The Impact of FTA's on Chilean Exports*

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Abstract

In this paper we look at the impact of FTAs on Chilean exports during the last three decades. Chile was a pioneer in establishing many FTAs aimed mainly to open external markets and to enhance export diversification. Since the middle of the 1990s, Chile has signed 31 FTAs, covering 65 countries, that represent almost 90% of the world GDP. However, little evidence has been provided regarding how and how much these agreements have increased exports and the number of exporters products. Using a difference in differences approach, exploiting the different timing of agreements, we show evidence of positive effects of this preferential trade policy on exports and the number of exported products. We also find heterogeneous effects depending on the income level of the trading partner and across industries. Additionally, by analyzing how the effects of FTAs were shaped by the level of financial development and capital controls on trading partners, we show that FTAs have helped counteract the limitations imposed by these financial frictions/restrictions.

JEL classifications:

Keywords: International trade, Free trade arrangements, Heterogeneous effects, Financial frictions

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1 Introduction

Chile, as an early reformer in Latin America, has been a pioneer in adopting a strategy of establishing Free Trade Agreements (FTAs) with numerous countries. Since the return to democracy in 1990, democratic governments have pursued this strategy with the primary goal of opening external markets and enhancing export diversification. This approach follows the country's previous experiment with unilateral trade liberalization in the 1970s and 1980s, making Chile an intriguing setting for studying the effects of selective trade policies. While some studies have explored the expected effects of these agreements, there has been a lack of comprehensive evaluation of their overall impact.

Malhotra and Stoyanov (2008) find a positive impact on Chilean agricultural exports from the FTA with Canada. The increase in exports due to the agreement is 35 percent. This is consistent with the descriptive analysis from Wehner (2011) showing that, in several sectors, the Chilean exports expanded after the FTA with Canada. The same author looks at also to the export performance of Chile regarding the different agreements. In most of them, he shows that exports increased after the agreement, in particular the FTAs with the U.S., Mexico, Panama, South Korea, Japan and China.

In the context of Chile, several ex-ante evaluations have been conducted (Chumacero et al., 2004; **?**). For example, Chumacero et al. (2004) suggest that the FTA with the U.S. would not only increase trade flows and welfare but also lead to a reduction in risk premiums for the Chilean economy. For the FTA with the European Union, **?** conclude that positive effects are expected for fruit industries. In the case of the FTA with Korea, López Giral et al. (2022) conclude that the agreement did not contribute to diversify the Chilean export basket.

Jean et al. (2014), using a computable general equilibrium model, estimates the impact of the FTA with the European Union and find a positive impact on Chilean exports. With a similar methodology, but focusing on the environmental effects of the FTA. O'Ryan et al. (2010) also find an expansion on Chilean exports due to the agreements with the European Union and the United States. Heine (2016) analyzes the what happened to the trade flows with the FTA with China and also finds an strong expansion of Chilean exports.

Then, several papers have studied specific FTAs, but there is not an overall evaluation of them neither an analysis of the impact heterogeneity of the agreements. This paper aims to address this gap by shedding light on the effects of FTAs on Chilean exports and providing a comprehensive impact evaluation, with implications for other developing countries following similar policies.

The main questions we seek to address in this study include: Have FTAs contributed to increase the value of exports and the number of exported products in Chile? Which

industries have benefited the most from these agreements? Are the effects of FTAs shaped by trading partners' characteristics as their income level or level of financial development? Can FTAs help overcome the negative consequences on trade of capital account restrictions on commercial credit and derivatives? These fundamental questions form the basis for the analysis of the findings obtained in this paper.

The existing literature has identified large and positive effects of FTAs on international trade (Rose, 2004; Baier and Bergstrand, 2007, 2009; Eicher and Henn, 2011). This is in contrast to unilateral trade liberalization, where the increase in exports may not be as pronounced, except for potential second-round or indirect effects of tariff reductions on inputs. However, the magnitude of the increase in exports depends on various factors, including the price elasticity of export demand, the presence of fixed costs in exporting, and the level of awareness among firms about the preferences established in the agreement. Therefore, it is crucial to provide evidence on the heterogeneous effects of FTAs to better understand their overall impact (Eicher and Henn, 2011).

In light of the varied and sometimes contradictory findings in the literature, this paper aims to provide a comprehensive evaluation of the effects of FTAs on Chilean exports. We employ a difference in differences estimation, making use of the fact that FTAs agreements were established at different periods with different countries. Our focus is on highlighting the heterogeneity of the effects of these agreements across various industries and trading partners' characteristics, shedding light on the results of the overall strategy pursued by Chile in its trade policy.

One of the key debates regarding the effectiveness of FTAs in Chile revolves around the issue of export diversification and sophistication. Some argue that these agreements have not succeeded in diversifying the Chilean economy, which remains heavily dependent on commodities like copper. However, others contend that, after decades of varying emphasis on trade policy, Chile's performance has exceeded expectations based on its fundamentals. Our paper contributes to this debate by providing evidence of positive effects of FTAs on exports and the number of exported products. Moreover, we uncover heterogeneous effects across industries, with manufacturing goods showing more significant positive impacts than primary goods. This suggests that FTAs have indeed contributed to diversifying Chilean exports.

The paper is structured as follows: Section 2 presents the data and describes the identification strategy used in this study. In Section 3, we present the main findings of our analysis. Section 4 focuses on the potential benefits of FTAs in reducing the negative effects of low levels of financial development and capital account restrictions on exports. Section 5 provides several robustness checks and extensions to validate the robustness of our results.

Finally, Section 6 concludes the paper, summarizing the key insights and discussing their implications.

2 Data and empirical strategy

We utilize data on bilateral trade flows at the 6-digit product level obtained from the "International Trade Database at the Product-Level (BACI)" provided by the Centre for Prospective Studies and International Information (CEPII). This comprehensive database encompasses trade information for more than 200 countries and 5,000 products spanning the period from 1994 to 2007. Using this dataset, we construct our variables of interest, including the total value of Chilean exports in dollars and the number of exported products, categorized by two-digit industry for each trading partner.

