RESEARCH HIGHLIGHTS

Review of the current research conducted at the Central Bank of Chile

April 2025

This issue of Research Highlights reviews the following subjects that have been recently analyzed at the Central Bank of Chile (CBC):

- **International trade finance and learning dynamics.**
- **Short-term financing of Chilean firms.**
- **Matching data from Administrative Records and Households Survey in Chile.**

International trade finance and learning dynamics

Exporting exposes firms to certain risks, such as the counterparty not meeting its obligations or facing a demand that is more unfamiliar and uncertain than that from domestic buyers. Moreover, the process of exporting requires more working capital to finance the mismatch between production and payments. Consequently, exporters' access to credit is key to understanding international trade flows.

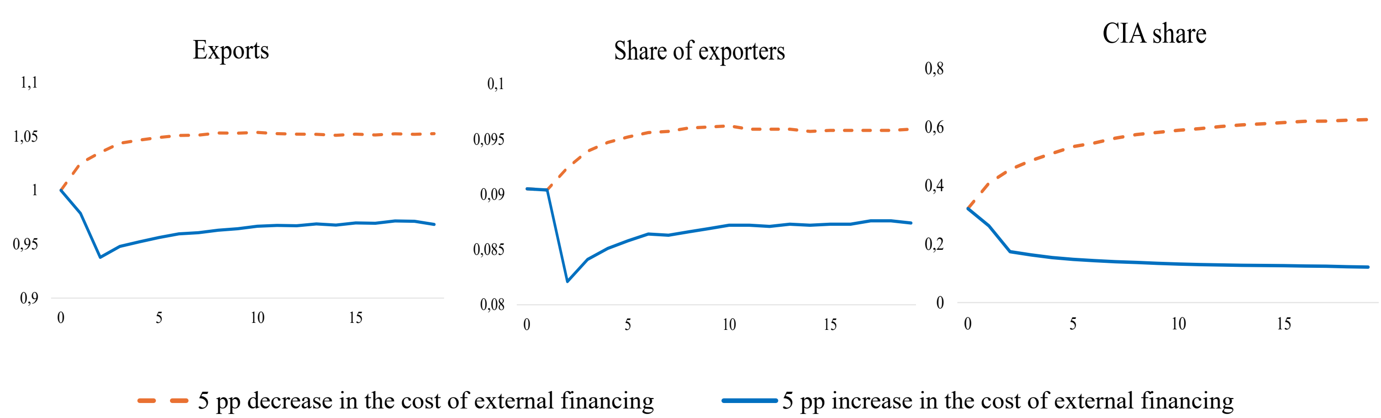
> *"[...] an increase in the cost of external financing has much stronger effects in the short term than in the long term. This non-monotonic response is due to the destruction and re-building of trade relationships."*

The paper "International Trade Finance and Learning Dynamics" coauthored by the Head of the Big Data Analysis Department of the Central Bank of Chile, David Kohn, with Emiliano Luttini (World Bank), Michal Szkup (University of British Columbia), and Shengxing Zhang (Carnegie Mellon University) analyze how these risks interact with firms' funding and production decisions, and how they affect their exports. To do so, they use micro data on Chilean exports, information from their balance sheets, and an economic model to quantify the role of these channels in exports.

The paper begins by documenting that the mode of payment when exporting varies with the history of the trade relationship. Initially, a greater use of cash-in-advance arrangements (CIA) dominates, which is gradually replaced by a greater use of an open account (OA), where the importer pays with a certain delay from the time of the purchasing order. Thus, they show that, as the number of transactions within a trade relationship increases, the use of OAs also increases. This process is more pronounced for smaller, inexperienced firms and riskier, less financially developed destinations.

