MACROECONOMIC IMPLICATIONS OF PENSION FUNDS AND CAPITAL MARKETS[1]

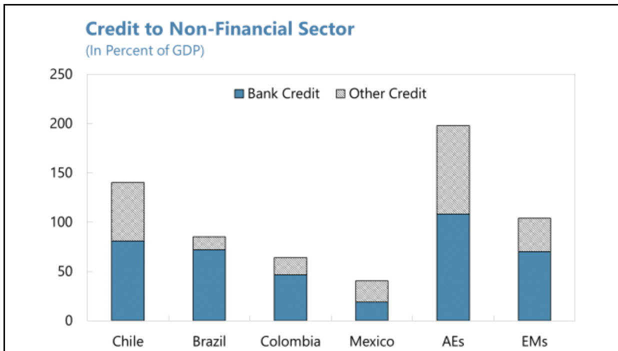
A. Introduction

1. **Chile has one of the deepest and most sophisticated capital markets among emerging market economies.** However, the three rounds of pension withdrawals approved during the COVID-19 pandemic have hurt the liquidity and depth of capital markets. In addition, possible future pension reforms may reshape the role that pension funds have played so far in the financial sector.

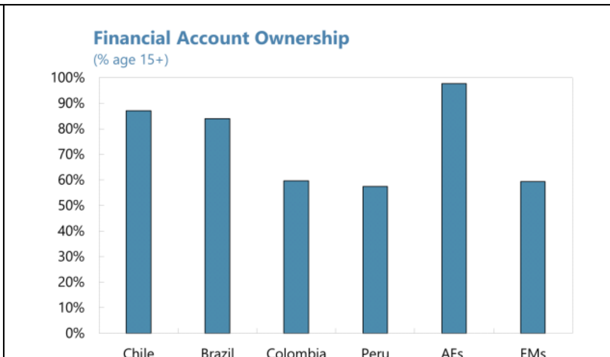
2. **This paper investigates the macroeconomic implications of pension funds and capital markets.** The paper (i) benchmarks Chile's capital markets against comparable countries; (ii) assesses the macroeconomic role pension funds have had in Chile and the impact of pension withdrawals approved in 2020 and 2021; and (iii) offers considerations for pension reform and other avenues that can foster capital market depth.

B. Institutional and Economic Factors Shaping the Development of Capital Markets

3. **Chile has large and well-developed capital markets, ranking high among peer countries.** This is reflected in the depth of the financial system, measured by the ratio of domestic credit to the private sector and individuals' access to financial accounts. Chile has a high level of credit to the non-financial private sector, not only from banks but also from non-bank sectors. Moreover, well-established financial institutions have promoted widespread access to financial services.



Sources: BIS Statistics and IMF staff calculations



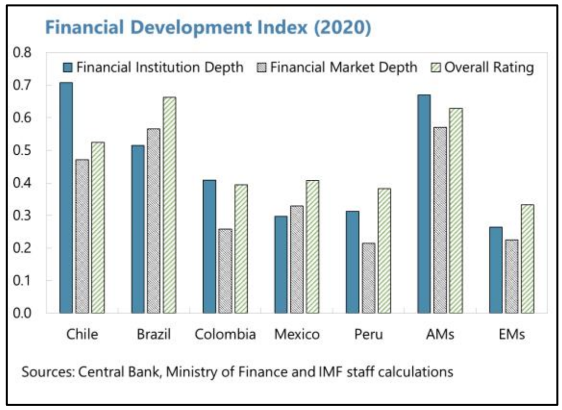
Sources: World Bank Global Findex Database and IMF staff calculations.

4. **The literature identifies a number of factors linked to a country's capital market development.** While there are many possible pathways, the literature broadly agrees on a set of economic and institutional features that are conducive to deep and developed capital markets: (i)

[1] Prepared By Chiara Fratto (WHD) and Junghwan Mok (MCM), with inputs from Antonio Gabriel (former IMF).

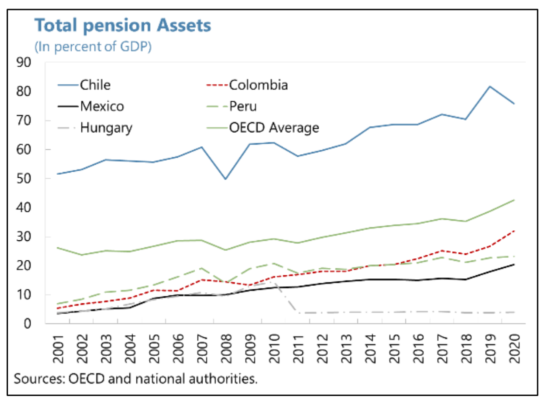
macroeconomic stability, in particular low and stable inflation; (ii) legal frameworks that foster transparency, competition, protection of property rights, bankruptcy regulation, investor protection rights, and sound financial regulation and supervision; (iii) the direct participation of institutional investors in financial markets, including the role of the state and public sector financial institutions; (iv) foreign participation in local currency bond markets; and (v) low cost of capital (Box 1).