We merge the BACI database with the "Gravity" database, also sourced from CEPII, which includes standard gravity indicators such as income per capita and population. Additionally, we incorporate data on the ratio of credit to the private sector to GDP from the Global Financial Database and the bilateral exchange rate with Chile from the WEO database, both provided by the World Bank.

Finally, we incorporate to the export database, information on the FTAs signed by Chile from the Subsecretaría de Relaciones Económicas Internacionales de Chile. Since the return of democracy, Chile has signed 31 FTAs, covering 65 countries that together represent almost 90% of the world GDP. Using this information we construct a dummy that takes the value of 1 from the year after the agreement has been signed onwards.

Tabla 1 presents a summary of the FTAs signed by Chile by country and specifying the year in which it was implemented.

2.1 Empirical strategy

We use a difference in differences approach for bilateral exports. Our baseline regression is:

$$Y_{s,c,t} = \alpha + \beta FTA_{c,t} + \gamma X_{c,t} + \omega_s + \omega_c + \omega_t + \mu_{s,c,t} \tag{1}$$

where s, c, t stands for industry, country (trade counterpart) and time respectively. $Y_{s,c,t}$ are the specific dependent variables of interest: value of exports and number of products in logs, $FTA_{c,t}$ is a dummy that takes the value of one for the period after the agreement was signed. $X_{c,t}$ is a group of time-varying country control variables based on the gravity model that include income per capita, population.[1] The ω represent fixed effects by industry s, country

[1] In Table 8 we show that these results are robust to including also private credit to GDP and the bilateral

Table 1: FTAs signed by Chile since 1995

Year	Countries
1997	Uruguay, Paraguay, Brazil, Argentina
1998	Canada
2000	Mexico
2002	Slovenia, Crimea
2003	Sweeden, Portugal, Netherlands, Luxemburg, Italy, Ireland, Greece, Great Britain,France, Finland, Spain, Denmark Deutschland, Belgium, Austria
2004	USA, Slovenia, Slovakia, Poland, Malta, Latvia, Lithuania, Korea, Hungary, Estonia, Chezc Republic, Cyprus
2005	Norway, Iceland, Switzerland
2006	Singapur, New Zealand, Brunei Darussalam
2007	China, Bulgaria
2008	Panama, Japan
2009	Peru, Honduras, Colombia, Australia
2010	Guatemala
2011	Turchia
2012	Malaysia
2013	Nicaragua, Croatia
2014	Vietnam
2015	Hong Kong
2020	Indonesia

c and time t. Errors are clustered at the country-time level.

Additionally, we explore whether the ex-ante relative importance of each industry's exports in total exports plays a significant role in shaping the industry's response to the FTA. To this end we construct the variable $share_s$ which is the average share of exporters of the sector with respect to the total during the 3 years before the FTA was signed. Given that this variable exhibits a very long right tail, we address this issue by winsorizing the database, retaining data up to the 95th percentile of this distribution.

Traditional industries may potentially experience a lower impact from the FTAs due to their pre-existing low tariffs in destination markets. However, it is equally plausible that the impact could be higher in these industries if there is an opportunity to introduce new products in sectors where the Chilean economy holds a comparative advantage. To discern which of these two channels is more relevant, we also estimate the following regression:

$$Y_{s,c,t} = \alpha + \beta_1 FTA_{c,t} + \beta_2 FTA_{c,t} * Share_s + \beta_3 Share_s + \gamma X_{c,t} + \omega_s + \omega_c + \omega_t + \mu_{s,c,t} \quad (2)$$

Where $share_s$ represents the average share of exporters in the sector relative to the total during the 3 years before the FTA was signed. Notably, $share_s$ exhibits a very long right tail. To address this issue, we present results for both the full sample and a sub-sample, referred to as the "winsorized sample." In the winsorized sample, we limit the data to the 95th percentile

exchange rate as additional controls. However, since by doing so we lose almost half of the observations we decided to leave them out of the baselinel

of the distribution of this variable.

3 Results

Columns (1) and (5) of Table 2 present the results of our baseline regression for exports and products. Results show that the impact of FTAs is positive and significant, with exports growing about 7,5% and the number of exported products growing by about 6,6%. The gravity control variables show the expected relationship with Chilean exports, i.e., exports increase on the population and income of the trading partner. Columns (2-3) and (6-7) incorporate the interaction of the FTA with the industry level variable $share_s$ for the full sample and for winsorized sample, respectively.

Figure 1 complements the analysis by showing the magnitude of the impact of the FTA on exports across industries with different participation in total exports, columns (2-3) and (6-7), by calculating the partial effect of the FTA at different levels of the variable $share_s$:

$$\frac{\partial Y_{s,c,t}}{\partial FTA} = \beta_1 + \beta_2 share_s. \tag{3}$$

Both the table and the figure suggest that FTAs have a more substantial impact on the value of exports in industries that represent a higher proportion of total exports to the partner country. However, it appears that this effect is non-linear, with a larger positive impact for lower shares. This is evidenced by the much larger coefficient of the interaction for the winsorized sample. In the case of the number of exported products, these differential effects are even more pronounced. The coefficient for the interaction is negative for the full sample, but it becomes positive and significant for the winsorized sample. As a result, our findings support the notion that FTAs tend to benefit industries with a pre-existing export presence, but the magnitude of these effects seems to be reduced for industries in the far right tail of the export share distribution.