To better understand the documented dynamics, the authors propose a model of international trade à la Melitz, with a few modifications. Firms can optimally choose how to finance their working capital to balance the risks that their product will not be demanded or that the counterparty will default on its obligations. When exporting, firms can sell under CIA, which protects the exporter from the risk of non-payment, but it is costly for

Figure 1: Asymmetric effect of changes in foreign financing costs



Notes: The figure displays the evolution of export sales, share of exporting firms, and share of exporters using CIA. The blue (red) line shows the response from a 5pp increase (drop) in foreign financing costs.

the importer and results in a lower volume traded. Or they can use an OA, which allows a higher volume of sales, but it exposes the exporter to greater counterparty risk. Firms learn from their counterparties and the popularity of their products through their business relationships: the longer the business relationship, the lower the risk and cost of financing, which in turn induces a greater use of OAs.

The model calibrated with Chilean data appropriately replicates the empirical patterns. It shows that the dynamics of exports and their financing depend on parameters that determine counterparty and demand risks. The former is more important for understanding access to credit, while the latter is crucial for understanding export volumes.

This model is used to study how financing shocks affect trade flows. A permanent and unanticipated increase in the cost of external financing triggers a fall in exports and in the number of exporters, which is steep in the beginning, but recovers partially over the long run. This is explained by the rapid destruction and slow reconstruction of trade relations, as well as a decrease in the use of OA that is partly replaced by an increase in CIA. Conversely, a reduction in external financing costs generates a gradual and monotonic increase in exports and in the number of exporting firms, as it does not lead to destroyed commercial relationships (Figure 1).

Finally, the authors show that the impact of changes in financing costs depends crucially on the characteristics of the export destination: exports to riskier destinations (those with weaker property rights) are more affected by changes in the cost of external financing, because they are more CIA intensive. This paper highlights the importance of understanding how trade relations interact with access to credit, affecting export and financing decisions. Consequently, this interaction influences the aggregate dynamics of exports in response to aggregate shocks.

Short-term financing of Chilean firms

The process of financing firms has first-order consequences on the functioning of the economy. Therefore, access to funds in the financial system will determine the firms' capacity for development and growth, which in turn will have an impact on output, capital, employment and aggregate productivity. In addition, having access to credit can allow firms to soften the adverse effects of temporary disturbances that may affect their liquidity, thus avoiding repercussions on their future viability. In this regard, empirically documenting the behavior and determinants of firms' access to credit provides valuable information for understanding the economies' dynamics.

> *"Between 2009 and 2019, the increase in bank debt was concentrated in firms with quarterly sales growth, while debt declined in those firms that achieved high operating margins."*

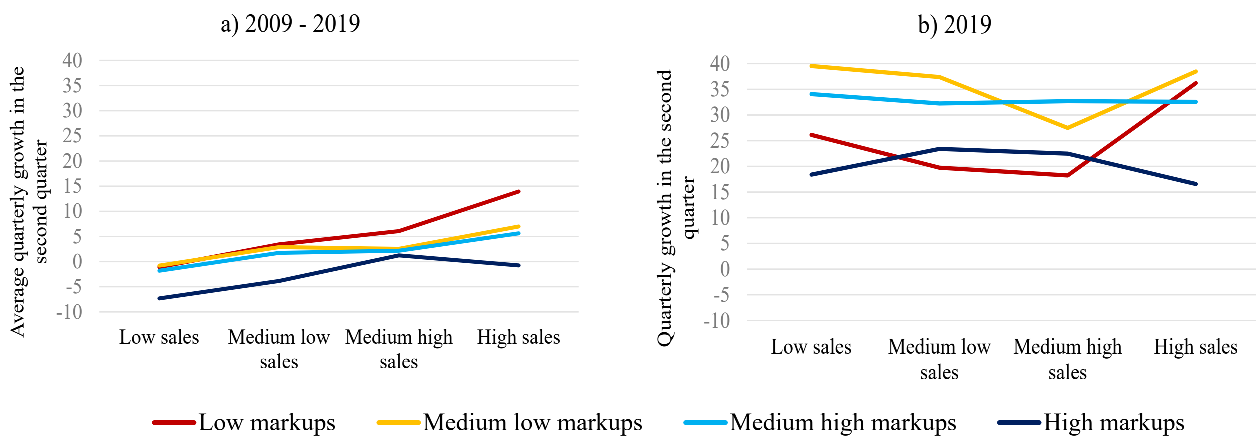
Contributing to this literature for the case of Chile, Central Bank researchers Jorge Fernández and Francisco Vásquez, in their working paper "Financiamiento de corto plazo de las empresas chilenas" (Short-term Financing of Chilean Firms), analyze the short-term financing of Chilean firms, using administrative data between 2009 and 2019 for those firms that are mainly financed using local banks. This is an important contribution, since much of the previous literature for unlisted firms, in the absence of publicly available information, has resorted to aggregate or survey-based data.