5. Across all these dimensions, Chile ranks high among comparable countries, and the growth of financial institutions has been a key driver of financial development. Supported by a coherent and very strong institutional policy framework, Chile has maintained stable macroeconomic conditions over decades. The fully-fledged inflation-targeting monetary policy framework, combined with a floating exchange rate, has kept inflation low and stable. The authorities' continuous efforts to establish a strong regulatory framework are reflected in the active participation of foreign investors in the local market. The recent reform of the Banking Law empowered the Financial Markets Commission (CMF) to supervise and regulate financial institutions, including banks, insurance companies, and securities. The CMF has been proactively designing regulations to enhance financial stability as well as the financial environment, in cooperation with the Central Bank of Chile (BCCh) and the Ministry of Finance (IMF, 2021a). The IMF Financial Development Index shows that Chile has a higher level of financial institution depth than the average in advanced economies (Sahay et al., 2015).[2]



C. The Role of Pension Funds in Chile's Capital Markets

6. Pension funds in Chile are larger than in other countries. Chile's pension funds are important players in capital markets. Relative to the size of the economy, assets held by Chilean private pension funds (AFPs) are significantly larger than in other countries in Latin America and the OECD. Their size steadily increased in the last 20 years. Even after the large pension withdrawals, pension assets amounted to about 70 percent of GDP, well above the OECD average.

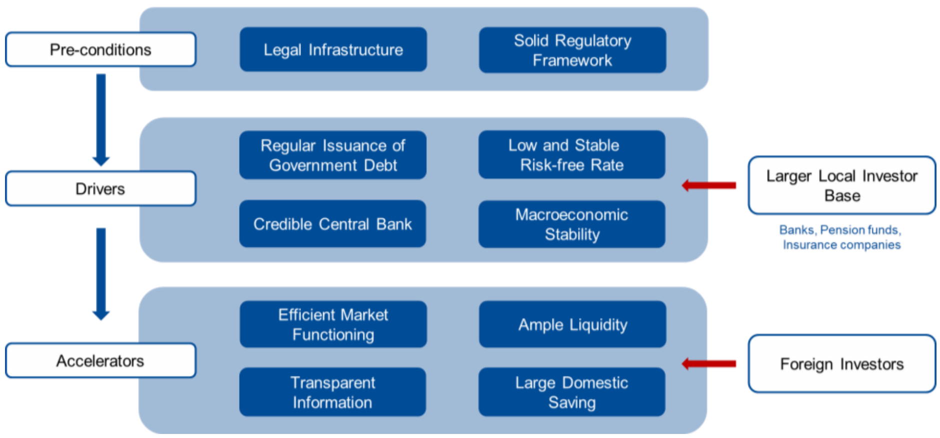


[2] The index reflects the ratio of private-sector credit, pension fund assets, mutual fund assets, and insurance premiums to GDP.

Box 1. Selected Country Experiences in Successful Capital Market Deepening 1/

Strategies for developing capital markets have evolved depending on countries' macro-financial environment. In many cases, a big push for reshaping the financial market structure has come with the need for reform after an economic downturn or financial crisis.

Pathways to Capital Market Development



Korea. In the wake of the Asian Financial Crisis (AFC), the Korean government improved financial infrastructure and promoted advanced financial techniques to enhance the self-adjustment function of prices. This included the establishment of the primary dealer system and the Treasury bond future market, as well as the development of the inter-institutional repo market. Structural reforms, including transparent ownership structures and governance of institutions, led to financial soundness and better international credit standing of financial institutions, which helped to attract foreign investors. The larger inflow of foreign investment and the active investment by the National Pension Service and insurance firms also expanded the depth of the financial market.

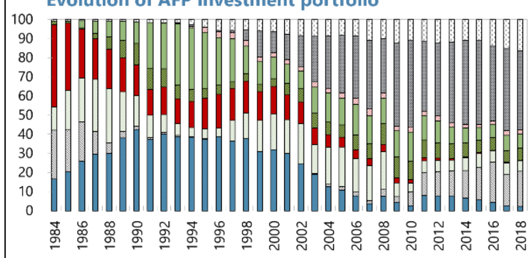
Malaysia. Before the AFC, credit intermediation in Malaysia depended mostly on bank loans, accounting for 81 percent of financing to corporations. To diversify the source of funding, the authorities pushed forward an active agenda to develop an efficient and deep local currency bond market by establishing repo and derivatives markets. In addition, the sizable investment by the public Employees Provident Fund and insurance companies in the domestic market were followed by significant foreign participation.