While the inclusion of income per capita, population of the trading partner, and time fixed effects allows us to control for some aggregate factors other than the FTAs that might influence the response of exports, there is still a possibility of unobservable variables at the aggregate level that could be correlated with the FTA, potentially introducing bias in our estimation (see also Table 8 for a version of the baseline with more macroeconomic controls). To address concerns about the impact of macro-level variables on the heterogeneous results, we incorporate country-time-fixed effects in columns (4) and (8) of our baseline regression. Notably, the coefficients of the interaction term β_2 maintain their sign and significance levels, and their magnitudes remain very similar. This suggests that our baseline regression effectively

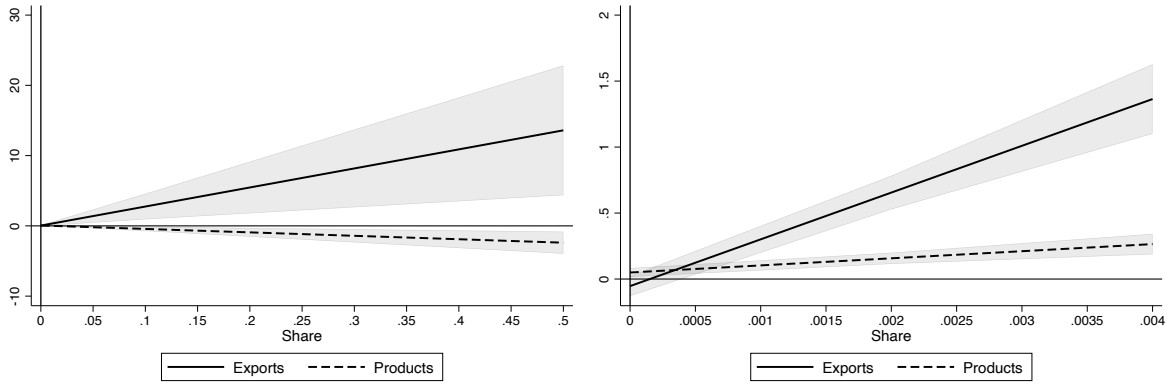
Table 2: Effects of FTAs on value of exports and number exported products

VARIABLES	(1) Exports Full Sample	(2) Exports Full Sample	(3) Exports W. Sample	(4) Exports Full Sample	(5) Products Full Sample	(6) Products Full Sample	(7) Products W. Sample	(8) Products Full Sample
FTA	0.071**	0.040	-0.060		0.045***	0.056***	0.049***	
	(0.032)	(0.036)	(0.039)		(0.015)	(0.016)	(0.017)	
FTA*Share		27.115***	355.354***	27.163**		-4.897***	51.816***	-4.961***
		(9.465)	(37.092)	(12.169)		(1.618)	(10.064)	(1.602)
Population	1.104***	1.074***	1.081***	0.000	0.469***	0.463***	0.445***	
	(0.148)	(0.148)	(0.151)	(0.000)	(0.076)	(0.076)	(0.077)	
Income p.c.	1.115***	1.107***	1.049***	0.000	0.362***	0.363***	0.357***	
	(0.082)	(0.082)	(0.084)	(0.000)	(0.048)	(0.048)	(0.050)	
Share		33.105***	316.139***	33.686		9.307***	90.526***	8.535***
		(7.845)	(31.479)	(22.604)		(1.604)	(8.952)	(1.591)
Observations	112,867	112,867	106,568	112,642	112,867	112,867	106,568	112,642
R-squared	0.530	0.532	0.508	0.550	0.614	0.615	0.613	0.642
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	NO	YES	YES	YES	NO
Year FE	YES	YES	YES	NO	YES	YES	YES	NO
Country-Year FE	NO	NO	NO	YES	NO	NO	NO	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: This table examines the effect of $FTAs$ and the interaction of FTA with $share_s$ on the value of exports and number of exported products at the industry level. All regressions include industry-fixed effects, and either country and time-fixed effects or country-time fixed effects. Robust errors clustered at the country-year level are reported in parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Figure 1: Heterogeneous effect of FTAs: Full versus winsorized sample



(a) Full sample (b) Winsorized sample

Note: Each panel depicts graphically the respective regression results from Table 3. The vertical axis measures the percentage change in the corresponding dependent variable triggered by the FTA for each level of *share*, which is measured on the horizontal axis. The solid and dotted lines show the estimated effect of the FTA for each level of *share* for the value of exports and number of products, respectively. The shaded areas are the corresponding 95 percent confidence intervals.

controls for relevant aggregate confounding factors.

3.1 Additional margins of heterogeneity

In addition to the participation of the industry in total exports, other factors may potentially influence how FTAs impact industries' exports.

3.1.1 Trading partners with different income levels

To explore the impact of trading partners' income levels on the effects of the FTAs, we present Table 3, which divides the sample of trading partners into two groups: those with high income (odd-numbered columns) and the rest of the countries (even-numbered columns) while also presenting the effects for the full sample and for the winsorized sample. Additionally, Figure 2 illustrates the magnitude of the FTA's impact on the value of exports and the number of exported products across industries with different export shares for the two samples under study.

