The use of foreign exchange derivatives by exporters and importers: The Chilean experience[1]

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Abstract

This paper presents micro-level stylised facts on the use of foreign exchange derivatives by Chilean exporters and importers. By exploiting contract-by-contract data from more than 5,600 firms over the 2000-2015 sample period, this paper provides a greater understanding of the structural characteristics of derivatives markets in developing countries. The results echo those observed in more advanced economies, showing that a growing number of firms create currency hedging strategies which are largely in proportion to their net trade exposures. Additionally, there is evidence of significant market concentration with a small number of entities accounting for a large share of the total amount of derivatives outstanding.

Keywords: importers, exporters, foreign exchange derivatives, hedge

Contents

1. Introduction

This paper analyses the use of foreign exchange (FX) derivatives by Chilean exporters and importers (EXIM) that conduct international transactions in foreign currencies. These firms generate currency mismatches between their assets and liabilities and potentially increase their exposure to financial instability due to exchange rate fluctuations.

In practice, firms can hedge their currency mismatches by using different types of financial instruments, including foreign-denominated debt and FX derivatives. As an example, exporters can take advantage of natural hedges by aligning their revenues in foreign currency with foreign-denominated debt obligations. On the other hand, both exporters and importers may reduce the uncertainty of their expected cash flow by fixing a future exchange rate with FX derivatives. Indeed, Allayannis & Ofek (2001) show that "exposure through foreign sales and trade" is the only significant determinant of the usage level of FX derivatives.

One of the most important lessons learned from the Global Financial Crisis (GFC) was the need for policy makers to have access to a wide range of reliable, timely and detailed financial statistics (BIS, 2010). Consistent with this idea, this paper exploits a database of FX derivatives catalogued by the Central Bank of Chile (CBCh) at the contractual level and studies the FX coverage strategies employed by EXIM firms from 2000 until 2015. This database is unique in the revised literature in terms of the scope of businesses covered and the length of time analysed.

By taking advantage of the richness and granularity of this database it is possible to gain a better understanding of the structural characteristics of the FX derivatives markets in developing countries. Moreover, a solid set of stylised facts regarding the use of FX derivatives at the micro level has been established in order to study the FX risk management strategies followed by EXIM firms in Chile.

Evidence of a high concentration in the use of FX derivatives among EXIM firms has been found, as well as a clear differentiation between their strategies. The paper shows a positive relation between firm size and the number of firms that use FX derivative hedging strategies. Furthermore, a direct relationship is observed between the level of foreign trade flows and turnover in the FX derivative market. The most common instruments used are Chilean peso against US dollar forward agreements maturing in less than 180 days.

The remainder of the paper is organised as follows. The next section reviews the literature on existing studies of the FX derivatives markets. Section 3 describes relevant details regarding the Chilean FX derivatives market. Section 4 discusses the data used. Sections 5 and 6 outline aggregate FX derivatives usage and analyse the data at the micro-level. Finally, the conclusions and main findings are summarised.

2. Literature review

The literature presenting stylized facts on FX derivative use by EXIM firms is limited, especially for emerging or developing economies. Some exceptions include cross-country studies as well as some specific case-studies for countries like England, New Zealand, the Czech Republic, Uruguay, Brazil and Chile.

Bartram et al. (2010) compares the use of derivatives for a wide range of countries. This study relies on accounting information from 7,000 non-financial corporations to show that 60% of the firms in their sample use some type of derivative. In particular, 45% use FX derivatives, 33% use interest rate derivatives and only 10% use commodity price derivatives. The latter two show a marked difference across industry types, while those that use FX derivatives show more widespread usage across industries. Across all countries, large firms tend to use more coverage than their smaller counterparts.

The Bank of England (1998) looks at survey information in order to characterise the use of derivatives by exporters in England. They show that 78% of exporters, especially larger ones, hedge themselves against exchange rate risk exposures, while smaller exporters are less inclined to do so. The coverage type taken is also shown to differ depending on firm size, with smaller firms typically hedging through standardised products such as bank overdrafts and loans. This is related to the fact that smaller firms possess more limited resources in order to identify, understand and manage exchange rate risk.

On the other hand, Briggs (2004) uses interviews with large banks and 42 EXIM firms in New Zealand as a principal input to show that exchange rate hedging is more important for smoothing revenue as opposed to generating net gains. Fabling & Grimes (2008) also consider New Zealand but only focus on exporting firms in a wide ranging database. They show that exporters hedge approximately 65% of their exposure and that hedging is positively correlated with firm size. They also find a positive relationship between export intensity and hedging which is related to the larger balance sheet risk arising from currency fluctuations.

More recently, Čadek et al. (2011) analyses the hedging behaviour of 184 Czech exporting firms, relying on information from surveys and bank interviews. The vast majority of exporters (approximately 60%, covering over 88% of exports) hedge their FX exposures with natural hedging or derivative contracts. Forwards and zero-cost options are the most widely-used instruments in maturities ranging from 3 months to 1 year. They find that hedging increases with firm size as well as with the foreign sales (exports) to sales ratio.

Buscio et al. (2011) use survey data to show that the use of FX derivatives by Uruguayan firms ranges between 6-7%. This use is positively related with the size of the firm, the firm´s orientation towards exports and whether or not the firm is publicly listed. They attribute this moderate use of FX derivatives to a poor awareness of exchange rate exposures and the implicit insurance produced by official interventions in the FX market. Specifically, EXIM firms tend to have income and cost structures in foreign currency that provide natural coverage.

Júnior (2006) uses accounting information from publicly traded firms in Brazil (more than half of whom are exporters) to present evidence of increasing hedging using FX derivatives[3]. Currency swaps are found to be the most commonly utilised instrument, pointing to the importance of coverage versus speculation. The authors also find a negative relationship between hedging and the foreign sales (exports) to sales ratio. Factoring in natural coverage, the author associates low FX derivative usage to the belief by exporters that there is a low probability of appreciation of the Brazilian real.

Finally, there are several studies that analyse the use of derivatives in EXIM firms in Chile. Acharán et al. (2009) finds evidence that lower global activity after the fall of Lehman Brothers did not produce a reduction in the usage of FX derivatives by exporters, irrespective of size. Rodríguez & Villena (2009) show that for different EXIM firm sizes there was an acceleration in the growth of FX derivative usage between 1998 and 2008.