The paper uses unnominated administrative information on costs, sales and bank debt to construct an unbalanced sample of more than 150 thousand firms, concentrated in the Retail, Wholesale, and Manufacturing sectors. The authors show that quarterly changes in the firms' bank debt are positively correlated with their changes in sales, and negatively correlated with their operating margins. The former result is consistent with the notion that firms having greater sales need to finance more working capital: access to bank credit thus allows them to meet their growth needs. The latter result, on the other hand, suggests that firms with higher margins have greater liquidity, and are therefore less dependent on external funding, and thus can reduce their levels of indebtedness.

Thus, as shown in panel (a) of Figure 2 for the Retail and Wholesale sector, debt is reduced for firms with low sales (position 1 on the X-axis) and high margins (blue line), while it increases significantly for firms with high sales (position 4 on the Y-axis) and small margins (red line).

In addition, the paper provides suggestive evidence of the role that credit played in the context of the 2020 pandemic and the massive supply of Fogape-Covid loans. As shown in panel (b) of Figure 2, credit increased very significantly during the pandemic for all types of firms, including those that suffered significant drops in sales. This seems consistent with the policy objective of providing extraordinary liquidity to those firms whose activity was temporarily affected by the pandemic-related constraints and the health measures adopted in 2020.

Figure 2: Growth of debt for retail and wholesale firms



Notes: The figure shows, on the vertical axes, the growth of debt between first and second quarter: the average between 2009-2019 (panel a) and in 2020 (panel b). The horizontal axes have firms ordered by their sales growth by quartiles. The colored lines correspond to levels of firms' markups in quartiles.

Matching data from Administrative Records and Household Survey in Chile

> *"By combining together administrative records, such as those from tax records and the Civil Registry, with information from the Casen household survey, it is possible to preserve information about the structure of households in Chile including high-income households, and at the same time capture informality."*

Income distribution is a variable of growing interest among the general public and economic policy makers alike. It has recently also caught the attention of those who conduct monetary policy. Yet measuring income distribution is complex, as it is based on microeconomic information with different concepts for the variables to be measured, different coverage, and it is usually difficult to obtain at the household level. For example, surveys tend to underrepresent upper-income segments, and tax administrative data provide little or no information on the income of individuals in the informal market. Moreover, the use of different methodologies, concepts and coverage makes international comparisons difficult, and inconsistent with the main macroeconomic aggregates contained in National Accounts.