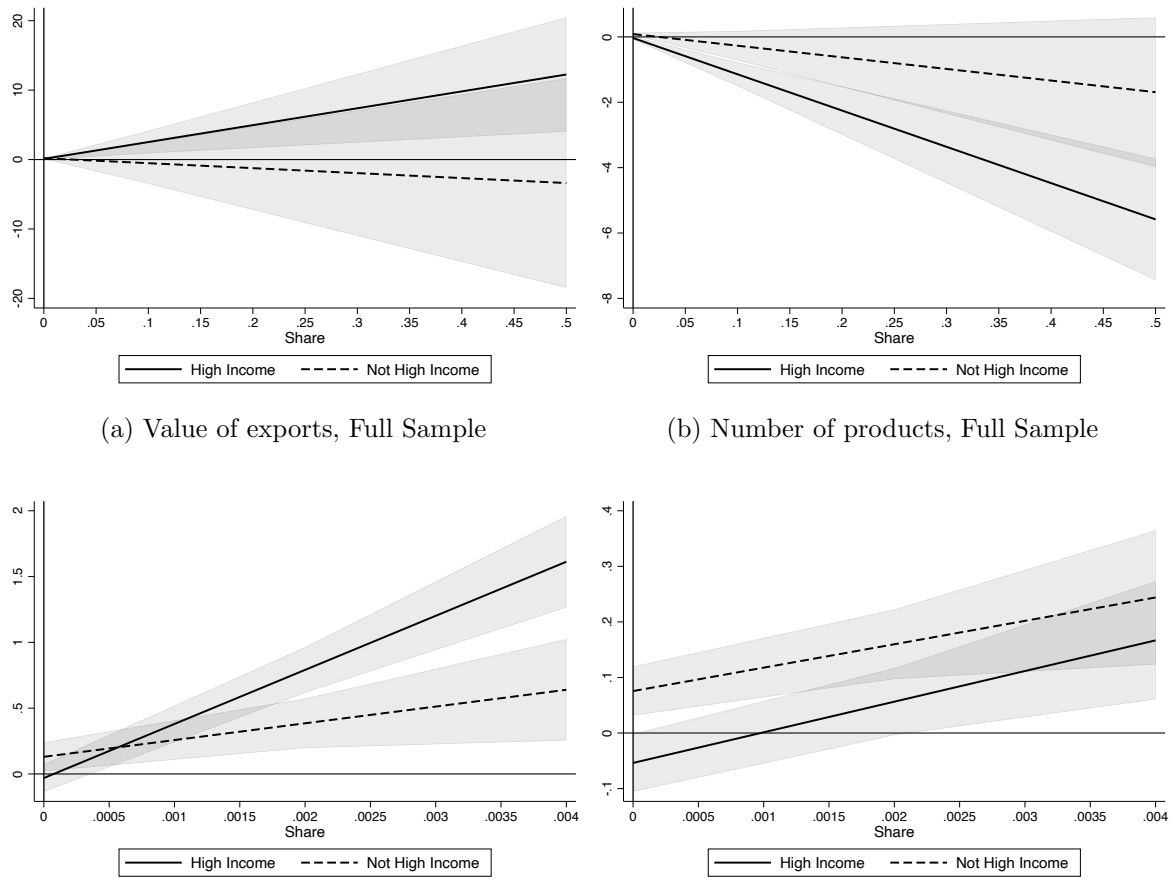
The table and the figure offer interesting insights into our analysis. Consistent with our previous findings, we observe a stronger positive coefficient for the interaction in the winsorized sample, which reaffirms the importance of studying the two samples separately. Furthermore, when considering the combined effects of the direct effect and the interaction in Figure 2, we observe that the effect only differs for countries with different income levels when considering the winsorized sample. Specifically, for this sample, we find that FTAs with trading partners with high income levels are more beneficial in terms of the value of exports, and that these differences increase with the export share (within the sample). Conversely, the opposite is true for the number of exported products. These findings provide valuable insights into how FTAs impact different industries and countries depending on their income levels and existing export shares.

Table 3: Heterogeneous effects of FTAs: Countries with different Income levels

	Exports				Products			
VARIABLES	High income Full Sample	Not-High income Full Sample	High income W. Sample	Not-High income W. Sample	High income Full Sample	Not-High income Full Sample	High income W. Sample	Not-High income W. Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTA	0.093*	0.193***	-0.031	0.130**	-0.035	0.086***	-0.054**	0.076***
	(0.048)	(0.054)	(0.053)	(0.056)	(0.024)	(0.021)	(0.027)	(0.023)
FTA*Share	24.313***	-7.152	410.929***	127.333**	-11.094***	-3.553	55.142***	42.114**
	(8.431)	(15.453)	(48.207)	(53.960)	(1.910)	(2.345)	(14.760)	(16.772)
Observations	54,285	58,582	49,590	56,803	54,285	58,582	49,590	56,803
R-squared	0.568	0.537	0.517	0.529	0.611	0.651	0.600	0.652
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 2: Heterogeneous effects of FTAs: Countries with different Income levels



(a) Value of exports, Full Sample

(b) Number of products, Full Sample

(c) Value of exports, Winsorized sample

(d) Number of products, Winsorized sample

Note: Each panel depicts graphically the respective regression results from Table 3. The vertical axis measures the percentage change in the corresponding dependent variable triggered by the FTA for each level of *share*, which is measured on the horizontal axis. The solid and dotted lines show the estimated effect of the FTA for each level of *share* for the value of exports and number of products, respectively. The shaded areas are the corresponding 95 percent confidence intervals.

3.1.2 Primary products vs manufactures

We adopt a differentiated approach by estimating the model separately for primary and manufacturing industries. This distinction is based on the observation that tariffs tend to be lower for commodities in comparison to manufacturing goods. Additionally, existing literature has highlighted that sunk costs are generally lower in commodity sectors, where information about prices is more readily available. However, it is important to note a caveat before proceeding to the results: due to the HS classification of products in our database, certain industry categories encompass both manufactures and primary products. To address this, we focus our

analysis solely on sectors that exclusively consist of primary or manufacturing products. The results of our analysis are presented in Table 4 and Figure 3.

The findings of this differentiated analysis reveal interesting insights. While we continue to find a stronger positive coefficient for the interaction in the winsorized sample, we also observe a higher positive impact on exports and product diversification for the primary goods sector which is significant for the winsorized sample. This suggests that FTAs have a favorable influence on the export performance and product variety of primary industries. This distinction between primary and manufacturing industries provides valuable insights into the varying effects of FTAs across different sectors of the economy. By recognizing these sector-specific impacts, policymakers can design targeted strategies to harness the full potential of FTAs in promoting export growth and diversification in both primary and manufacturing sectors.