This article expands on these previous works to analyse the use of FX derivatives in Chile. In particular, a micro-level analysis was built in order to characterise FX derivatives strategies followed by EXIM firms in Chile. At the same time, stylised facts have been outlined for the Chilean FX derivatives market in the context of experiences from other countries. This yields micro-based evidence that confirms the aggregate conclusions found in the literature, which is that the usage of FX derivatives is growing, particularly with larger-size firms or firms with more foreign trade.

3. The Chilean FX derivatives market

In a description of the Chilean FX market, Villena & Salinas (2014) observe significant growth in the derivatives market between 1998 and 2013. In particular, the volume of derivative market activity grew from US$ 76 billion to US$ 903 billion during the period studied. From an international perspective, Chile shows greater levels of depth[4] than both emerging economy and Latin American averages. This development is explained by a variety of general and specific factors: the elimination of capital controls in 2001, a higher level of international trade and greater stocks of assets and liabilities outside the country throughout the sample and, perhaps most importantly, the need to hedge growing Pension Fund investments[5].

This article shows that for the year 2013, derivatives operations were undertaken almost completely in over-the-counter (OTC) markets and that the most used FX derivatives are forward contracts and FX swaps, which account for 96% of the total amount traded. The remaining 4% of corresponds to currency swaps and options. Almost all (98%) transactions are Chilean pesos against US dollars. In terms

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[3]   The increase in exchange rate hedging is associated with the adoption of a floating exchange rate regime in Brazil.

[4]   Measured as notional amounts normalised by GDP.

[5]   Avalos & Moreno (2013) present evidence that the greater depth and liquidity in the Chilean FX market is due largely to the necessity to cover Pension Funds.

of settlement of non-interbank transactions, the vast majority of contracts are cash-settled (98%) with the remaining (2%) being physically delivered. The decomposition of the outstanding positions by sector shows that Pension Funds are the most relevant sector, followed closely by Real Sector and Financial Companies (excluding banks and institutional investors), and then Insurance Companies.

4. Data Description

Since 1992, the CBCh has collected daily information on FX derivatives transactions made through the Formal Foreign Exchange Market (FEM)[6]. Using this database, the CBCh produces separate series on turnover and amounts outstanding and is used as a main input in understanding the FX derivatives market in Chile. For this article, a monthly series was created from 2000 to 2015 for turnover, amounts outstanding, contractual term length, currency type and instrument. Additionally, the database of the National Custom Service was utilised to identify FX derivative contracts between FEM institutions and EXIM firms[7].

The aggregate analysis performed at the CBCh shows that FX derivatives contracts with maturities less than 7 days can be associated with a speculative nature. Given that the focus of this article is to study the use of FX derivatives for hedging purposes, the analysis excludes contracts with maturities of less than 7 days. This is also justified by the fact that the majority of international trade by EXIM firms have payment timeframes longer than 30 days.

In order to identify EXIM firms, the "net" definition of exporters (importers) is used. Thus, those firms that have a level of exports (imports) higher than imports (exports)[8] during a calendar year are considered as exporters (importers)[9] in that year. This permits a correct interpretation of the expected FX derivatives position of a particular type of business. Furthermore, because data are difficult to obtain and in line with Briggs (2004) this investigation does not consider international trade in services.

As a result of the definition of an EXIM firm used, the database yielded a sample of more than 5,600 FX derivatives-using companies. The revised literature on FX derivatives usage stresses the convenience of access to more detailed information

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[6] According to CBCh surveys, 96% of Chilean market transactions take place through FEM channels. The institutions that make up the FEM include banks and banking institutions (other financial firms) who are legally obligated to make daily reports on all signed foreign exchange derivatives contracts. See Orellana & Rodriquez (2009) for a description of the statistical collection methodology utilized by the CBCh.

[7] Counterparty information is matched with National Custom Service data via the unique tax identification number (*RUT*) held by all legal persons and entities residing in Chile. Furthermore, firms were matched to sectors using the CBCh directory using the same legal ID. It is important to note that both databases contain individuals. For simplification, these are treated as businesses in this paper.

[8] Čadek et al. (2011) use an alternative definition of exporters for the Czech Republic: firms that have a share of exports in total sales greater than 50%, or those whose nominal exports sum to more than CZK 1 billion.

[9] This paper is focused on "direct" exporters. A firm that sells a product to another national firm, who exports said product is an "indirect" exporter, not considered here.

such as larger databases or administrative contract registries (Čadek et al. (2011), Fabling & Grimes (2008), Briggs (2004) and Bank of England (1998)). This database, which utilises contract-by-contract information from bank administrative records combined with a sample of all Chilean EXIM firms from 2000-2015, makes this work unique in this research area due to the sheer number of companies included and the breadth of time covered.

4.1. General aspects of EXIM firms

International goods trade growth in Chile has averaged 7.7% annually over the past 16 years; even as it was interrupted briefly by the GFC where exports and imports contracted by 19% and 31% respectively from peak to trough. The number of importers reached a peak of more than 160,000 firms in 2015 with an average annual growth rate of 19% between 2008 and 2015. This compares with an annual growth rate of 2% before the GFC[10] (2000 to 2008). For their part, the number of exporters is substantially lower, with a peak sample of 8,400 in 2014.

In order to gain insight into the structure of EXIM firms, the gross amounts of exports and imports were calculated for each firm during the entire sample period. This provided a number of exporters and importers on a "gross" basis. After applying the "net" definition of an EXIM firm, the number of exporters was reduced by 40% and the number of importers was reduced by 6%. This net effect confirms that exporters generally import goods as well, as they often require inputs from abroad[11].

Throughout the sample period, a total of 25,058 exporters and 558,818 importers were observed including both hedgers and non-hedgers. The differences that exist in the composition of EXIM firms by size are shown in Appendix 1. On average, more than 93% of importers are small (importing less than US$ 500,000 of goods annually) while only 66% of exporters are small (exporting less than US$ 500,000 of goods annually). Furthermore, the rotation of businesses and individuals that enter and exit the sample annually was greater for exporters. For exporters, 47% remained in the sample for at least 4 years with only 3% in all 16 sample years. On the other hand, 65% of importers remained in the sample for at least 4 years with only 5% in all 16 years (see Appendix 2).

5. Do EXIM firms hedge?

5.1. FX derivatives usage

Figure 1 shows the number of EXIM firms that use FX derivative contracts (hedgers) as well as the proportion of hedgers within exporters and importers over time. Increasing usage of FX derivatives by both exporters and importers is

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[10]   This difference is explained, in part, by the incorporation of small importers once several bilateral free trade agreements became active.