Poland. The underdeveloped banking system bequeathed by the socialist command society was a big structural challenge in the Polish financial market. Undercapitalization and poor loan portfolios of banks prompted the authorities to set up a program requiring banks to restructure credit portfolios and solve bad loan problems by themselves, not to create a moral hazard problem, while the government provided financial support. The scheme was a success, stabilizing banks and setting a stage for privatization, with foreign investors allowed to participate in the domestic banking sector. A carefully designed privatization process allowed banks time to build resilience to then benefit from the know-how of foreign investors and to develop their in-house advanced technologies.

1/ Based on Demekas and Nerlich (2020), BIS (2020), and Sahay et al. (2015).

7. Pension funds are deemed to have played a key role in the development of capital markets. The establishment of AFPs in Chile is associated with a remarkable increase in aggregate savings. They contributed to lower financing costs, provided a stable source of funding for long-term investment, and acted as shock absorbers in several episodes of capital outflows. Today, they continue to be key players, unparalleled in size when compared to other domestic investors or other countries.

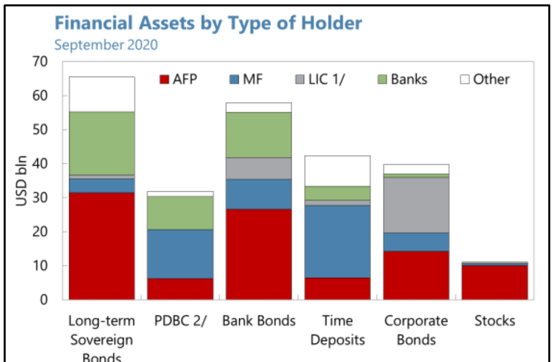
The Investment Strategy of Pension Funds Versus Other Investment Strategies



Source: Superintendencia de Pensiones

8. The progressive relaxation of AFP investment rules facilitated the availability of inexpensive long-term financing in the financial sector (Walker and Lefort, 2002). Since the creation of AFPs in 1981, investment rules have been progressively relaxed and AFPs have been allowed to invest in more asset classes, while ensuring adequate risk management. Initially, AFPs were only allowed to invest in fixed-income instruments. In 1985, investment in equities was allowed up to 30 percent of assets. In 1989 and 1990, AFP investment options were broadened to also include all types of publicly traded shares, mutual funds (MFs), and foreign fixed-income instruments. During the 1990s, investment limits abroad were also gradually relaxed. The reform in 2002 introduced five different types of funds, known as A through E, with varying degrees of exposure to variable-income assets. In 2008, the limits for AFPs to invest abroad were further relaxed, and pension funds were authorized to invest in derivative instruments.[3]

9. AFPs feature prominently in almost all asset classes. AFPs have been the main providers of liquidity for long-term sovereign bonds, bank bonds, corporate bonds, and stocks. Noticeably, AFPs have been by far the major domestic holders of local equities. As such, their role has been instrumental for the size of these markets.

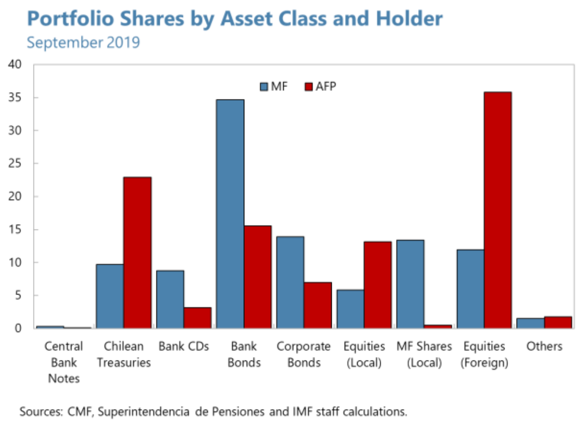


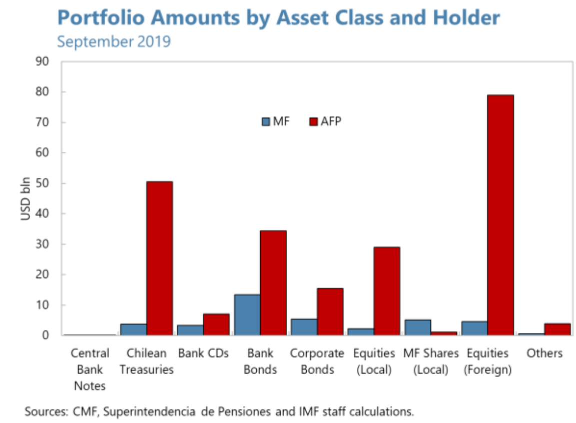
Source: Central Bank of Chile.
1/ Life Insurance Companies. 2/ Pagaré Descontable del Banco Central de Chile.