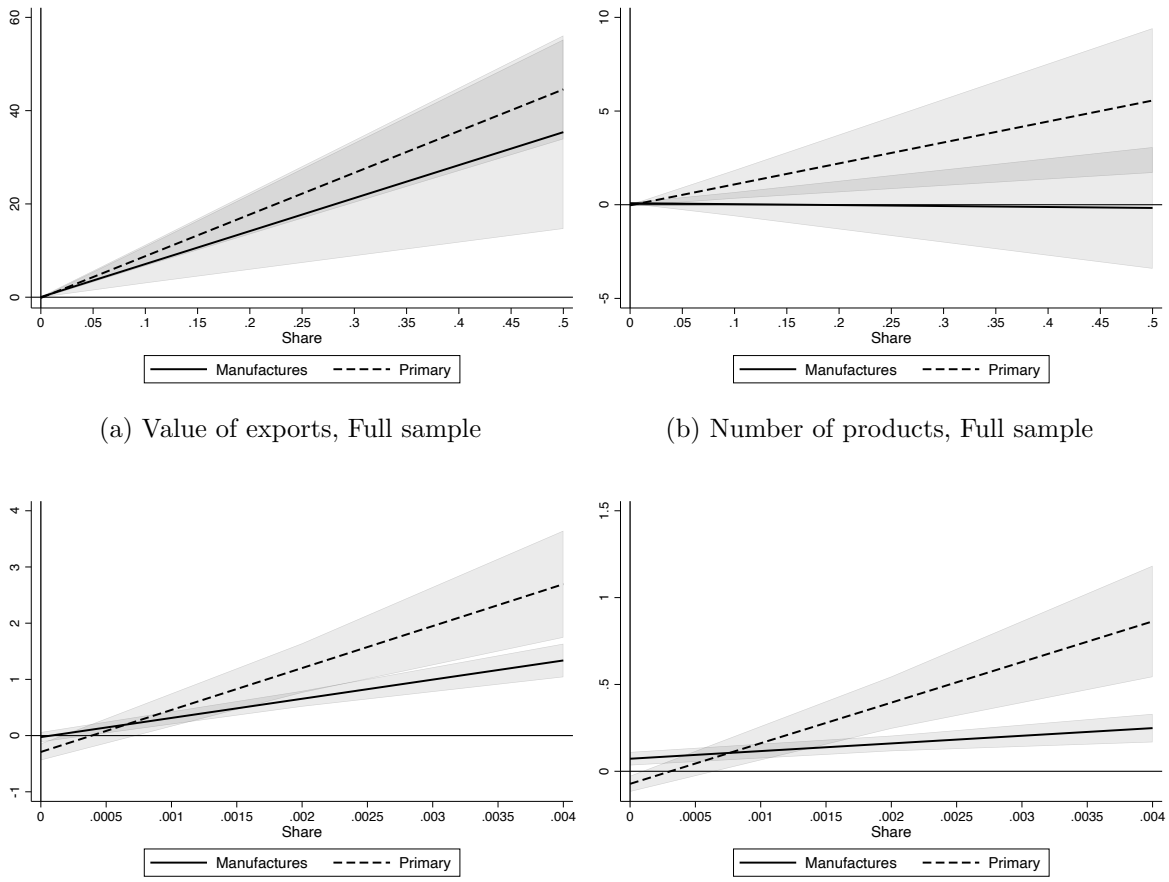
The findings of this differentiated analysis reveal interesting insights. As expected, we continue to find a stronger positive coefficient for the interaction in the winsorized sample. Additionally, we observe a higher positive impact on exports and product diversification for the primary goods sector, although this effect is not significant for the full sample, as shown in Panels (a) and (b) of Figure 3. This suggests that FTAs have a favorable influence on the export performance and product variety of primary industries. This distinction between primary and manufacturing industries provides valuable insights into the varying effects of FTAs across different sectors of the economy. By recognizing these sector-specific impacts, policymakers can design targeted strategies to harness the full potential of FTAs in promoting export growth and diversification in both primary and manufacturing sectors.

Table 4: Heterogeneous effects of FTAs: Manufactures vs primary products

	Exports				Products			
VARIABLES	Manufactures Full Sample	Primary Full Sample	Manufactures W. Sample	Primary W. Sample	Manufactures Full Sample	Primary Full Sample	Manufactures W. Sample	Primary W. Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTA	0.044	-0.139**	-0.026	-0.291***	0.082***	-0.032*	0.072***	-0.072***
	(0.042)	(0.059)	(0.045)	(0.076)	(0.018)	(0.019)	(0.020)	(0.023)
FTA*Share	70.689***	89.392***	340.803***	746.260***	-0.508	11.186***	44.056***	233.825***
	(21.193)	(10.957)	(43.120)	(132.705)	(3.322)	(3.953)	(11.681)	(44.074)
Observations	78,835	22,715	76,637	20,406	78,835	22,715	76,637	20,406
R-squared	0.567	0.516	0.559	0.448	0.637	0.623	0.643	0.553
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 3: Heterogeneous effects of FTAs: Manufactures vs primary products



(a) Value of exports, Full sample

(b) Number of products, Full sample

(c) Value of exports, Lower share

(d) Number of products, Lower share

Note: Each panel depicts graphically the respective regression results from Table 3. The vertical axis measures the percentage change in the corresponding dependent variable triggered by the FTA for each level of *share*, which is measured on the horizontal axis. The solid and dotted lines show the estimated effect of the FTA for each level of *share* for the value of exports and number of products, respectively. The shaded areas are the corresponding 95 percent confidence intervals.

4 Can FTAs help compensate for low levels of financial development or capital control restrictions?

Financial development plays a crucial role in facilitating international trade. Approximately 40 percent of global trade transactions are financed through bank-intermediated trade finance, while the remaining portion relies on interfirm trade credit (BIS, 2014). Consequently, it becomes pertinent to inquire whether the effects of FTAs on exports are influenced by the trading partner's level of financial development or by its capital control restrictions. Additionally, exploring whether FTAs can potentially mitigate the disadvantages arising from weaker

financial systems or capital account restrictions can provide interesting insights.

4.1 Financial development and FTAs

To investigate whether this is indeed the case, we divide our sample between trading partners with high or low levels of financial development. For this purpose, we utilize the ratio of domestic credit to the private sector as a percentage of GDP, sourced from the Global Financial Database of the World Bank. We classify countries with high financial development as those falling within the top quartile of the distribution of this indicator at the time the FTA was signed, while the remaining countries form the low financial development group.