[11]   Rébora & Vivanco (2016) confirm this finding by showing that Chilean exporters have made significant use of imported goods in recent years.

observed over this sample period. In 2000 only 48 exporting companies utilised derivative contracts (hedgers). Eleven years later this figure reached a peak of 602. For its part, the number of hedging importers went from 199 in 2000 to a sample peak of 1,560 in 2010. As importers outnumber exporters 22:1 in the sample, and even more so if we consider only smaller firms, the utilisation rate is less for importers than for exporters. This rate is measured as the number of firms that use derivatives (hedgers) divided by the total number of firms (hedgers and non-hedgers).

At the macro level, the increase in the use of derivatives in EXIM firms is related to the growing depth of the Chilean derivatives market (see section 3). This is in line with Bertram et al. (2009) who show that one factor consistently relevant is the size of the local-currency derivatives market, notwithstanding that this is generally less important than firm-specific factors.

Derivatives usage   Figure 1
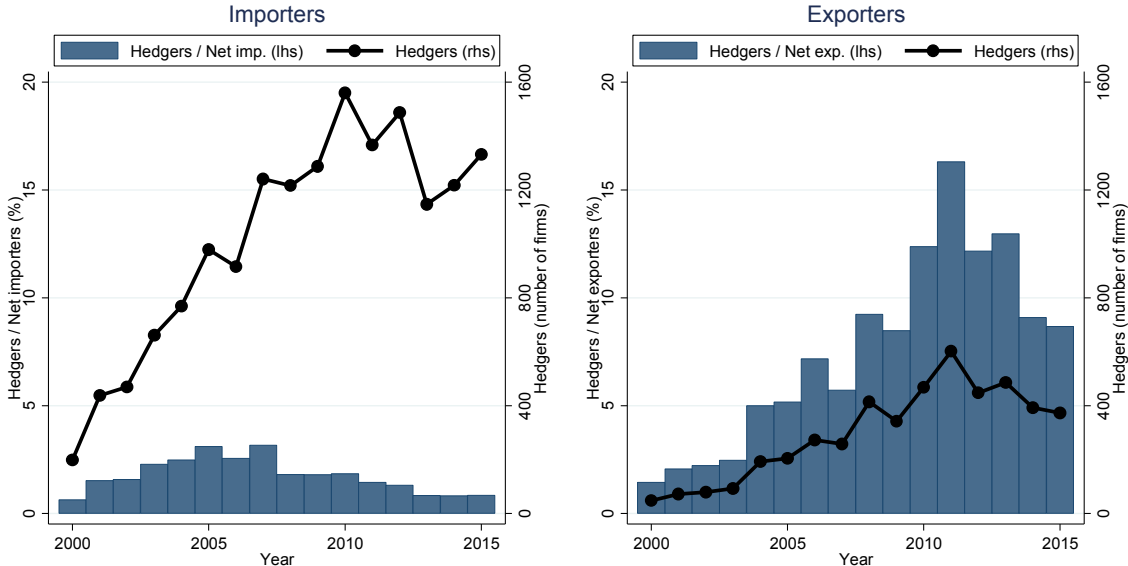
Source: Author's calculations using CBCh data.

As shown in Figure 2, the utilisation rate is not homogeneous among different sized firms. Firm size is calculated as the total value exported for exporting firms and the total value imported for importing firms[12]. Larger sized firms exhibit higher utilisation rates than their smaller counterparts.

Over the entire sample period, the utilisation rate of importers increases with firm size. Firms that import less than US$ 500,000 per year exhibit very low utilisation rates. This compares with firms importing more than US$ 50 million that

[12]   As consistent with Rodriguez & Villena (2009) and Acharán et. al (2009), this paper uses the same method of determining firm size. Other methods can include calculating by number of employees or total asset.

exhibit utilisation rates of between 60% and 70%. Similarly, larger exporters display higher utilisation over the entire sample. However, exporting firms in the two largest groups by firm size only present utilisation rates between 40% and 50%. While Rodriguez & Villena (2009) use a different methodology to define EXIM firms, their results regarding the use of FX derivatives are consistent with the results of this paper.

Derivative utilisation rates by firm size   Figure 2
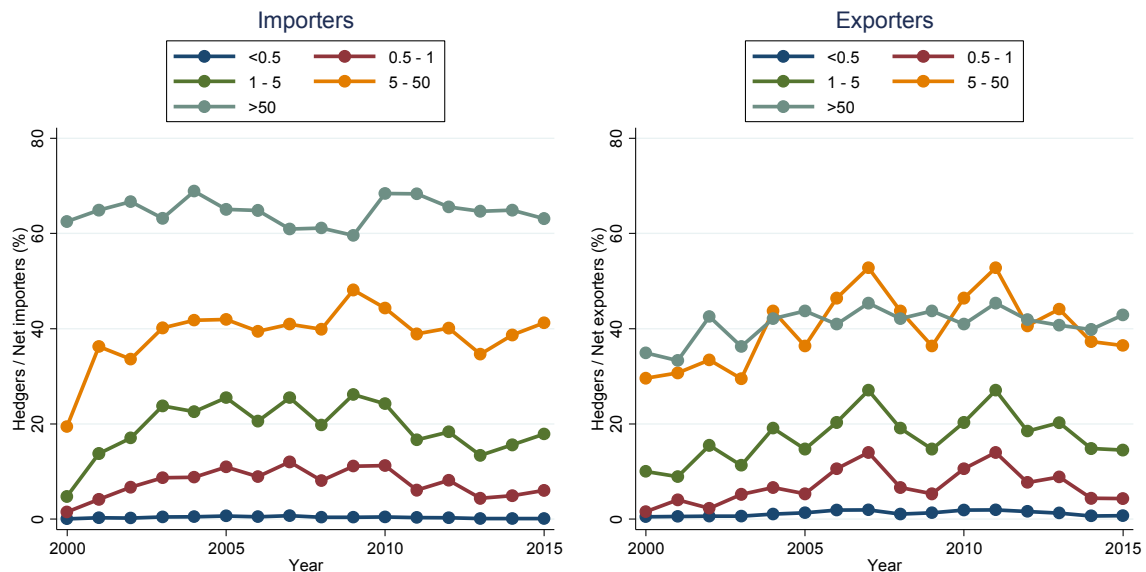
Note: Legend numbers refer to millions of USD.