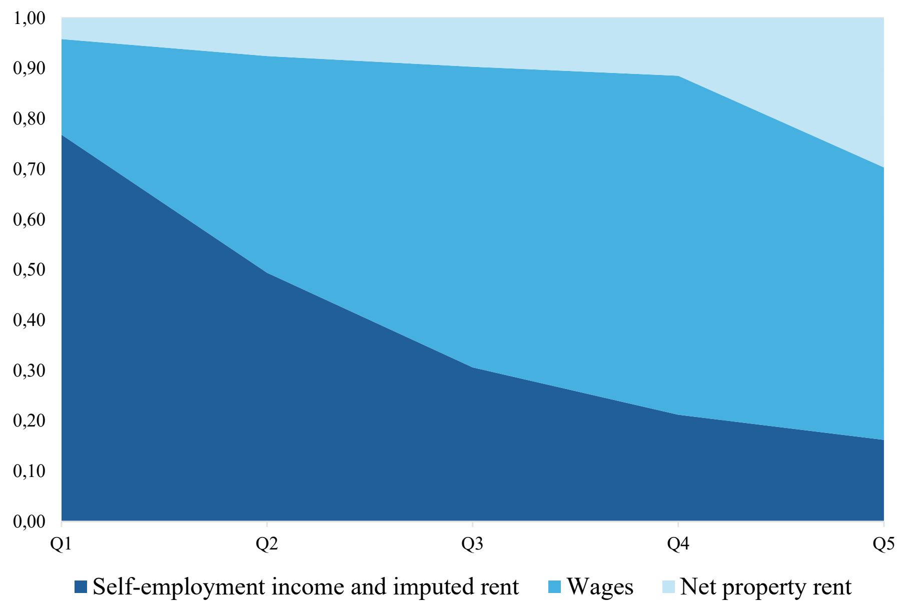
Central Bank of Chile economists Alfonso Barrero, César Ferreiro, Mario Giarda, Claudia Henríquez and Federico Huneeus, together with Manuel Taboada, a graduate student at Columbia University, in their paper "Emparejamiento de datos provenientes de Registros Administrativos y Encuesta de Hogares en Chile," (Matching data from Administrative Records and Household Survey in Chile) address this challenge for the case of Chile. For this purpose, the authors apply a method that combines different sources, either sample- or population-based, to construct distributional statistics with a broad coverage for the different income components, while preserving sociodemographic information of Chilean households.

This paper uses administrative data from the Chilean IRS (SII in Spanish), which are a reliable source of income obtained from labor and corporate capital structures. However, this information does not cover the informal market and does not have sufficient demographic variables. The administrative database of the Chilean Civil Registry (Registro Civil in Spanish) has more demographic information, and although it identifies the marital status of individuals, it does not provide information that would allow identifying all the households' members. Finally, the National Socioeconomic Characterization Survey (Casen in Spanish) does have information on demographics, household structure and income, but it has less coverage, especially in the higher-income segment. With this in mind, the authors apply a cross-checking methodology to aggregate the relevant information from the different sources, which enables them to construct distributive household statistics that are consistent with National Accounts.

This study constructs the distribution for Primary Income, which is composed of: (i) wages, (ii) self-employment income and imputed rent, and (iii) net property income. The results obtained by examining the bases separately highlight the importance of combining them; for example, the incomes of the first quintiles are underestimated in the administrative records compared to the Survey. The opposite is true for the two highest income quintiles. When considering the combined basis, the results (Figure 3) show that self-employment income and imputed rent are the main components for the lowest income quintile. Meanwhile, wages represent the main source of income for the middle part of the distribution. Finally, net property income would be relevant for the highest income quintile.

Soon, it is expected that this methodology will be used to estimate the distribution of other macroeconomic variables such as disposable income, consumption and household savings

Figure 3: Primary Income distribution



Notes: The figure displays, for each income quintile, the fraction of Primary Income coming from Self-employment income and imputed rent, Wages and Net property rent.

Publications in academic journals by researchers of the Central Bank of Chile

Albagli, E., Arias, A. & Kirchner, M. (2024). "Collective Savings Pension Policy in an Economy with Heterogeneity and Informality". *Estudios de Economía*, 51(2): 325-381.

Albagli, E., Canales, M., Syverson, C., Tapia, M., & Wlasiuk, J. (2025). "Productivity Growth and Workers' Job Transitions: Evidence from Census Microdata". *The Economic Journal*, 135(666), 405-429.

Albagli, E., Hellwig, C., & Tsyvinski, A. (2024). "Information aggregation with asymmetric asset payoffs". *The Journal of Finance,* 79(4), 2715-2758.

Andreasen, E., Bauducco, S., & Dardati, E. (2024). "Capital controls and firm performance". *Journal of International Economics*, 150, 103897.

Bastos, P., & Sánchez, C. (2024). "The effects of educated leaders on policy and politics: Quasi-experimental evidence from Brazil". *Latin American Economic Review,* 33.