Table 5 presents the results of this analysis, following the same structure as the previous tables. Notably, for both samples, we observe that point estimates on the direct effect and the interaction are more positive (or less negative) when the FTA is signed with a country that has a relatively lower level of financial development. The combined effect of these estimates for each regression is illustrated in Figure 4. While the differential effect between the two types of countries does not seem to be significant for the full sample and for the value of exports, it does trigger a shift in terms of the responses of the number of products. In this case, the number of products increases significantly more as a result of the FTA when the agreement is signed with countries with lower levels of financial development. [2]

Table 5: Heterogeneous effects of FTAs: Financial development

	Exports				Products			
VARIABLES	H. Fin. Dev. Full Sample	L. Fin. Dev. Full Sample	H. Fin. Dev. W. Sample	L. Fin. Dev. W. Sample	H. Fin. Dev. Full Sample	L. Fin. Dev. Full Sample	H. Fin. Dev. W. Sample	L. Fin. Dev. W. Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTA	0.023	0.039	-0.038	-0.065	-0.036	0.125***	-0.061**	0.131***
	(0.059)	(0.055)	(0.065)	(0.057)	(0.024)	(0.026)	(0.027)	(0.028)
FTA*Share	-0.073	46.893***	282.293***	422.582***	-9.275***	-2.025	45.785***	55.478***
	(9.612)	(14.094)	(53.492)	(53.333)	(1.578)	(3.004)	(14.421)	(17.142)
Observations	33,695	79,172	30,388	76,005	33,695	79,172	30,388	76,005
R-squared	0.570	0.520	0.534	0.502	0.632	0.613	0.631	0.612
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

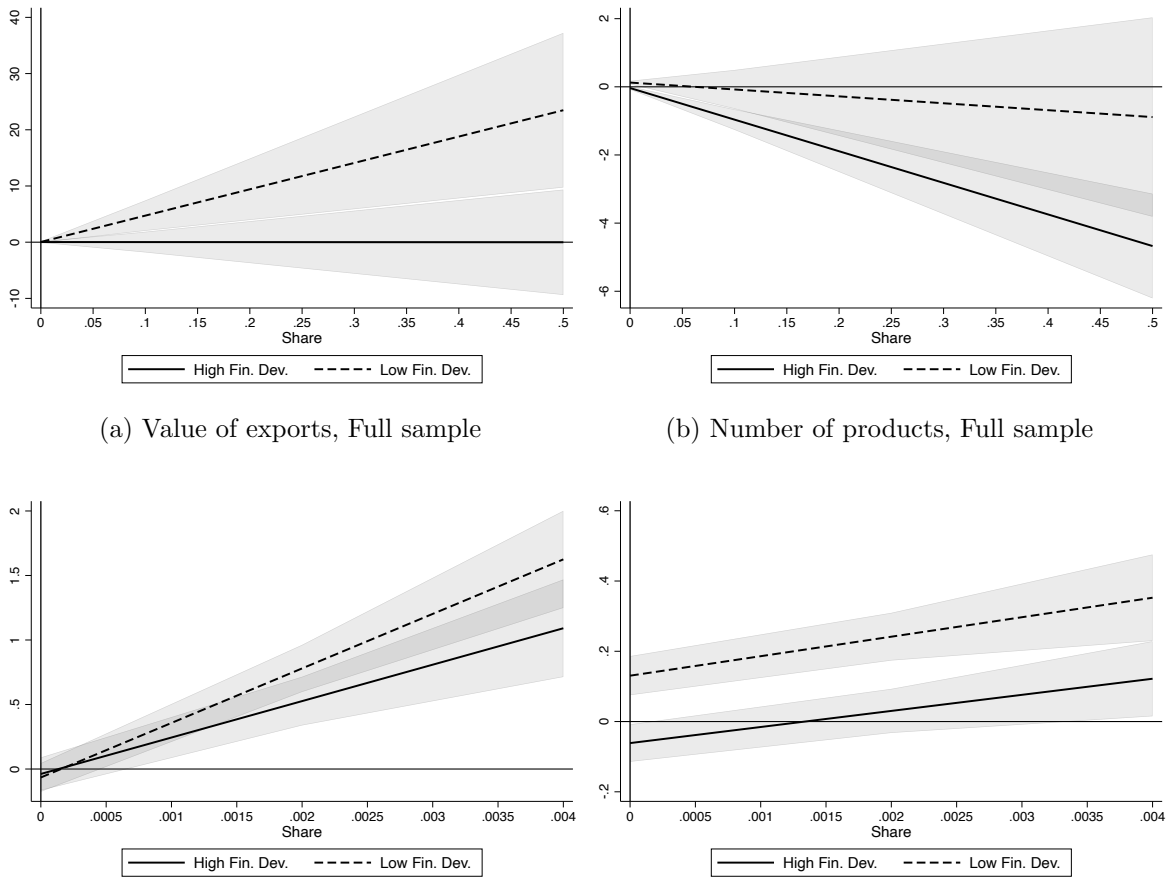
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.2 Capital controls and FTAs

Commercial and financial credit, as well as trade derivatives, play a vital role in facilitating international trade by providing firms with necessary working capital and hedging tools to

[2] These results are robust to considering alternative measures of financial development.

Figure 4: FTAs and financial development



(a) Value of exports, Full sample

(b) Number of products, Full sample

(c) Value of exports, Winsorized sample

(d) Number of products, Winsorized sample

Note: Each panel depicts graphically the respective regression results from Table 3. The vertical axis measures the percentage change in the corresponding dependent variable triggered by the FTA for each level of *share*, which is measured on the horizontal axis. The solid and dotted lines show the estimated effect of the FTA for each level of *share* for the value of exports and number of products, respectively. The shaded areas are the corresponding 95 percent confidence intervals.

manage currency and commodity price risks. However, when governments impose restrictions on these financial instruments, it can lead to adverse consequences on international trade (Tamirisa, 1998). Beyond the direct impact on trade finance, such restrictions can have medium-term spillover effects on international trade. By limiting access to credit and hedging instruments, these restrictions can exacerbate currency and commodity price volatility, increasing risks for both exporters and importers. Consequently, firms may become more cautious about entering foreign markets and may opt for domestic sales over exports to mitigate risks associated with trade finance limitations. Additionally, restrictions on foreign direct investment (FDI) inflows can further limit foreign market access for domestic firms, hindering

their ability to expand into international markets and participate in global value chains. As a result, these dynamics can lead to a decline in the competitiveness of domestic industries in global markets, ultimately impeding overall trade growth.