Source: Author's calculations using CBCh data.

The fact that smaller firms exhibit lower utilisation rates is expected as implementation of exchange rate hedging requires a more sophisticated level of financial management. Furthermore, due to the credit lines associated with FX derivatives usage, the greater inherent credit risk of smaller firms restricts their participation in the market. The fixed cost of this type of product is another factor that limits their use by smaller firms as the relative cost of hedging is higher when the amounts to cover are lower.

For the specific case of small exporters, the Bank of England (1998) provides an analysis of vulnerabilities to an appreciation in the domestic currency. This includes the fact that they have less negotiating power in external markets, their sales are generally concentrated in only a few markets, it is more difficult for them to cut prices in order to maintain market participation and they use fewer imported inputs, which diminishes the benefits received when import prices fall. That smaller firms may be more vulnerable, and therefore more likely to hedge, runs counter to the observed results in this paper which shoes a low utilisation by small exporting firms.

5.2. Long or short?

The previous subsection showed that both exporters and importers use financial derivative instruments, however, the strategies employed by each vary over business types. This section outlines expected strategies that would be employed by an exporter. It then tries to empirical verify whether or not the evidence supports this expected behaviour for both exporters and importing firms at the aggregate level and by sector.

Assuming an exporter sells US$ 5 million of goods on 31 March and both parties agree that payment should be made in 90 days. At the current exchange rate of 650 pesos per dollar the equivalent value in pesos is CLP$ 3,250 million. In 90 days, if the Chilean peso falls to 600 pesos per dollar, the equivalent value in pesos would be CLP$ 3,000 million. Without hedging, this would create an unfavourable difference for the exporter of CLP$ 250 million. In order to avoid uncertainty about future cash flows, the exporter could sign an FX derivatives contract in which the exporter agrees to sell the US$ 5 million at a fixed exchange rate of 640 pesos per dollar. This "short position" would guarantee a cash flow of CLP$ 3,200 million in 90 days.

This hypothetical situation is reversed for the case of importers because they are interested in fixing the exchange rate for the future purchase of foreign currency. This "long position" can guarantee a fixed cost for the importer in the future.

International trade operations generate FX risks because the exchange rate can vary between the moment an obligation occurs and when the payment is made[13]. Derivatives contracts allow firms to reduce this uncertainty and stabilize their cash flows by providing protection against unexpected exchange rate movements. It should be noted that derivatives do not guarantee a better result than simply waiting and making the transaction via the spot market. Nonetheless, the elimination of uncertainty allows firms to focus on and optimise core business elements.

Figure 3 presents the gross positions for purchases and sales, as well as net positions (purchases minus sales), of foreign currency by EXIM firms. On average, the observed net derivative position (NDP) is negative (short) for exporters and positive (long) for importers throughout the period, as expected. Importers display a markedly positive NDP throughout the period. However, exporters show occasional periods where the NDP is positive. Reasons for the latter include: (i) exporters also hedge their imports; (ii) it is normal to close or terminate contracts by taking the opposite position; (iii) large companies that use derivatives usually have natural hedges via obligations (liabilities) in foreign currency. Also noted are the large gross positions held by importers as compared to exporters.

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[13]   Buscio et al. (2011) show that the reasons for derivatives use in Uruguay are 1) to cover operating expenses in foreign currency and 2) to cover costs.
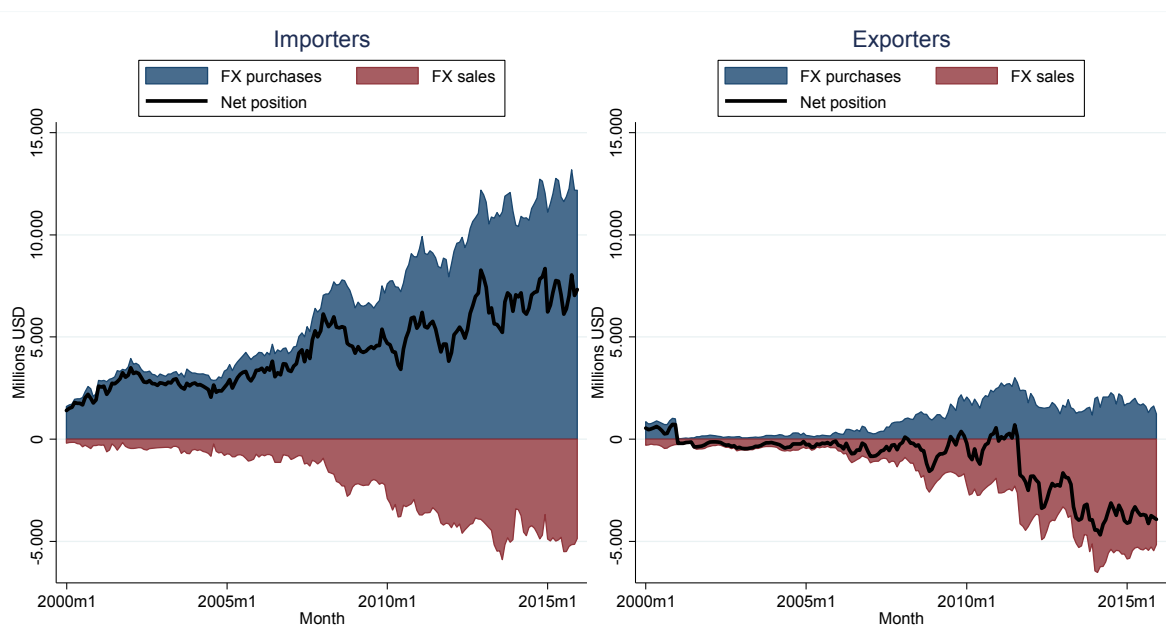
Source: Author's calculations using CBCh data.

The amount of coverage chosen by these companies, measured as the NDP divided by the net flow of foreign trade, averages around 9% for exporters and 19% for importers[14]. Note that this only considers hedging through FX derivatives, so effective coverage is underestimated. With broader coverage measures, Fabling & Grimes (2008) and Čadek et al. (2011) found higher coverage ratios in more developed countries.