10. Compared to MFs, AFP investment portfolios tend to hold more equities. AFPs hold about 50 percent of their portfolio in equities, more than double the share of equities held by MFs. In contrast, MFs hold larger shares of corporate and bank bonds compared to AFPs, even though the amounts are much smaller. The investment has been concentrated in natural resources, services, and electricity.[4]

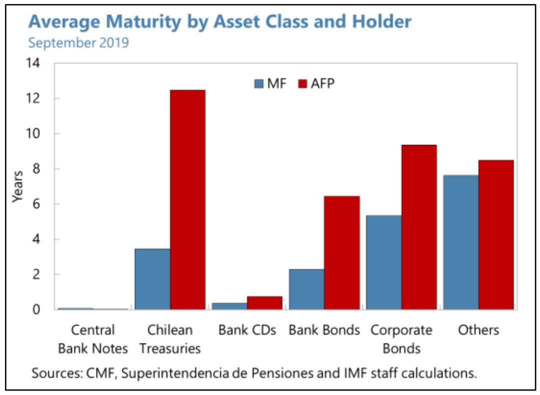
[3] OECD (2011).

[4] Superintendencia de Pensiones (2022).



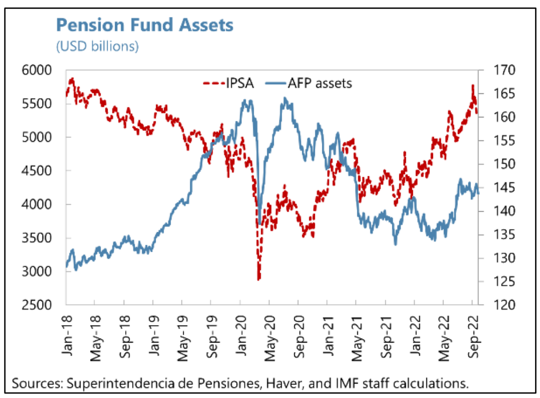


11. AFP investment strategies have favored long-term instruments, but also buy-and-hold. The average maturity of assets held by AFPs is longer than those held by MFs across all asset classes, particularly for sovereign bonds. Moreover, in contrast to AFPs, banks typically invest more short-term, due to regulatory restrictions that require banks to invest more in liquid assets. On the other hand, AFPs tend to buy and hold, hence do not provide much short-term liquidity to capital markets.



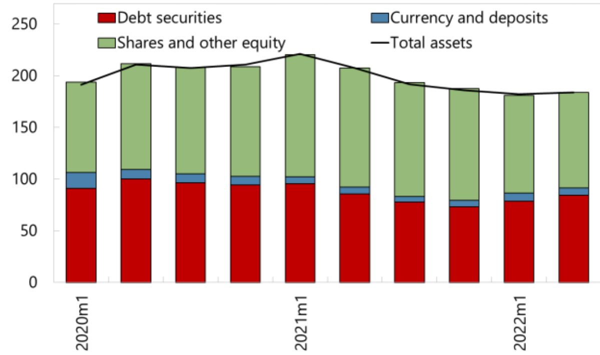
The Impact of Pension Withdrawals

12. After the pension withdrawals, pension fund assets declined significantly. The Chilean Congress approved three rounds of withdrawals (in June 2020, December 2020, and April 2021), which resulted in the withdrawal of more than US$48 billion from pension funds, equivalent to 23 percent of 2020 total assets or nearly 20 percent of 2020 GDP. The recovery of the stock market and the appreciation of the peso that followed after the peak of the COVID-19 crisis generated favorable valuation effects and helped to partly rebuild pension assets.



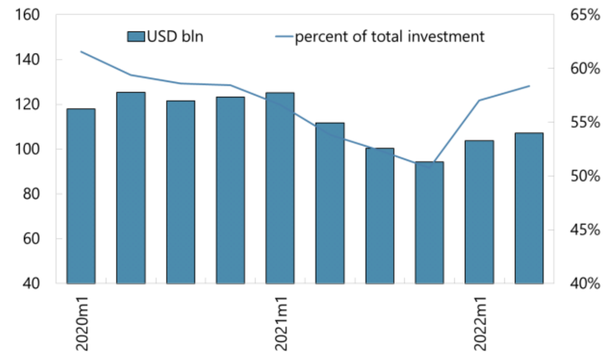
13. Most of the reduction in assets took place in debt securities and currency and deposits. At the time of the pension withdrawals, AFPs were highly liquid, in a context of high uncertainty and excessive fund switching. In addition, the introduction of liquidity facilities by the BCCh allowed the AFPs to carry out a more orderly asset liquidation process during the massive liquidation of assets for the pension withdrawals. Overall, AFPs reduced their domestic exposure, both in USD and as a share of total investment, mostly driven by a reduction in domestic deposits.

