5S 3E6 (e-mail: bblum@rotman.utoronto.ca). Claro: Pontificia Universidad Catolica de Chile and Central Bank of Chile, Agustinas 1180, Santiago (e-mail: sclaro@bcentral.cl). Horstmann: Rotman School of Management, University of Toronto, 105 St. George Street, Toronto ON M5S 3E6 (e-mail: ihorstmann@rotman.utoronto.ca). We thank Trevor Tombe for superb research assistance and Jim Tybout for helpful comments. Sebastian Claro acknowledges financial support from Fondecyt Grant 1080109.

[1] Andrew B. Bernard et al. (2010) provides features of US importers, both manufacturers and intermediaries.

buy slightly more products. Chilean manufacturers and service providers buy, on average, from 2.1 Argentine exporters per year, while wholesalers buy from 2.0 and retailers from 2.3 exporters.[2]

II. Trade and Intermediation Facts

A fact that features prominently in Blum, Claro, and Horstmann (2009) is that, for trade between Chilean exporters and Colombian importers, there are virtually no cases in which small (worldwide) exporters match with small (worldwide) importers. In addition, small exporters typically sell to one large Colombian importer. Similar facts are found in the matched Chile-Argentina data. Specifically, while almost 50 percent of Argentine firms exporting to Chile are small sellers to Chile—they sell less than US$30,000 there—only about 20 percent are small worldwide exporters and sell less than US$30,000 to Chile and to the world. Only about four percent of all Argentine exporters to Chile are small worldwide exporters who match with small worldwide importers in Chile; that is, roughly 96 percent of all Argentine exporters are in matches involving at least one large trading partner. Although not included here, more than 50 percent of Argentine exporters match with a single Chilean importer, and these are the small exporters.[3]

We can summarize these results as:

FACT 1: *Small exporters from Argentina match typically with one large Chilean importer.*

As discussed in Blum, Claro, and Horstmann (2009), if one thinks of trading costs as arising from the cost of either the seller's identifying a foreign customer or a customer's identifying a foreign seller, these facts suggest that a large trading agent is more easily identified (and matched with) than a small trading agent. In essence, trading/matching costs decline as the volume of an agent's trade increases. Small exporters can achieve low match costs by selling through a (larger) intermediary.

In addition to structuring the costs of matching and trading, modelers also must structure the technology of intermediation. Two possible intermediation scenarios are: (i) intermediaries specialize in a narrow range of products and become large by importing these products from many countries, and (ii) intermediaries specialize in a small number of countries and become large by importing a number of different products from these countries. The former case would imply low cross-country matching costs but high cross-product matching costs while the latter implies high cross-country matching costs. The nature of the cross-product matching costs depends on the number of distinct products the intermediary carries.

To examine this issue, we look at both the average number of countries from which Chilean intermediaries import and the average number of products imported, as defined by the HS six-digit classification. Table 1 below provides this information for wholesalers of different sizes, as measured by total worldwide imports. From the top part of Table 1, we see that even wholesalers in the seventy-fifth to ninetieth percentile of import value obtain over 70 percent of that value from one country and almost 90 percent from two countries. Even ones in the top one percent of the distribution, and that import from on average 16 countries, obtain approximately 60 percent of import value from one country and 75 percent from two countries. The same is true for retailers (see the online notes). Overwhelmingly, then, the evidence is that, except for the absolute largest ones, intermediaries import from a small number of countries. Virtually all intermediaries, including the largest ones, obtain the vast majority of their imports from one or two countries.

In terms of product specialization, the bottom part of Table 1 shows that even the smallest intermediaries import, on average, three HS6 products. Those intermediaries in the seventy-fifth to ninetieth percentile import almost 30 HS6 products on average. They also import almost nine HS2 codes (not shown). The largest intermediaries import almost 100 products. By this measure, import intermediaries are not very specialized. As with the country data, however, a significant share of total import value for the typical import intermediary comes from a small number of HS6 codes. Even for the largest wholesalers, carrying over 50 HS6 codes, approximately 60 to 65 percent of import value is accounted for by two HS6 codes. For the largest retailers, two HS6 codes account for between 50 and 60 percent of import value.

[2] For more detailed summary statistics, see notes to this paper at www.rotman.utoronto.ca/bblum/personal/front.htm.

[3] This information is available in Table 2 of the online notes.

TABLE 1—WHOLESALE IMPORTER CHARACTERISTICS

Wholesalers				
Percentile	Imports (Thous. $)	Average # countries	Country share Top	2nd top
0–25	7	1.3	0.94	0.05
25–50	63	2.1	0.85	0.11
50–75	320	3.5	0.77	0.15
75–90	1,710	5.8	0.72	0.15
90–99	9,806	9.7	0.64	0.17
99+	67,800	16.0	0.59	0.17
Percentile	Imports (Thous. $)	Average # HS6	HS6 share Top	2nd top
0–25	7	3.0	0.80	0.12
25–50	63	7.6	0.66	0.16
50–75	320	15.5	0.58	0.17
75–90	1,710	28.9	0.53	0.17
90–99	9,806	49.0	0.49	0.16
99+	67,800	96.6	0.46	0.15

What we don't see in the data are intermediaries that specialize in small value products imported from many countries. This pattern suggests that cross-country matching costs are significant. Instead, we see intermediaries specializing in countries, obtaining the vast majority of their import value from at most one or two countries. Within this pattern, we also see considerable specialization in products; that is, upon specializing in countries, intermediaries achieve size via one or two large import value HS6 codes. At the same time, these intermediaries carry, in total, a large number of products—even the smallest intermediaries carry, on average, two HS2 codes while the largest intermediaries carry many HS codes.