For the CCs measures we use the database of **?**. This database contains information on a comprehensive set of indicators on capital account restrictions using the information provided in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) from to 1995 to 2021. This database provides information on restrictions on international inflow and outflows of equity, bonds, money market, collective investment, derivatives, commercial credits, financial credits, guarantees, direct investment and real estate. Whenever a restriction is active in any of these categories, the individual indicator takes the value of 1 and zero otherwise. Since our focus is on trade financing we focus specifically on restrictions on commercial credit, financial credit, derivatives and FDI, taking the average between restrictions on outflows and restrictions on inflows for each category.

In Table 6, we delve into whether the effect of FTAs differ when trading with countries that have active restrictions on capital account transactions that are relevant for international trade. The analysis reveals interesting insights. First, in line with prior research, the direct effect of these restrictions on exports and the number of exported products is negative. Second, and more interestingly, FTAs exhibit a higher positive impact when signed with countries that have such restrictions, although the coefficient for the effect of restrictions on financial credit and derivatives on the number of products for the winsorized sample is non-significant. This suggests that FTAs may have indirect beneficial effects in terms of mitigating or reducing the negative consequences that capital account restrictions impose on international trade.

5 Robustness and Extensions

5.1 Excluding copper and main export destinations

Chile stands as the world's foremost exporter of copper. Given this significant contribution, copper represents a substantial portion of Chilean exports, accounting for approximately 40% to 50% of the country's total export value in recent years. To ensure that our findings are not solely driven by copper exports, we conduct an additional analysis by excluding copper from our sample. Columns (1) and (2) of Tables 8 and 9, demonstrate that our baseline results remain qualitatively unchanged when copper is excluded from the industries in the sample. This robustness check validates the reliability of our findings and confirms that copper exports alone do not drive influence our conclusions.

Following the same logic columns (3) and (4) of the same tables replicate our baseline

Table 6: Effects of FTAs and capital controls in the value of exports

VARIABLES	Com. Credit		Fin. Credit		Derivatives		FDI	
	Full sample	W. Sample	Full sample	W. Sample	Full sample	W. Sample	Full sample	W. Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTA	-0.016	-0.113***	-0.037	-0.132***	-0.003	-0.101**	-0.015	-0.106**
	(0.040)	(0.043)	(0.039)	(0.042)	(0.040)	(0.043)	(0.041)	(0.044)
FTA*Share	22.209**	341.164***	22.078**	334.060***	19.556**	331.355***	22.767**	347.505***
	(9.573)	(38.163)	(9.563)	(38.062)	(9.479)	(38.414)	(9.543)	(37.892)
CC Com. Credit	-0.249***	-0.222***						
	(0.061)	(0.064)						
FTA* CC Com. Credit	0.333***	0.321***						
	(0.069)	(0.074)						
CC Fin. Credit			-0.277***	-0.265***				
			(0.058)	(0.061)				
FTA* CC Fin. Credit			0.373***	0.383***				
			(0.068)	(0.072)				
CC Derivatives					-0.236***	-0.222***		
					(0.063)	(0.067)		
FTA* CC Derivatives					0.301***	0.289***		
					(0.068)	(0.073)		
CC. FDI							-0.281***	-0.266***
							(0.066)	(0.069)
FTA*CC.FDI							0.263***	0.220***
							(0.066)	(0.070)
Observations	94,182	88,210	94,090	88,123	91,271	85,326	95,364	89,384
R-squared	0.527	0.500	0.527	0.500	0.531	0.504	0.526	0.500
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: This table examines the effect of $FTAs$ and the interaction of FTA with $share_s$ on the value of exports and number of exported products at the industry level. All regressions include industry-fixed effects, and either country and time-fixed effects or country-time fixed effects. Robust errors clustered at the country-year level are reported in parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

regressions while leaving out Chile's main trading partners: China and the US, which together represent over 50% of Chile's exports. The estimations show that our results are not driven by these countries either.

5.2 Additional controls

In our baseline regressions, we included income per capita and population of the trading partner as control variables. Furthermore, we conducted a robustness check by adding country-time fixed effects to our model, and the point estimates of the interaction remained unchanged. However, in Columns (5) and (6) of our Robustness tables, we added additional controls, such as private credit to GDP and the bilateral exchange rate for the trading partner. While these controls did not alter the point estimate of the interaction, we observed that including them resulted in a significant reduction in the number of observations, losing almost half of our data. As a result, we decided to omit these additional controls from our baseline regression

Table 7: Effects of FTAs and capital controls in the number of exported products

VARIABLES	Com. Credit		Fin. Credit		Derivatives		FDI	
	Full sample	W. Sample	Full sample	W. Sample	Full sample	W. Sample	Full sample	W. Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTA	0.020	0.014	0.033*	0.027	0.049**	0.041*	0.032	0.027
	(0.019)	(0.020)	(0.020)	(0.021)	(0.020)	(0.022)	(0.021)	(0.022)
FTA*Share	-5.929***	47.132***	-5.742***	45.409***	-6.573***	46.112***	-5.711***	49.340***
	(1.616)	(10.971)	(1.605)	(10.920)	(1.610)	(11.112)	(1.607)	(10.873)
CC Com. Credit	-0.037	-0.030						
	(0.025)	(0.025)						
FTA* CC Com. Credit	0.138***	0.126***						
	(0.035)	(0.037)						
CC Fin. Credit			-0.049**	-0.054**				
			(0.023)	(0.024)				
FTA* CC Fin. Credit			0.057*	0.051				
			(0.031)	(0.033)				
CC Derivatives					-0.049*	-0.068**		
					(0.029)	(0.031)		
FTA* CC, Derivatives					0.059*	0.050		
					(0.034)	(0.036)		
CC. FDI							-0.075**	-0.087***
							(0.031)	(0.032)
FTA*CC.FDI							0.100***	0.089***
							(0.031)	(0.033)
Observations	94,182	88,210	94,090	88,123	91,271	85,326	95,364	89,384
R-squared	0.636	0.636	0.636	0.636	0.637	0.637	0.636	0.636
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: This table examines the effect of $FTAs$ and the interaction of FTA with $share_s$ on the value of exports and number of exported products at the industry level. All regressions include industry-fixed effects, and either country and time-fixed effects or country-time fixed effects. Robust errors clustered at the country-year level are reported in parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

to retain a larger sample size for more robust and reliable results.