The expected NDP for importers is displayed across the majority of economic activities and/or sectors[15] (Figure 4). Indeed, 92% of the NDP is explained by four sectors: Commerce, Restaurants and Hotels (32%); Transportation and Communication (26%); Manufacturing Industry (18%); and Electricity, Water and Gas (16%). For their part, exporters show a higher grade of concentration with 90% NDP held across just 3 sectors: Manufacturing Industry (67%); Commerce, Restaurants and Hotels (14%); and Mining (9%). It should be noted that even though mining is the highest exporting sector in Chile[16], it has a relatively low participation in derivative markets. This is likely due to strong natural hedging due to currency matching of foreign-denominated assets and liabilities in the industry. Specifically, a

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[14]   Using Chilean firms from 2008 and 2009, Acharán et al. (2009) find that smaller firms display higher coverage than their larger counterparts due to the fact that the latter tend to utilise more natural hedges.

[15]   Firms are grouped using a CBCh characterisation method with in the following categories: Manufacturing industry; Retail and Hospitality; Mining; Transport and Communications; Agriculture; Business and Financial Services; Fishing; Electricity, Gas and Water; Construction; Personal Services; and Others.

[16]   In 2015 the mining industry represented more than 50% of total exports.

large part of the mining industry´s liabilities are held in foreign currency while many make utility payments in that same foreign currency, as in many cases they are owned by foreign firms[17].

Net derivative position by sector   Figure 4
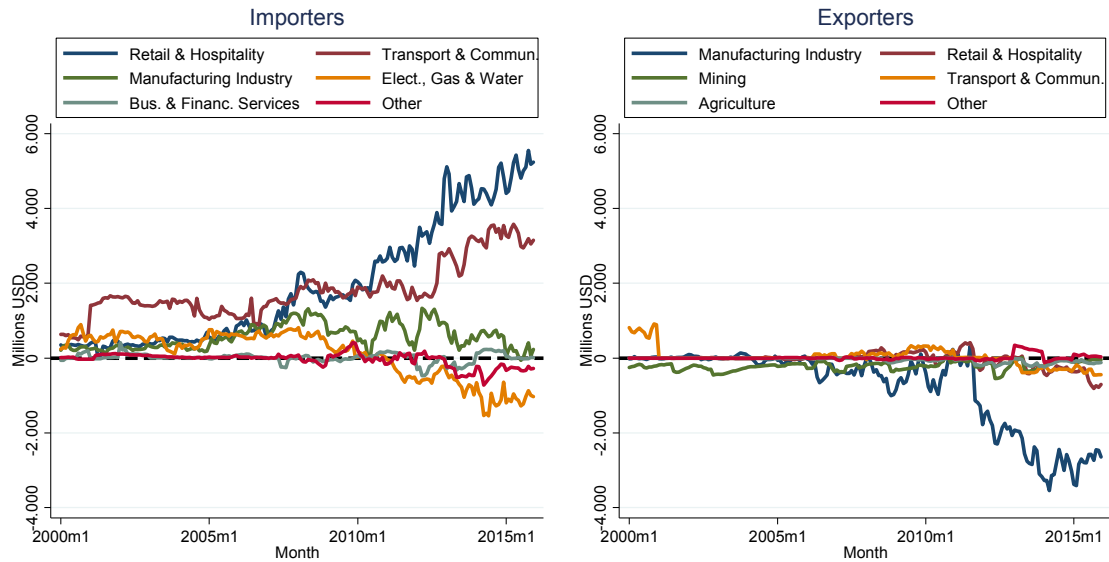
Source: Author's calculations using CBCh data.

5.3. Contract characteristics

FX derivative contracts are characterised by annual turnover by instrument, currency and maturity. The shares of characteristic are presented in Figures 5 and 6.

The FX derivative instruments contracted by both types of firm have similar characteristics. The vast majority of contracts are forwards with an average share of over 80% for the entire period[18]. A greater diversification into more sophisticated instruments has been observed however over the sample period. Among them, cross-currency swaps (CCS) have played an important role, along with options, FX swaps and combinations thereof (classified as "Other").

The most traded currency pair by far is the CLP/USD. However, the figures show a high proportion of non CLP/USD contracts at the beginning of the sample period, which includes both currency pairs labelled as CLP/OT (other currencies) and UF

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[17]   According to Bank of England (1998), hedging in each industry depends on contract length in each industry, each firm´s capacity to project cash flow, and the cost of hedging.

[18]   The high popularity of forward contracts is due to their simplicity and low entry costs, as no payment is required at the beginning of the operation.

(*Unidad de Fomento*[19])/USD. For the purposes of this analysis, the latter currency pair can be considered a transaction between the national currency and the US dollar. As such, almost all of the coverage includes the US dollar on one side of the transaction. Within "Other Foreign Currencies", the euro and Japanese yen make up the most significant proportion.

Contract characteristics for importers	Figure 5
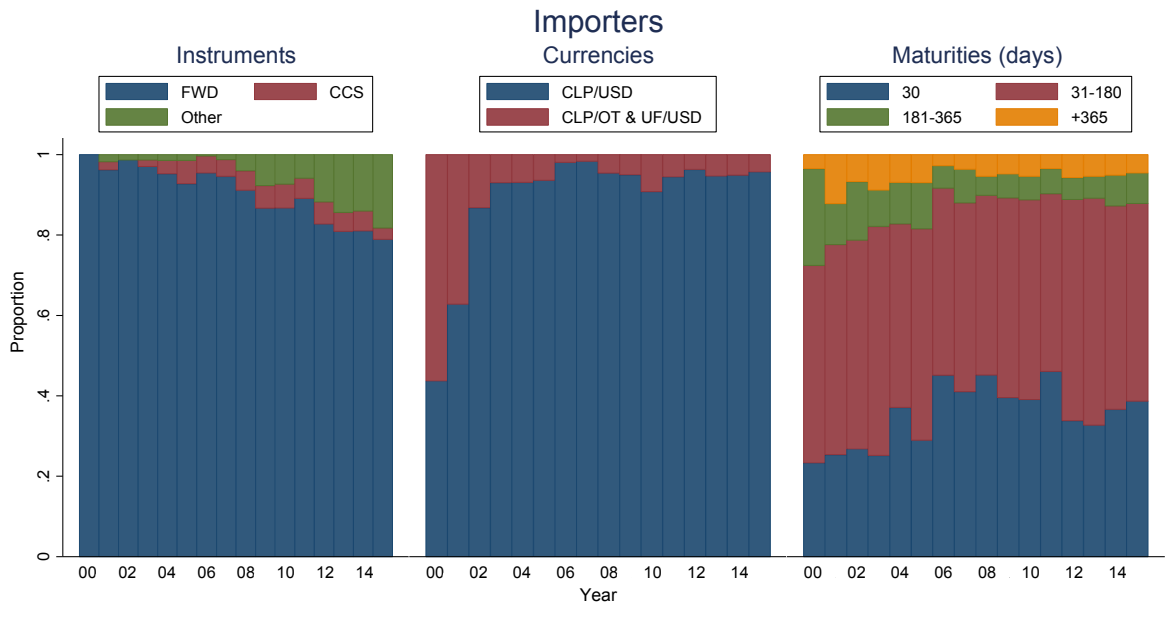
Source: Author's calculations using CBCh data.