Beltrán, F., Durand, L., González-Frugone, M., & Moreno, J. (2024). "A preliminary assessment of the economic effects of energy and climate in Chile". *Latin American Journal of Central Banking*, 100146.

Calani, M., Margaretic, P., & Moreno, D. (2025). "Navigating trade uncertainty: The role of trade financing and the spillover effects". *Journal of International Economics*, 153, 104043.

Canales, M. & López-Martín, B. (2024). "Exchange Rates, Uncertainty, and Price-Setting: Evidence from CPI Microdata". *Economic Modelling,* 139, 106762.

Carreño, J. G., & Uras, B. (2024). "Macro welfare effects of flexible labor contracts". *European Economic Review*, 161, 104633.

Castro, J. F., & Villacorta, L. (2024). "Too Hard, Too Easy, or Just Right: The Productivity of Schooling and the Match between Child Skill and School Complexity". *The World Bank Economic Review,* lhae013, https://doi.org/10.1093/wber/lhae013.

Ceballos, L., Christensen, J. H., & Romero, D. (2025). "A post-pandemic new normal for interest rates in emerging bond markets? Evidence from Chile". *Journal of International Money and Finance*, 150, 103234.

Cifuentes, R., Gómez, T., & Jara, A. (2024). "Capital Ratios and the Weighted Average Cost of Capital: Evidence from Chilean Banks". *Latin American Journal of Central Banking*, 100143.

Cobas A, Maziotis A, Villegas A (2024). "Measurement of efficiency and its drivers in the Chilean banking industry". *PLoS ONE* 19(5): e0300019. https://doi.org/10.1371/journal.pone.0300019.

Cox, L., Müller, G. J., Pasten, E., Schoenle, R., & Weber, M. (2024). "Big G". *Journal of Political Economy*, 132(10), 3260-3297.

De Gregorio, J., García, P., Luttini, E. E., & Rojas, M. (2024). "From Dominant to Producer Currency Pricing: Dynamics of Chilean Exports". *Journal of International Economics,* 149, 103934.

García, B., & Guerra-Salas, J. (*Forthcoming*). "On the Response of Inflation and Monetary Policy to an Immigration Shock". *Journal of Human Capital.*

García, B., & Skaperdas, A. (*Forthcoming*). "Central Bank Independence at Low Interest Rates". *Journal of Money, Credit, and Banking*.

Huneeus, F., & Rogerson, R. (2024). "Heterogeneous paths of industrialization". *Review of Economic Studies*, 91(3), 1746-1774.

Madeira, C. (2024), "The impact of macroprudential policies on industrial growth". *Journal of International Money and Finance*, 2024, 145, 103106.

Romero, D. (2025). "Domestic linkages and the transmission of commodity price shocks". *Journal of International Economics*, 153, 104041.

Latest working papers of the Central Bank of Chile

Number	Title	Authors	Date
1039	The Effects of Educated Leaders on Policy and Politics: Quasi-Experimental Evidence from Brazil	Paulo Bastos , Cristián Sánchez	March 2025
1038	Equilibrium Consequences of Vouchers Under Simultaneous Extensive and Intensive Margins Competition	Cristián Sánchez	March 2025
1037	Dinámicas del Mercado Laboral Formal en Chile: Evidencia desde los Microdatos	Roberto Gillmore, Gustavo González, Nicolás Rivera	March 2025
1036	Micro-Evidence on the Consumption Impact of Income-Support Policies During COVID-19	Metodij Hadzi-Vaskov, Emiliano Luttini, Luca Antonio Ricci	March 2025
1035	Crisis Credit, Employment Protection, Indebtedness, and Risk	Federico Huneeus, Joseph Kaboski, Mauricio Larrain, Sergio L. Schmukler, Mario Vera	December 2024
1034	Emparejamiento de datos provenientes de Registros Administrativos y Encuesta de Hogares en Chile	Alfonso Barrero, César Ferreiro, Mario Giarda, Claudia Henríquez, Federico Huneeus, Manuel Taboada	December 2024
1033	Market Size in Pricing Problems on Multi-sided Matching Platforms	Jorge Arenas	December 2024
1032	Financiamiento de corto plazo de las empresas chilenas	Jorge Fernández B., Francisco Vásquez L.	December 2024
1031	International Trade Finance and Learning Dynamics	David Kohn, Emiliano Luttini, Michal Szkup, Shengxing Zhang	November 2024
1030	Climate change's impact on real estate prices in Chile	Karla Hernández, Facundo Luna, Carlos Madeira	November 2024
1029	Una mirada a la evidencia internacional en la emisión de bonos digitales	Valeria García, Leonardo Luna	November 2024
1028	Climbing the (in)formality job ladder: Determinants and Dynamics of Labour Informality in Peru	Tomás Opazo	November 2024
1027	Navigating trade uncertainty: The role of trade financing and the spillover effects	Mauricio Calani, Paula Margaretic, David Moreno	November 2024
1026	The Incidence of Distortions	David Atkin, Baptiste Bernadac, Dave Donaldson, Tishara Garg, Federico Huneeus	October 2024
1025	Strike while the Iron is Hot - Optimal Monetary Policy with a Nonlinear Phillips Curve	Peter Karadi, Anton Nakov, Galo Nuño, Ernesto Pastén, Dominik Thaler	October 2024