5.3 Pretrends

One of the identification assumptions for a difference in difference estimation is that previous trends are similar between the treated and the control group. In this case between the countries with FTA and those where the FTA has not been implemented. We can test that by introducing lagged dummy variables for the FTAs. In case that exports and products were evolving similarly for both groups, the parameter of the lagged variables must be not different from zero. Columns (7) and (8) Tables 8 and 9 show the estimation results, which allow us to conclude that previous trends are similar. We cannot reject that each parameter for lagged FTA variable is equal to zero. Then, the identification assumption seems to be reasonable.

Table 8: Robustness: Full sample

VARIABLES	(1) No Copper Exports	(2) No Copper Products	(3) No CHN-USA Exports	(4) No CHN-USA Products	(5) Extra Controls Export	(6) Extra Controls Products	(7) Pretrend Exports	(8) Pretrend Products
FTA	-0.008	0.046***	-0.017	0.047***	-0.015	0.012	0.009	0.069***
	(0.039)	(0.016)	(0.036)	(0.016)	(0.048)	(0.019)	(0.053)	(0.022)
c.acuerdo#c.share	93.754***	5.226	44.438***	0.735	68.328***	1.143	27.092***	-4.891***
	(18.403)	(3.706)	(8.357)	(1.135)	(11.780)	(1.486)	(9.462)	(1.622)
fta1r							0.011	0.027
							(0.063)	(0.029)
fta2r							-0.044	-0.014
							(0.061)	(0.028)
fta3r							-0.105	0.002
							(0.069)	(0.031)
fta4r							-0.052	0.036
							(0.075)	(0.028)
fta5r							-0.021	0.043
							(0.065)	(0.029)
Priv. Credit/GDP					-0.001**	-0.001***		
					(0.001)	(0.000)		
Bilateral ExR					0.459***	0.143***		
					(0.107)	(0.039)		
Observations	111,465	111,465	108,928	108,928	68,825	68,825	112,867	112,867
R-squared	0.530	0.615	0.519	0.607	0.542	0.631	0.532	0.615
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: This table examines the effect of $FTAs$ and the interaction of FTA with $share_s$ on the value of exports and number of exported products at the industry level. All regressions include industry-fixed effects, and either country and time-fixed effects or country-time fixed effects. Robust errors clustered at the country-year level are reported in parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 9: Robustness: Winsorized sample

VARIABLES	(1) No Copper Exports	(2) No Copper Products	(3) No CHN-USA Exports	(4) No CHN-USA Products	(5) Extra Controls Export	(6) Extra Controls Products	(7) Pretrend Exports	(8) Pretrend Products
FTA	-0.057	0.047***	-0.207***	0.013	-0.198***	-0.021	-0.092*	0.072***
	(0.039)	(0.017)	(0.038)	(0.017)	(0.050)	(0.020)	(0.055)	(0.023)
c.acuerdo#c.share	355.236***	53.800***	613.290***	130.223***	684.020***	123.905***	354.695***	53.494***
	(37.315)	(10.716)	(30.250)	(7.938)	(36.735)	(8.925)	(37.367)	(10.716)
fta1r							-0.011	0.044
							(0.067)	(0.031)
fta2r							-0.055	-0.002
							(0.066)	(0.031)
fta3r							-0.113	0.014
							(0.075)	(0.034)
fta4r							-0.060	0.044
							(0.078)	(0.031)
fta5r							-0.013	0.051
							(0.069)	(0.033)
Priv. Credit/GDP					-0.002**	-0.001***		
					(0.001)	(0.000)		
Bilateral ExR					0.468***	0.148***		
					(0.113)	(0.040)		
Observations	105,863	105,863	102,790	102,790	64,315	64,315	106,393	106,393
R-squared	0.507	0.612	0.496	0.606	0.508	0.629	0.507	0.613
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: This table examines the effect of $FTAs$ and the interaction of FTA with $share_s$ on the value of exports and number of exported products at the industry level. All regressions include industry-fixed effects, and either country and time-fixed effects or country-time fixed effects. Robust errors clustered at the country-year level are reported in parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

6 Conclusion

In this paper, we examined the positive effects of Free Trade Agreements (FTAs) on Chilean exports. Chile's strategic pursuit of FTAs with numerous countries has been aimed at enhancing export diversification and accessing external markets. However, little comprehensive evaluation existed regarding the overall impact of these agreements on Chilean exports.

Our analysis utilized a rich dataset covering bilateral trade flows at the product-level, along with standard gravity indicators and financial data. We employed a difference-in-differences approach, allowing us to control for potential confounding factors and identify the causal impact of FTAs on exports.

The results of our study offer valuable insights into the heterogeneous effects of FTAs across different industries and trading partner characteristics. We found that FTAs have a more substantial impact on the value of exports in industries with a higher proportion of total exports to the partner country. Interestingly, this effect appears to be non-linear, with a larger positive impact observed for lower shares. For the number of exported products, our analysis suggests a similar trend, with significant differential effects for the winsorized sample.

Moreover, we differentiated our analysis between primary and manufacturing industries. The findings revealed that FTAs have a favorable influence on the export performance and product variety of primary industries. This distinction provides essential insights into the varying effects of FTAs across different sectors of the economy, enabling policymakers to design targeted strategies to harness the full potential of FTAs in promoting export growth and diversification.

Furthermore, we investigated the role of financial development and capital control restrictions on the impact of FTAs on exports. The results suggested that FTAs tend to have a stronger positive impact when signed with countries that have relatively lower levels of financial development. Additionally, the presence of capital control restrictions seemed to enhance the positive effects of FTAs, particularly for the number of exported products.

In conclusion, our study highlights the significant positive effects of FTAs on Chilean exports, providing empirical evidence to support the country's strategic pursuit of such agreements. By shedding light on the industry-specific impacts and the role of financial development and capital controls, our findings contribute to the broader understanding of the implications of trade liberalization and can inform policymakers in designing effective trade policies to foster export growth and economic development. As global trade dynamics continue to evolve, the lessons from our research can guide policymakers in maximizing the benefits of international trade for Chile's economic prosperity.

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