On average, more than 80% of contracts have maturities of less than 180 days. Of these, two-thirds are between 31 and 180 days. Those with longer maturities (more than 1 year) are mostly CCS´s. This is related to the use of CCS´s as a debt hedging instrument which regularly have longer-term obligations.

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[19]   The UF (*Unidad de Fomento*) is a readjustable measure widely used in Chilean financial markets that varies daily with past inflation. This tool was particularly important before the nominalization of Chilean monetary policy in August 2001 (Jara et. al, 2003).
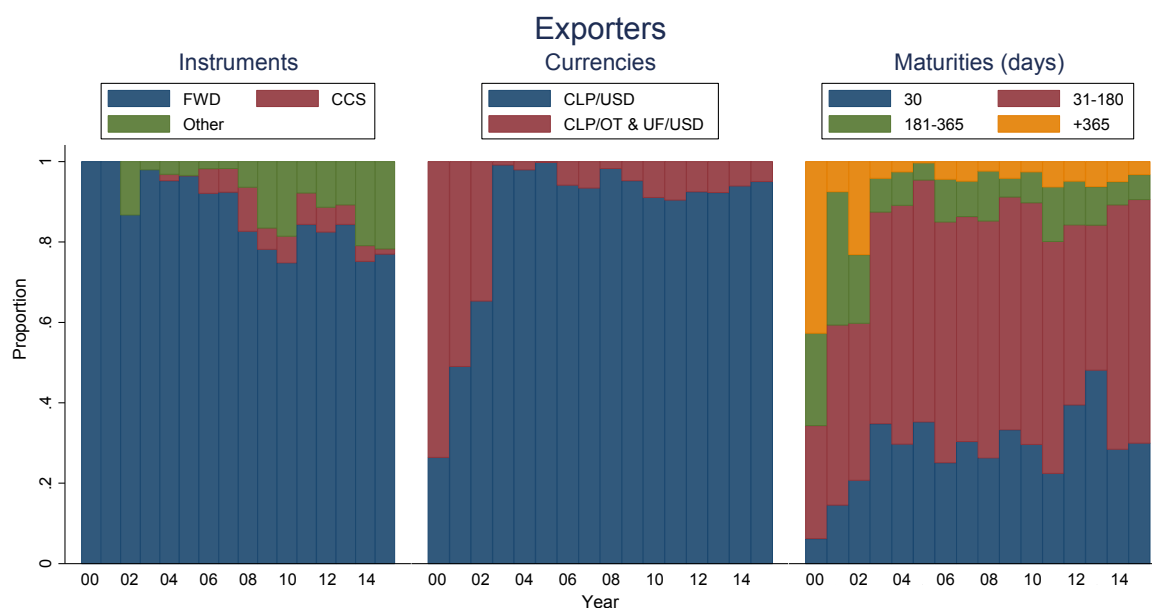
Source: Author's calculations using CBCh data.

6. Micro-level analysis

This section studies the behaviour of FX derivative use at the micro-level. Firstly, the degree of concentration of the total amount outstanding is analysed. The expected NDP is then studied to see if it is satisfied at the individual level. Subsequently, the relationship between the magnitude of foreign trade flows and derivatives market activity exhibited by EXIM firms is examined.

To measure the degree of concentration, a graphical representation of the distribution of wealth, known as the Lorenz curve (Lorenz, 1905), is used. As an application of this study, the wealth variable is replaced by the gross derivative position (purchases + sales)[20]. The concentration analysis reveals that 80% of exporters and importers accumulate less than 1% of the total gross positions throughout the period. The related Gini coefficient, which measures the degree of inequality based on the Lorenz curve, shows a value of 0.886 for importers and 0.872 for exporters, implying a high degree of concentration in both cases[21].

The high level of concentration could lead to think that the positions observed at an aggregate level (Figure 3) do not correspond to the hedging strategies taken by most companies. However, this is ruled out by analysing the empirical distributions of NDP´s for the last month of each year (Figure 7). These distributions

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[20]   Appendix 3 shows the Lorenz curves for exporters and importers.

[21]   This index is from 0 to 1, in which 0 represents perfect equality and 1 represents perfect inequality.

confirm that the expected behaviour also holds at the individual level. It is noted that 75% of importers display the expected NDP, with exporters displaying no less than 50%.

Distribution of net derivative positions	Figure 7
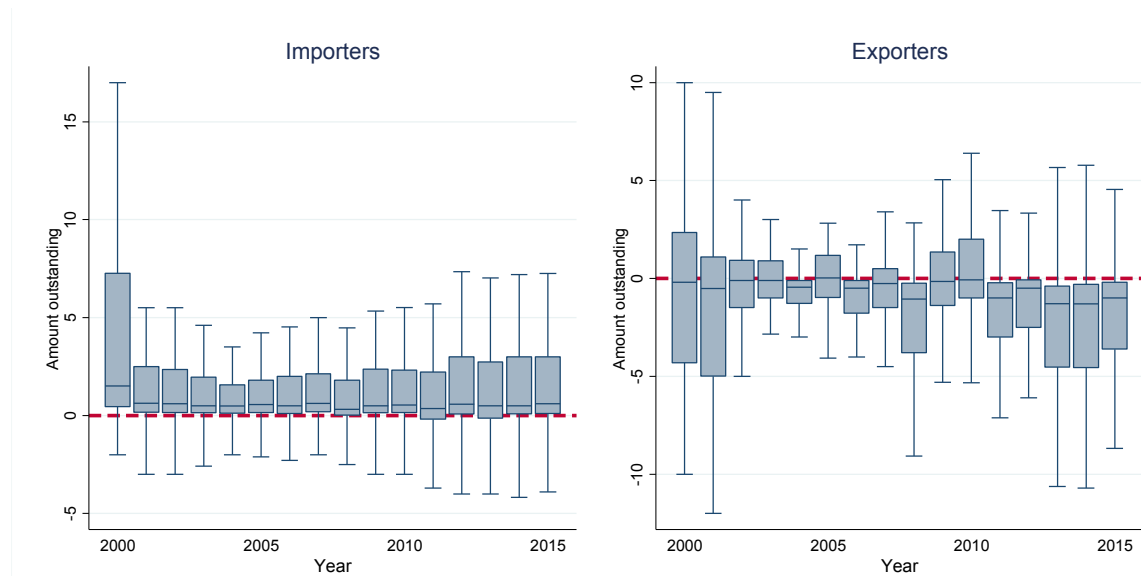
Note: Excludes outside values

Source: Author's calculations using CBCh data.