1024	Optimal Monetary and Fiscal Policies in Disaggregated Economies	Lydia Cox, Jiacheng Feng, Gernot Muller, Ernesto Pastén, Raphael Schoenle, Michael Weber	October 2024
1023	Modelling high frequency non-financial big time series with an application to jobless claims in Chile	Antoni Espasa, Guillermo Carlomagno	October 2024
1022	Aggregating Distortions in Networks with Multi-Product Firms	Yasutaka Koike-Mori, Antonio Martner	September 2024
1021	Análisis de redes aplicado al sistema de pagos de alto valor del BCCh	Álvaro González, Carmen López, María José Meléndez	August 2024
1020	Financial advisory firms, asset reallocation and price pressure in the FOREX market	Francisco Pinto-Avalos, Michael Bowe, Stuart Hyde	August 2024
940*	Overborrowing and Systematic Externalities in the Business Cycle Under Imperfect Information (Revisado)	Juan Herreño, Carlos Rondón-Moreno	August 2024
1019	Through Drought and Flood: the past, present and future of Climate Migration	Elias Albagli, Pablo García, Gonzalo García-Trujillo, María Antonia Yung	August 2024
1018	Supply Chain Uncertainty and Diversification	Ignacia Cuevas, Thomas Bourany, Gustavo González	June 2024
1017	Is the Information Channel of Monetary Policy Alive in Emerging Markets?	Mariana García-Schmidt	June 2024
1016	The Portfolio Choice Channel of Wealth Inequality	Mauricio Calani, Lucas Rosso	June 2024
1015	Fiscal Consolidations in Commodity-Exporting Countries: A DSGE Perspective	Manuel González-Astudillo, Juan Guerra-Salas, Avi Lipton	June 2024
1014	Accounting for Nature in Economic Models	Nicoletta Batini , Luigi Durand	May 2024
1013	Transmission Mechanisms in HANK: an Application to Chile	Benjamín García, Mario Giarda, Carlos Lizama, Ignacio Rojas	May 2024
1012	Cyclical wage premia in the informal labour market: Persistent and downwardly rigid	Daniel Guzman	May 2024
1011	Macro Implications of Inequality-driven Political Polarization	Álvaro Aguirre	May 2024
1010	Firm Shocks, Workers Earnings and the Extensive Margin	Álvaro Castillo, Ana Sofía León, Antonio Martner, Matías Tapia	March 2024
1009	Trade Policy and Reallocation: Multinational vs. Single-Country Linkages in the Tire Industry	Brian Pustilnik	March 2024
1008	The finances of Chilean households during the pandemic: an assessment from the 2021 Household Financial Survey	Enzo Cerletti, Magdalena Cortina, Alejandra Inzunza, Felipe Martínez, Patricio Toro	March 2024