To summarize, we have:

FACT 2: *Import intermediaries specialize in countries, with, on average, 75 percent to 95 percent of imports coming from two countries. These intermediaries achieve scale by importing a small number of large volume HS6 codes; at the same time, intermediaries import a large total number of HS6 codes.*

Exploiting the panel nature of the data, we can also follow small intermediaries that grow over time and see how they achieve their growth. In this way we can provide additional evidence regarding specialization and size. The results are provided in Table 2 and are for wholesale intermediaries only. The second column of the top panel of the table indicates that, in 2005, there were 1,176 wholesalers with worldwide imports in the bottom 25 percent of imports for wholesalers in Chile. Subsequent panels show that, on average, these wholesalers imported 2.9 HS6 products valued at US$7,000 from 1.3 foreign destinations. By 2006, only 621 of these wholesalers continued to import at all (the 555 firms in the "0" row exited importing by 2006). Of these continuing importers, 36 moved from the first to third quartile of the import value distribution.[4] These 36 firms' import value grew to roughly US$247,000 on average, and they imported 18 HS6 codes from three countries. For 42 percent of these firms, the country that represented the main source of import value in 2005 is no longer the main source of import value in 2006. Two things stand out as noteworthy. First, as above, these 36 firms continued to specialize in a relatively small number of countries, 3.2, but added a significant number of HS6 codes, 18. Second, there is evidence of these intermediaries' searching for high import value countries—the number of importing countries rose from 1.3 to 3.2, and 42 percent of wholesalers switch the country from which they obtain the greatest import value.

The arrows from the third to fourth column of Table 2 shows the transition between 2006 and 2007. For the 36 wholesalers that transitioned to the third quartile in 2006, 19 remained in the third quartile. On average, these firms imported from 3.9 countries, and 26 percent switched the country from which they obtained the greatest import value. Five wholesalers transitioned to the top quartile, with import values, on average, of US$416,000. For these wholesalers, on average, the number of countries from which they imported declined to two, and none switched the country from which they obtained the greatest import value. The contrast here is startling. The wholesalers that transitioned to the top quartile found a large import source—there were no top country switches— and grew with that source. They dropped a country and added HS6 codes. Those that failed to grow added a country and saw switches in the country that was the main source of imports. They added very few extra HS6 codes. These firms appear to be still searching for a country to generate import value growth.

[4] The arrows from the second to third columns show the transitions between 2005 and 2006 for the 1,176 wholesale intermediaries. In the discussion here, the appropriate transition for each panel can be found by following along the next to bottom arrow.

TABLE 2—SMALL IMPORTER TRANSITIONS

Quartile	2005	2006	2007
	Number of importers		
0		555	3
1	1,176	425	4
2		155	5
3		36	19
4		5	5
	Imports per importers (1,000 US $)		
1	7.0	9.3	10.9
2		56.3	64.5
3		247.0	311.6
4		680.2	416.1
	Average number of countries		
1	1.3	1.4	1.3
2		1.9	3.2
3		3.2	3.9
4		2.8	2.0
	Share of top country switchers		
1	—	0.32	0.75
2		0.37	0.40
3		0.42	0.26
4		0.60	0.00
	Average number of HS6 products		
1	2.9	3.4	3.5
2		7.2	11.8
3		17.9	19.3
4		10.0	31.2

In common parlance, these firms are still fishing for a successful country match. These findings confirm the previous findings on country specialization. In addition, they suggest that there is a nontrivial amount of cross-country search involved in becoming a large intermediary.

We undertook a similar analysis for within-country growth using the matched Chile-Argentina data. Here the question is how a Chilean wholesaler achieves import growth from Argentina. We find a pattern that is similar to the across-country pattern. Specifically, small wholesalers grow initially by matching with more firms and often switching the firm that is the top import source. Wholesalers that fail to achieve additional growth continue to search for an "export champion." Those that achieve further growth do so by growing with the same top import source firm. The evidence on these results is in the online notes to this paper.

