



BOX V.1:

Macroeconomic impact of long-term interest rate hikes

Long-term interest rates have a weak relationship with monetary policy because they are exposed to a wide range of forces derived from global factors, particularities in the markets in which debt instruments are traded, and various elements that affect the longer-term economic outlook. For this reason, the macroeconomic impact of a rise in the long-term interest rate depends crucially on the reasons behind the increase^{1/}. On the one hand, there are “positive” factors, such as an improvement in growth prospects. In this situation, the rate increase will reflect a better economic outlook and, therefore, will give a positive signal to the markets that outweighs the impact of a higher financing cost. On the other hand, there are “negative” factors, such as increased risk. Here, the rate increase will reflect a less auspicious outlook and therefore will give a negative signal to the markets, amplifying the impact of a higher financing cost^{2/}.

In Chile, the main benchmark long-term interest rate —measured by the BTP-10 rate— ha acumulado un alza del orden de 300 puntos base (pb) durante el 2021, casi el doble que sus pares externos (160pb en el mismo lapso) (grafico II.1). The increases in BTP-10 rates are significant not only in comparison to the latter, but also against its own recent history, reaching levels not seen in more than a decade in a few months (figure V.9). A structural decomposition of the increase in long-term rates shows that the main factor behind it has been the greater perception of risk, followed by better growth prospects for this year. This assessment has important implications for the expected evolution of investment in the central projection scenario. Actually, it helps to explain that by 2022 this Report anticipates a contraction of this component of private spending and a marginal expansion for 2023.

FIGURE V.9 LONG-TERM INTEREST RATE (BTP-10)
(percent)



Source: Central Bank of Chile.

^{1/} See box II.2 of the [September 2021 MP Report](#).

^{2/} These risks include uncertainty about future rates, risks of depreciation and inflation, the possibility of the debt being downgraded or the issuer going into default, as well as liquidity risks.

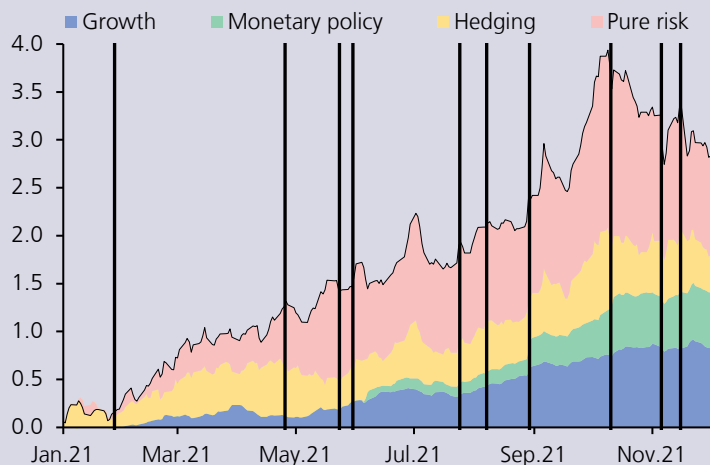


The causes of the increase in the long-term interest rate

The recent dynamics of financial and real variables have been determined by two main factors. On the one hand, a strong demand impulse linked to massive withdrawals of pension savings and fiscal transfers, which has raised inflation expectations and risks and, consequently, prompted a monetary policy reaction. On the other hand, a significant increase in risk premiums largely associated with pension fund withdrawals and the uncertainty related to the discussion on structural changes. Thus, interest rates would be rising due to both growth surprises and higher risk perceptions (see box I.1 of the [FSR for the second half of 2021](#)).

A structural decomposition of the long-term interest rate^{3/} shows that of the 300bp increase in 2021 to date, the main factor has been higher risk perception (“pure risk”), which explains about a third of the increase. Slightly behind is the factor related to growth expectations, which explains just under 90bp of the increase. The change in monetary policy expectations plays a smaller role, explaining 55bp of the increase (figure V.10). A second risk factor, different from pure risk, which is called hedging, reflects changes in the risk outlook between fixed-income and equity assets, so that in the event of a positive hedging shock, agents would move from fixed income to equities, putting upward pressure on interest rates. At the current juncture, much of the hedging risk could be associated with higher inflation expectations, which explains almost 50bp more of the increase in interest rates^{4/}. Therefore, all risk factors combined (pure risk plus hedging), explain half of the increase in the long-term interest rate since the beginning of the year.