Asset Composition
(Billion pesos)



Sources: Superintendencia de Pensiones and IMF staff calculations.

Domestic Investment



Sources: Superintendencia de Pensiones and IMF staff calculations.

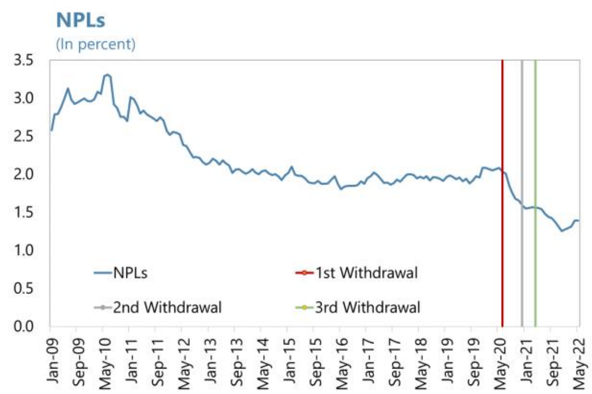
14. As a result of pension withdrawals, households' net financial assets decreased, despite their stable income. Households' gross disposable income remained above pre-pandemic levels, both in nominal terms and as share of GDP, buoyed by ample fiscal transfers. Nevertheless, net financial assets decreased during this period. In particular, pension fund savings went from 77 percent of GDP in 2020Q1 to 63 percent of GDP in 2021Q3.

Households Balance Sheet
(percent of GDP)

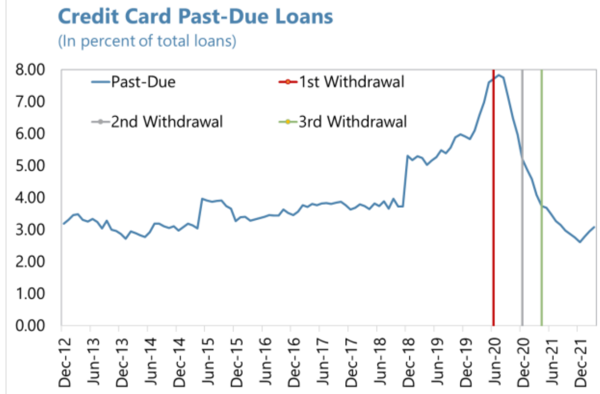
	2020Q1	2021Q3	2022Q2
Outstanding financial asset	188.2	178.8	167.9
Currency and deposits	24.7	36.5	31.9
Shares and other equity	64.4	58.6	56.1
Pension funds	76.8	63.4	59.5
Life insurance entitleme	20.8	18.6	18.5
Outstanding liabilities	51.4	47.3	47.5
Net financial assets	136.8	131.5	120.4
Gross disposable income	15.5	17.8	14.6

Sources: Central Bank of Chile, and IMF staff calculations.

15. Households used part of the pension withdrawals for repaying loans and replenishing cash deposits. A large part of the increased liquidity due to the pension withdrawals was stored in deposit accounts, which increased significantly between 2020Q1 and 2021Q3. However, following the pension withdrawals, households also repaid some of their debt: after spiking during the first months of the COVID-19 crisis, credit card past-due loans decreased below pre-pandemic levels, and non-performing loan rates (NPLs) reached historical lows. In aggregate terms, liquidity that remained in the country was transferred to banks' balance sheets, either via repayment of loans or stored in demand and term deposit accounts.