We can summarize these results as:

FACT 3: *For wholesalers, initial growth in total import value occurs by adding countries and features switches in the highest value import country. Additional growth occurs by pruning countries and growing with the previous highest value import country. In both instances, wholesaler growth features significant increases in the number of HS6 codes. Initial growth in import value from Argentina occurs by adding firm matches and features significant amounts of switches in the highest value export firm. Additional growth occurs by growing with the previous highest value export firm. Firms that fail to grow continue to see significant amounts of switches in the highest value export firm.*

Finally, the above facts all suggest that, if any intermediary either imports from small exporting countries or imports products having small export values, it will be the large intermediaries. To test this hypothesis, we first identify, for each country from which any Chilean firm imports, the smallest Chilean firm, based on worldwide imports, that imports from this country. We then plot this smallest import firm size, in logs, against total import value, also in logs, from the paired country. This plot is reported in Figure 1. We see that the countries with the smallest import values are paired with the large import firms. Regression analysis reported in the online notes to this paper confirms this conclusion.

Both the plot and the regression results include all importing firms, intermediaries and manufacturers. As a result, we cannot conclude from the above that intermediaries, in fact, are importing from the small countries. Additional analysis reported in the online notes shows that, in general, intermediaries account for a significant share of the imports from small countries, and that this share declines as the value of imports from the country increases. Together with the evidence in Figure 1, this confirms that, for small (to Chile) export countries, imports are undertaken by large firms and that a significant fraction of these firms are import intermediaries.

We perform a similar analysis for HS6 codes. Now, for each HS6 product imported into Chile, we identify the smallest Chilean firm that imports this product. We then plot, for each HS6 product, the size of the smallest import firm against the value of imports of the paired product. This

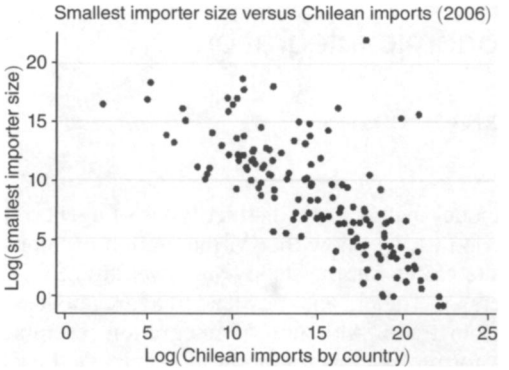

FIGURE 1. IMPORTER SIZE—COUNTRY IMPORT VALUES

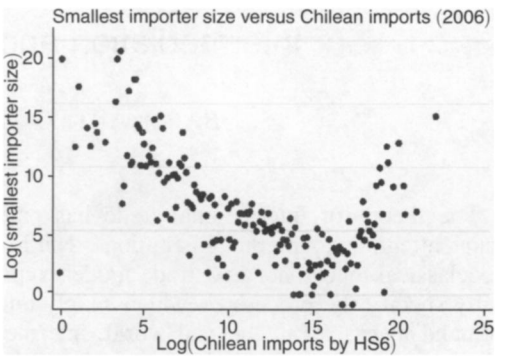

FIGURE 2. IMPORTER SIZE—HS6 IMPORT VALUES

plot is reported in Figure 2.[5] Again we see that the products having the smallest import values to Chile are imported by very large firms. Again, the analysis in the online notes shows that a significant fraction of these firms are intermediaries.

Together, these results give us our final fact.

FACT 4: *Countries with the lowest total export value to Chile have their products imported by large Chilean firms, a significant fraction of which are intermediaries. The same is true for products (at the HS6 level) with the lowest export values to Chile.*

In essence, we find that the large intermediaries play a significant role in facilitating trade in low volume products and from low volume countries. This fact is important. It suggests that growth in the intermediation sector gives consumers access to products and countries that they would otherwise not be able to access. In this sense, a large intermediation sector is crucial if consumers are to have access to "niche" foreign products. Looked at the other way, a large intermediation sector facilitates trade for small traders, small products and small exporting countries.

III. Conclusion

We find that firms with small amounts of worldwide exports almost invariably match with an importer that is a large worldwide importer. This importer may be an intermediary or a manufacturer. Focusing on import intermediaries, we find that intermediaries become large by matching with a few large sellers located in one or two countries and buying a few large import products. At the same time, having achieved significant size, the large intermediaries are the source of imports for both small import value countries and small import value products.

[5] For purposes of the plot, HS6 import values are rounded to one significant digit.

REFERENCES

Antràs, Pol, and Arnaud Costinot. 2009. "Intermediated Trade." Unpublished.

Bernard, Andrew B., J. Bradford Jensen, Stephen J. Redding, and Peter K. Schott. 2010. "Wholesalers and Retailers in U.S. Trade." Unpublished.

Blum, Bernardo S., Sebastian Claro, and Ignatius J. Horstmann. 2009. "Intermediation and the Nature of Trade Costs: Theory and Evidence." Unpublished.

Petropoulou, Dimitra. 2007. "Information Costs, Networks and Intermediation in International Trade." University of Oxford Department of Economics Working Paper 370.

Rauch, James E., and Joel Watson. 2004. "Network Intermediaries in International Trade." *Journal of Economics and Management Strategy*, 13(1): 69–93.

Townsend, Robert M. 1983. "Theories of Intermediated Structures." *Carnegie-Rochester Conference Series on Public Policy*, 18(1): 221–72.