FIGURE V.10 STRUCTURAL DECOMPOSITION OF 10-YEAR ZERO RATE (1) (2) (3)
(difference from December 2020, percentage points)



(1) Structural decomposition based on [Cieslak y Pang \(2021\)](#). (2) Decomposition based on the 10-year (SPC) zero coupon. (3) Vertical lines from left to right indicate the following events occurred during 2021: begins discussion of third pension fund withdrawal (Jan. 29); Constitutional Tribunal ruling on third pension fund withdrawal (Apr. 28); government proposal of “common minimums” (May 26); introduction of bills on 100% withdrawal of pension savings (Jun. 2); scheduled start of discussion of bill on fourth pension-fund withdrawal (Jul. 27); announced IFE and employment subsidy (Aug. 10), publication of September MP Report (Sep. 1), October monetary policy meeting (Oct. 13), rejection by the Senate of fourth withdrawal (Nov. 8); elections (Nov. 18).
Source: Central Bank of Chile based on RiskAmerica.

^{3/} See [Cieslak y Pang \(2021\)](#) and box II.2 of the September 2021 MP Report.

^{4/} [Cieslak y Pang \(2021\)](#) show that hedging risk is generally procyclical with inflation.



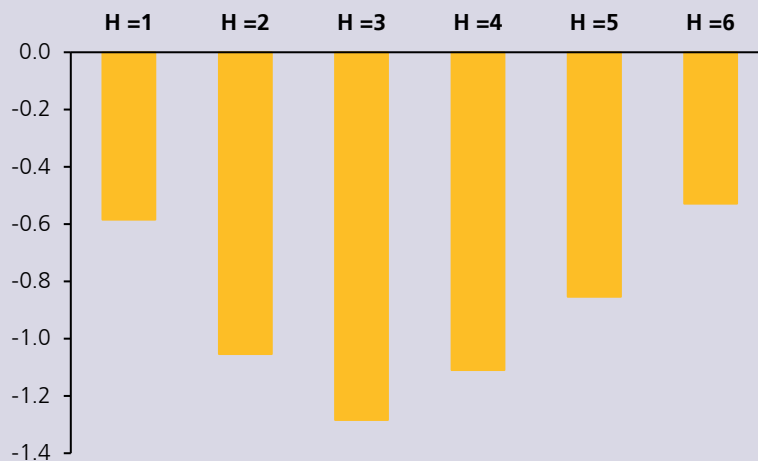
It is worth noting that risk factors, particularly pure risk, have played an even more significant role in the long-rate increase as of October 12: of the nearly 400bp increase in the long-term rate, half was due to pure risk premiums alone. While this premium has been declining recently, the lags of risk premiums on real variables suggest that the future evolution of investment will still respond to the risk premium peak observed in October.

Effects of higher risk premiums on investment

Bond interest rates are transmitted to the lending rates offered by banks through various mechanisms (see [Berstein y Fuentes, 2004](#); [Pedersen, 2016](#), among others), so that higher long-term interest rates will imply higher financing costs for investment projects.

To quantify the macroeconomic effect of a shock where risk increases, it is necessary to isolate it from other developments that are occurring in the economy at the same time. In addition, it must be considered that an increase in risk has effects on other variables, such as consumption and inflation, and that they also affect investment. An empirical model used^{5/} shows that a pure risk shock of the characteristics observed since early this year results in a contraction of gross fixed capital formation between 1% and 1.5% after four quarters (figure V.11). These results are opposite to those that would occur if the same increase in the 10-year rate were caused by better growth prospects. The same model indicates that in the event of a shock in growth expectations that increases the two-year rate by 100 bp, investment would increase by around 2%, which would be diluted as time passed (figure V.12).

FIGURE V.11 RESPONSE OF INVESTMENT TO A 10-BASIS-POINT PURE RISK SHOCK
(percentage points)



(*) Impulse-response function of a BVAR model with zero and sign constraints, calibrated with the pure risk shocks documented by [Cieslak y Pang \(2021\)](#). Horizon H in quarters.
Source: Central Bank of Chile.

^{5/} A semi-structural Bayesian self-regressive vector model (BVAR) estimation based on the strategy proposed by [Korobilis \(2020\)](#) is considered. This includes a large number of macroeconomic and financial variables, together with a strategy to identify the shocks that affect them.



FIGURE V.12 RESPONSE OF INVESTMENT TO PRODUCTIVITY SHOCK THAT INCREASES 2-YEAR RATE BY 100 BASIS POINTS (*)
(percentage points)



(*) Impulse-response function of a BVAR model with zero and sign constraints, calibrated with the pure risk shocks documented by [Cieslak y Pang \(2021\)](#). Horizon H in quarters.
Source: Central Bank of Chile.

Conclusions

The central scenario of this Report assumes that investment will fall by 2.2% in 2022, accounting for the effect that the deterioration of financial conditions has on this component of demand. This box shows that the impact of increases in long-term interest rates on investment depends on whether they originate from greater uncertainty or better growth prospects. It also points out that the uncertainty factors that are currently affecting the Chilean economy—in the political and legislative arenas—explain a substantial portion of the rate hike this year. A scenario in which persistent uncertainty causes a more negative effect than anticipated on investment cannot be ruled out. Meanwhile, in a scenario where idiosyncratic uncertainty is reduced, the dynamism of investment would increase in the medium term.