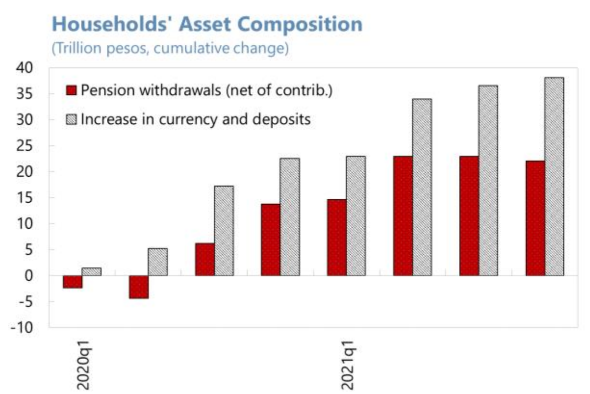


Sources: CMF and CEIC

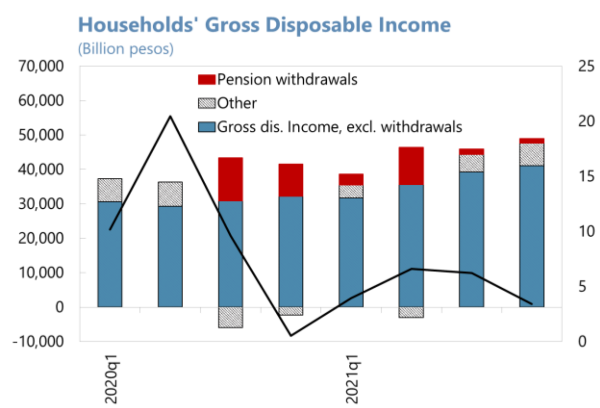


Source: CMF

16. Households displayed a high propensity to consume out of pension withdrawals. The withdrawal from pension funds were coupled with a corresponding increase in currency and deposits. However, the average saving rate decreased significantly in the second half of 2020, in correspondence with the first two withdrawals, despite gross disposable income remaining relatively stable. Households did not substitute mandatory savings with voluntary savings, as the total saving rate declined. The saving rate turned negative in 2022Q3, as households continued to reduce their deposit balances.



Sources: Central Bank of Chile, and IMF staff calculations.



Sources: Central Bank of Chile, and IMF staff calculations.

17. The availability of long-term financing for the government and corporate sectors declined. AFPs have been major buyers of long-term domestic government and corporate bonds, but their role in those markets was diminished by the need to liquidate their assets following pension withdrawals. In 2021, the share of external sovereign debt reached 35 percent, as the government resorted more to external debt to meet financing needs. All these factors have impacted the financing cost for the government and corporates.

18. On the stock market, the impact of pension withdrawals likely depended on the exposure of the company to the risk of pension fund liquidations. Stock prices increased and the stock market rallied since the second half of 2020, given the expected consumption boost from

the COVID-19 related stimulus and the withdrawals. However, the impact of pension withdrawals on equities was likely heterogeneous depending on the exposure to the risk of liquidation of pension fund assets. Hence, stocks in the pension funds' portfolios would be expected to reflect the risk of liquidation in their prices more than stocks not included in pension funds' portfolios, on top of the aggregate effect of withdrawals on the economy. Moreover, the liquidation risk from pension withdrawals would be expected to be directly proportional to the exposure, as measured by the pension fund portfolio holdings relative to the market value of the company.

19. To test this hypothesis, staff estimated a panel regression of stock prices on several indicators, including company-specific exposures to pension funds. To estimate the impact of pension withdrawals on the stock market, staff compared abnormal returns around the period of the approval of the three pension withdrawals for companies exposed to pension funds versus companies not exposed to pension funds. The sample consisted of daily returns for all companies listed in the Santiago Stock Exchange between 2018 and 2022. Abnormal returns were estimated assuming a firm-specific beta coefficient and a common elasticity of the returns to the pension fund exposure.

$$r_{i,t} = \beta_{i,t} r_t + \gamma PF_{i,t-31} + \delta_t + \eta_t PF_{i,t-31} + e_{it},$$

Where:

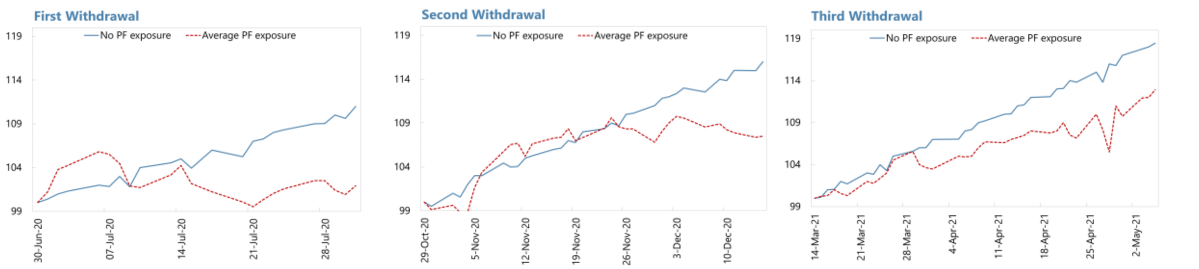
- $r_{i,t}$ are daily returns for company i, and r_t are average daily returns for the Santiago Stock Exchange;
- $PF_{i,t-31}$ measures the exposure of company i to pension funds as the share of stocks held on pension fund portfolios the month earlier;
- δ_t are daily fixed effects in a 30-day window around the approval of the three pension withdrawals;
- η_t are daily fixed effects interacted with the exposure to pension funds; and
- e_{it} is an error term.