Figure 8 presents some key points in the relationship between the flow of foreign trade of each company and the frequency of FX derivative transactions. The horizontal axis shows gross exports and imports while the vertical axis shows turnover of FX derivatives, with both classified into 20 quantiles. The colours simulate the density of companies through an index ranging from 0 to 100. Cooler colours represent a lower density of firms with warmer colours representing a higher density[22].

Warmer colours dominate the lower quantiles of trade flows and turnover. This implies a greater density of EXIM firms with low levels of foreign trade flows and turnover in the derivatives market compared to the total of companies analysed. In other words, a high number of small EXIM firms display lower activity in the FX derivatives markets.

Furthermore, the cold colours are concentrated in two distinct areas: (1) high turnover and low levels of foreign trade flows, (2) low turnover and high levels of foreign trade flows. Therefore, a positive relationship is observed between the level of foreign trade and activity in the FX derivatives market. This is in line with previous empirical evidence and literature. This result also corroborates Villena & Salinas (2014) who suggest that the increased activity noticed in the Chilean FX market

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[22]   Appendix 4 shows this graph divided into 3 sub periods.

between 1998 and 2013 was influenced by greater international trade flows during this period.

Quantiles of foreign trade flows and turnover, 2000-2015   Figure 8
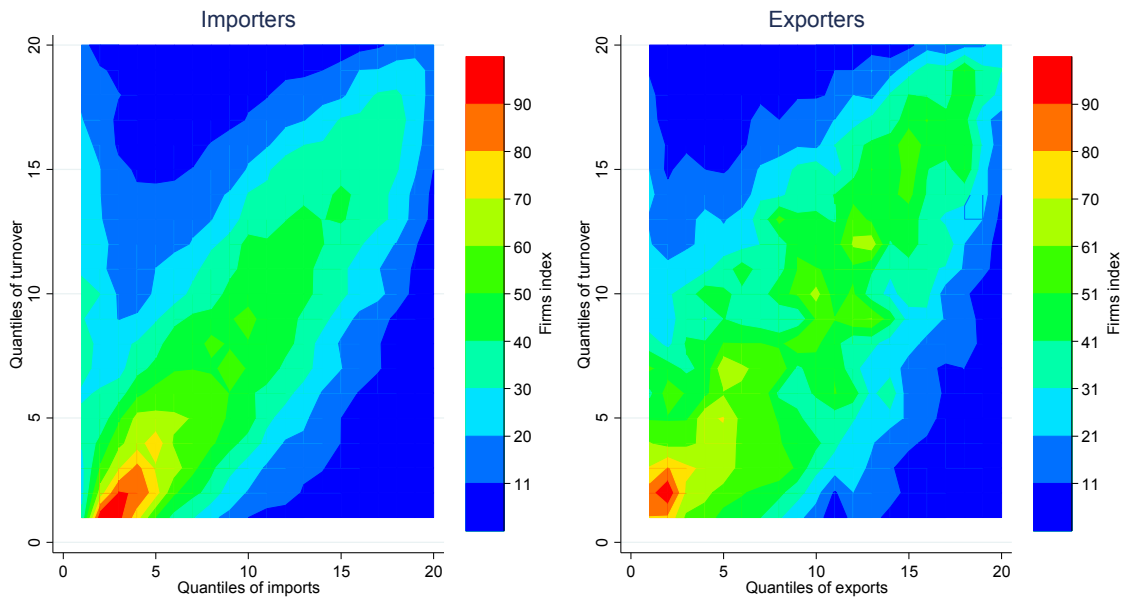
Source: Author's calculations using CBCh data.

7. Conclusions

A unique micro-level database has been exploited in order to characterise the structure of FX derivative usage by EXIM firms in Chile. Evidence is presented of a growing number of EXIM firms utilising FX derivatives as a hedging strategy against exchange rate risk. Furthermore, the paper shows a positive relation between firm size and the number of firms that use FX derivative hedging strategies. A direct relationship is also observed between the level of foreign trade flows and turnover in the FX derivative market.

The development of hedging strategies is in line with the currency mismatches experienced by different firms. Thus, importers exhibit net purchase (long) positions on FX derivatives while exporters exhibit net sale (short) positions. In both cases, the expected net derivatives position is found to hold for most sectors and for the majority of individual firms. The latter is true despite the high concentration in the FX derivatives market, where 80% of EXIM firms hold less than 1% of the total amount outstanding.

Even though there is a general trend towards the use of more diversified and sophisticated financial instruments, forward contracts are by far the principal instruments used by EXIM firms in Chile (with maturities of less than 180 days). This is consistent with the maturities of outstanding accounts payable or receivable in foreign trade operations. Breaking down these contracts by maturity shows that

about two-thirds of them are between 31 and 180 days. Companies also cover foreign-denominated debt using cross-currency swaps with maturities longer than 1 year. Most exchange rate protection measures are taken against the US dollar.

The database constructed for this project as well as the initial evidence presented in this article can be used as a starting point for future research questions. These elements, used in conjunction with the financial statements of companies, could be used to examine in more detail the determinants of FX derivatives usage in Chile. This database could also shed light on the financial results of currency hedging made by EXIM firms. Finally, given the amount of available information in the dataset, analysis could be undertaken on how hedging strategies evolve over time due to changes in exchange rate volatility.