20. The analysis captures the impact withdrawals on the most affected companies relative to the rest of the stock market rather than general equilibrium effects.[5] Moreover, given that the withdrawals were discussed publicly at length before the approval in Congress, it is hard to pinpoint exactly the time in which the news of pension withdrawals was reflected in stock prices. However, the identification strategy does not rely on timing, like event studies do, but on the

[5] Many confounding factors pose a challenge to the identification of the full effect that the pension withdrawals had on the economy, including the presence of two shocks, the 2019 social unrest and the pandemic, which hit the country in close succession. Moreover, the period in which pension withdrawals were approved by Congress is characterized by the deployment of fiscal stimulus and monetary policy easing, amid uncertainty around the evolution of the pandemic.

assumption that companies exposed to pension funds and those not exposed to pension funds shared similar features and were affected by other policies and economic shocks in the same way during this period, differing only on their pension fund exposure.

Stock Market Returns of Companies with and without Exposure to Pension Funds

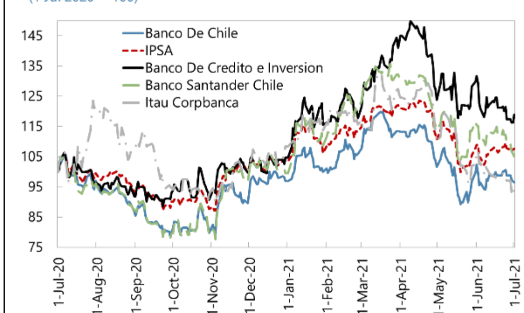


Sources: Fund staff calculations and daily returns of companies listed in the Santiago Stock Exchange.
Note: The figures report the values for δt and ηt for a firm with the average exposure to AFPs. Normalized to 100 at the beginning of the 30-day window.

21. Companies exposed to pension funds saw a larger decrease in their stock prices due to the expectation of liquidation of pension fund portfolio holdings. On average, movements in the stock market were not unusually large, either negative or positive. However, stocks held by pension funds performed worse than stocks not held by pension funds, which suggest an increased cost of capital and reduced liquidity for those companies relative to the rest of the stock market. The negative impact of the pension withdrawals seemed also proportional to the exposure to the pension funds: restricting the sample to only companies on the pension fund portfolios, companies with more exposure experienced larger declines in their stock values than companies with less exposure.

22. The impact on banks' stocks seemed muted. The pension funds invested in all major banks in Chile. There is no clear evidence of negative performance of their stock prices when compared with the aggregate stock market index, in contrast to the experience of other companies exposed to pension funds. As a matter of fact, while pension funds were liquidating bank stocks and bonds to accommodate the pension withdrawals, banks also saw increased funding via increased deposits. Moreover, the BCCh provided extraordinary liquidity facilities, reducing the need for banks to resort to the wholesale market. As a result, the impact of pension withdrawals on banks' availability of liquidity was muted. However, banks shifted the type of liabilities to more short-term funding, cut long-term lending, and started lending more at variable rates.

Stock Price Index
(1 Jul 2020 = 100)



Sources: Refinitiv and IMF staff calculations.

23. The performance of pension funds as a natural offset of non-resident capital outflows weakened. Pension fund investment rules dictate strict limits on foreign investment. As a result, in

response to exchange rate movements, pension funds need to rebalance their portfolios. Hence, pension funds act as shock absorbers, and this function is proportional to the transaction volume that needs to take place, and ultimately the size of pension fund assets. As the size of pension fund assets declined with the withdrawals, the performance of pension funds as natural shock absorbers also weakened (IMF, 2021b).

24. The speed of adjustment was also important. Congress approved the withdrawal of about 10 percent of the outstanding pension fund assets in each of the episodes. The timely fulfillment of the withdrawal requests required AFPs to quickly liquidate large volumes of assets. While the BCCh appropriately intervened to provide liquidity and avoid disruptions, the withdrawals required a fast adjustment to the pension fund portfolios with consequences for their returns.

D. Possible Avenues to Further Deepen Capital Markets

25. More pension withdrawals should be avoided. Additional pension withdrawals would further weaken the pension system, raise fiscal costs, and undermine the depth of the domestic capital market its capacity to absorb shocks. Further withdrawals would pose a systemic liquidity risk, especially given the uncertain environment and the decline in the number of buyers for long-term assets.

26. Pension reform should first and foremost focus on improving pension outcomes. Pension reform remains a priority to deliver on better pensions and redistribution goals. While the introduction of the universal basic pension has virtually eliminated risks of old-age poverty, addressing the low contribution rate, weak contribution density, and a retirement age that has not kept up with life expectancy remains critical to improve inadequate replacement rates and pension outcomes (IMF, 2021a).

27. Pension reform should also consider the capital market and macroeconomic implications. Pension reform should seek to rapidly replenish savings and foster sound investment. International experience suggests that individual capitalization accounts provide stronger incentives to save than notional accounts or pay-as-you-go systems, and are less likely to result in fiscal imbalances. Sound investment rules, adequate regulation on risk and asset management, and a level playing field among investment managers (either public or private) are also key to foster an efficient allocation of savings and avoid excessive risk taking.

28. There is scope to improve the current pension system. In particular, pension regulations and investment options can further promote financial stability and long-term investment. The risk-based supervision model of the pension supervisor can be enhanced, including by streamlining compliance-based oversight to allow the pension supervisor to focus on riskiest entities and activities (IMF, 2021b, and World Bank, 2021).

29. Other avenues that would also support the development of capital markets include:

- **Establishing a repo market.** The 2021 FSAP recommended to set appropriate risk/reward and regulatory incentives to develop this market.[6] This would alleviate the BCCh's burden to backstop banks' liquidity needs and support the efficient allocation of capital in both financial and non-financial firms. The pricing information that the repo market creates is crucial for a primary dealer system. These reforms will increase liquidity in the market and might have secondary positive effects on the depth of the capital markets.

- **Establishing a Primary Dealers System.** Given that pension funds have been the largest buyers of sovereign bonds, their drop in size has made a dent on market liquidity. A system of primary dealers for sovereign bonds could help fill the gap, while enhancing transparency and increasing financial resilience. It would require the government's guarantee of the availability of sovereign bonds, the development of the electronic platform, and clear transparency principles.

- **Fostering the internationalization of the Chilean peso.** Streamlining administrative process and removing obstacles for foreign investors could expediate the broader use of the Chilean peso in the financial market.[7] The internalization of the Chilean peso is another avenue to attract more investors, promote their operation in Chile, and mitigate exchange rate risk for bond issuers.

- **Supporting the depth and liquidity of the equity market.** Compared to other emerging market economies, IPO numbers in Chile are low due to the high reliance on bank lending. The high cost of equity due to the illiquidity and ownership concentration leave institutional investors with limited investment options,[8] leading to less competition and fewer opportunities for exit from the investment. Incorporating flexibility and proportionality in the legal framework would attract smaller, growing firms to the equity market. The authorities could also consider relaxing some investment restrictions on institutional investors, especially pension funds,[9] while safeguarding consumer protection and financial stability. Promoting venture investment, crowdfunding,[10], or minibonds could also attract investors, especially retail investors, to the capital market.

- **Promoting financial inclusion by harnessing the benefits from fintech.** Financial innovation can enhance access to financial services, thus broadening the scope of financial markets. The

[6] A draft Financial Market Resilience Bill, recently submitted to Congress, aims to strengthen the legal framework of repo operations. Also, the Financial Stability Council (CEF) agreed to activate the Repo group to identify obstacles that have impeded the development of the repo market.

[7] The draft Resilience Bill also includes a simplified procedure for obtaining a Single Tax ID for financial operations in Chilean peso.

[8] IMF (2016).

[9] OECD (2019).

[10] A Fintech Law, approved by Congress in October 2022, established the legal and regulatory framework for crowdfunding. See details in Annex VII of the Staff Report for the 2022 Article IV Consultation.

recently approved Fintech Law[11] has established the legal framework applicable to FinTech companies in Chile. As the Law is implemented, the competition between new Fintech companies and incumbent financial institutions can enhance the efficiency of the financial market and attract more capital to the Chilean economy.

E. Conclusion

30. Pension funds are unique players in Chilean capital markets, providing liquidity to sectors where other players are more reliant to invest. Pension fund investment strategies differ from that of other players, which has translated into large investment shares in key markets, most notably long-term financing and the corporate sector. While the experience from other countries indicates that there are many possible pathways for developing capital markets, pension funds serve an important role in Chile, which is not easily replaced by other investors. Hence, it will remain important to monitor the availability of liquidity in key markets.

31. Pension withdrawals reduced pension benefits, lowered savings, and hurt the depth and liquidity of the domestic capital market. Pension withdrawals resulted in lower pensions and higher fiscal costs, heightening the urgency of pension reform. The withdrawals also had wide ranging macroeconomic consequences. Households displayed a large propensity to consume, which favored a very fast recovery from the pandemic, but also worsened the external position and increased inflationary pressures. Moreover, the withdrawals weakened capital markets and reduced the availability of long-term finance.

32. An active agenda should seek to further deepen capital markets. Pension reform should focus first and foremost on improving pension outcomes. When considering alternatives, pension reform should also be mindful of the capital market and macroeconomic implications, including the timely need to replenish savings and channel resources to productive investment. Other avenues for deepening capital markets, complementing the role of pension funds, should also be considered.

[11] See Annex VII of the Staff Report for the 2022 Article IV Consultation.

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