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Appendix

Average concentration of EXIM firms by firm size, 2000 - 2015

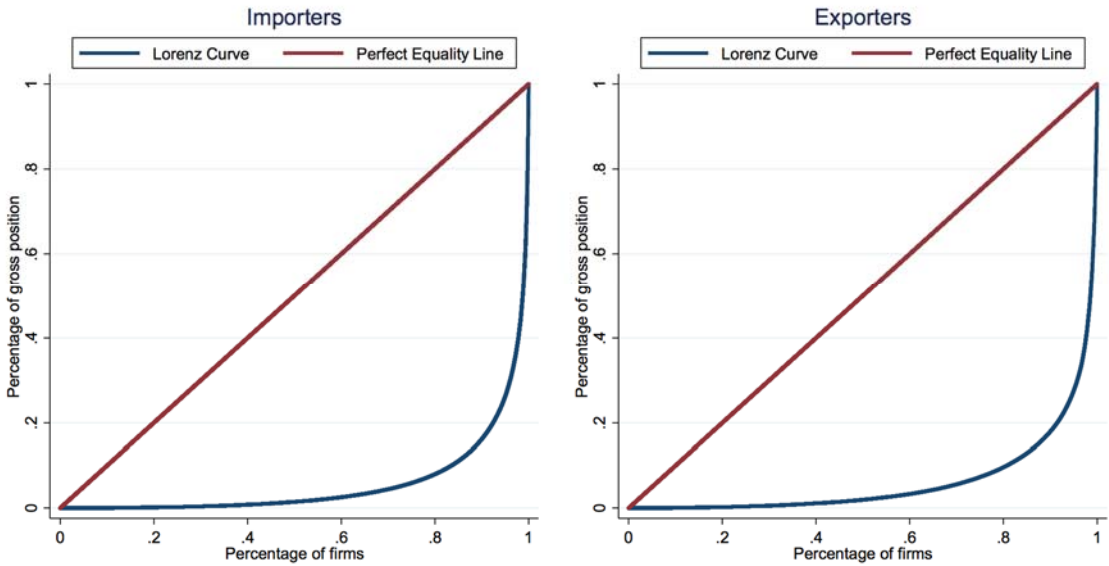|	Firm size by amount imported or exported (US$ million)				
	<0,5	**0,5 - 1**	**1 - 5**	**5 - 50**	**>50**
Importers	93.2%	2.3%	3.0%	1.3%	0.2%
Exporters	66.6%	7.6%	14.4%	9.2%	2.2%

Source: Author's calculations using CBCh data.

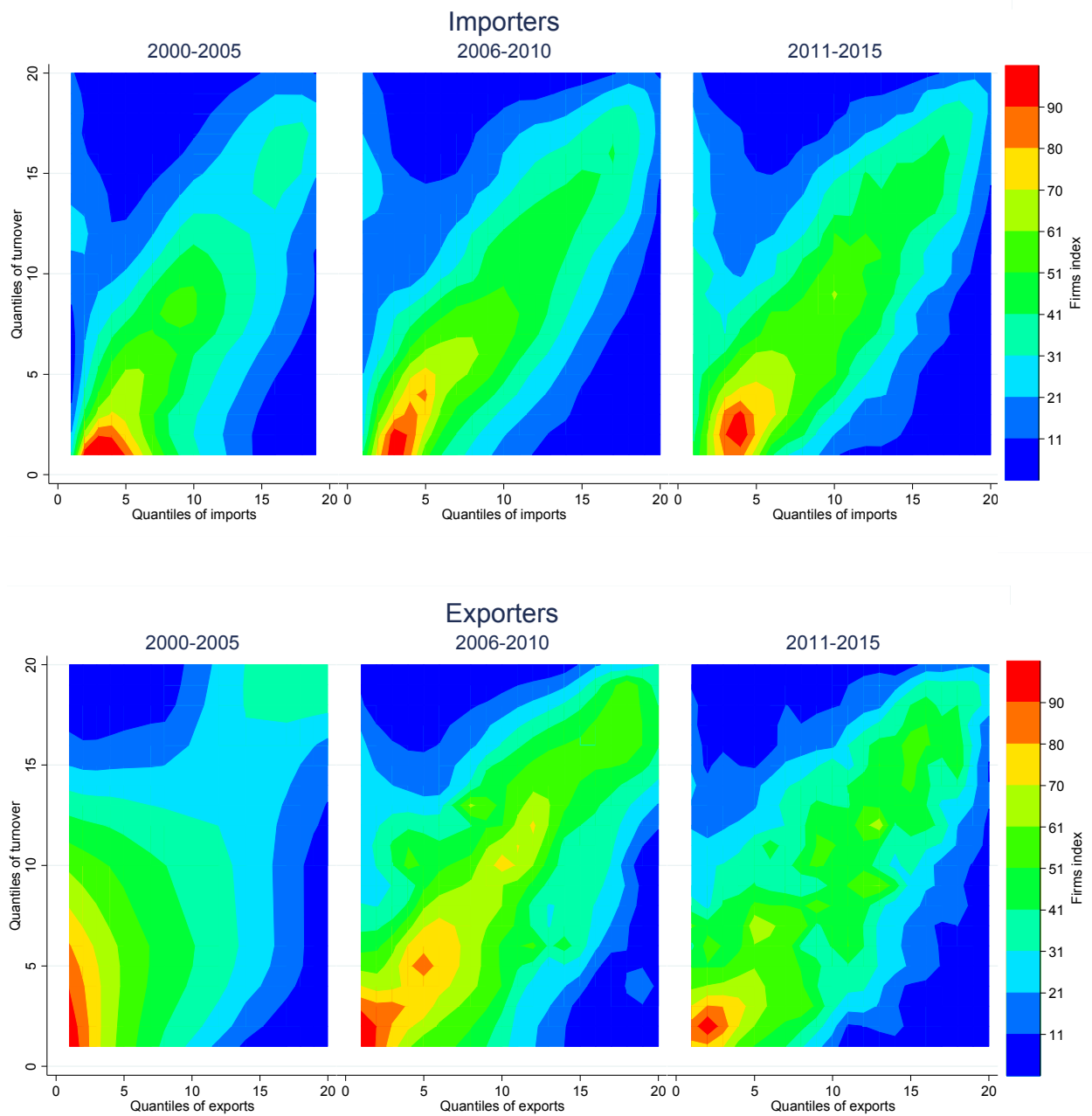## Turnover of EXIM firms (hedgers and non-hedgers) within the sample period

Years in the sample	Exporters		Importers	
	Number	**Percent**	**Number**	**Percent**
1-4	31,457	46.9%	749,814	65.5%
5-8	14,472	21.6%	206,491	18.0%
9-12	8,854	13.2%	83,932	7.3%
13-16	12,359	18.4%	105,195	9.2%

Source: Author's calculations using CBCh data.

Source: Author's calculations using CBCh data.

Source: Author's calculations using CBCh data.