Online Appendix for Financial Shocks in Currency Markets: Evidence from UIP Premia

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A Narratives for the Financial Shock Episodes

A.1 Chile

A.1.1 June-August 2001

> During the present year, the peso has depreciated substantially against the dollar. Thus, from December 2000 to mid-August, the observed exchange rate depreciated by 20%. This was mainly due to economic instability in the regions countries (Argentina and, to a lesser degree, Brazil) and the drop in the terms of trade, particularly the depressed price for copper. Thus, the nominal exchange rate has been the main adjustment variable in dealing with recent turbulence abroad, which is exactly what is to be expected when using a free floating exchange rate regime such as the one operating in Chile since 1999. (Central Bank of Chile, 2001, p. 26)

> The announcement of these measures, the improved availability of funds to relieve Argentinas situation, and a slight improvement in the price of copper combined to reduce the observed exchange rate, which fell even further when the Central Bank effectively carried out some operations on the exchange market. Thus, today the exchange rate stands at 665 pesos per dollar, the result of almost 16% depreciation so far this year. (Central Bank of Chile, 2001, p. 27)

> The substantial weakening of the peso during this period disturbed financial markets. The speed and quick succession of movements that led to a decline in conditions abroad exacerbated peso volatility and depreciation, despite the strength of Chiles economy and the coherence of its macroeconomic policies. This led the Central Bank Board to adopt measures to improve the stability of the countrys financial markets. One way of achieving this goal has been by providing securities that satisfy higher demand for instruments for hedging exchange risk. Thus, on 6 July, the Bank announced its decision to auction around US$1 billion in additional PRDs during the second half and extend maturities for this type of instrument by offering an early swap option. Moreover, on 16 August, the Central Banks Board decided to raise the amount of PRD auctions to US$2 billion, over two and four years. As a result of these operations, stock of PRDs by the end of 2001 could reach up to US$4.5 billion. As another way of stabilizing the exchange rate market, the Central Bank decided to use up to US$2 billion of its international reserves to finance currency sales on the exchange market through to years end. (Central Bank of Chile, 2001, p. 26)

> At the end of last year, Argentinas sovereign spread stood at about 800 basis points and the copper price was over 80 cents per pound. While the latter remained relatively stable until mid-March, the perception of risk for the Argentine economy improved temporarily, reducing its sovereign spread by almost 150 basis points toward the end of January, before deteriorating again to reach from 900 to 1000 basis points during the second half of March. The observed exchange

rate reflected trends in these variables for the period, appreciating at first during January, then returning to levels from earlier in the year in early March, when it reached around 3% during March. From mid-March to mid-June the copper price fluctuated between 75 and 80 cents per pound, while Argentinas sovereign spread continued to fluctuate until late June around levels similar to March. The peso, however, continued to devalue against the dollar, driven mainly by weaker economic activity and domestic expenditure. Overall, toward the end of the first half of the year the exchange rate had depreciated by almost 10%. (Central Bank of Chile, 2001, p. 26)

Finally, the limited passthrough of depreciation to inflation is not typical of Chile alone. This has also occurred in other economies with similar exchange rate and monetary stances. The floating exchange rate, in effect since 1999, was specifically designed to allow the exchange rate, freely determined by the market, to be the correction variable during the periods of turbulence in the financial system or terms of trade that may affect a small, open economy. The credibility resulting from achieving this target provides the economy with a nominal anchor and expectations about inflation in recent months reveal that exchange rate depreciation has not significantly changed this. (Central Bank of Chile, 2001, p. 9)

Among the first, uncertainty associated with emerging economies stands out. Although most of the negative scenario considered in previous reports has taken shape during the second and third quarters, it is clear that the situation could worsen further. This would probably bring with it further, temporary peso depreciation. Recent peso depreciation timing and impact on inflation can only be generally estimated, adding degrees of uncertainty to those already affecting the behavior of the exchange rate. (Central Bank of Chile, 2001, p. 11)

The nominalization of the monetary policy rate is the logical consequence of the modernizing of monetary policy, over time by the Central Bank. The current approach began in the mid-eighties with indexed interest rates being used as the main policy instrument. This was an instrument well suited to that point in time, because of a history of high and variable inflation in Chile and the relative depth of financial markets offering fixed earnings indexed to the UF. Then, during the nineties the Central Bank progressed in several areas essential to modernizing policy instruments, first in 1995, when it defined the daily interbank rate as the relevant instrument, and then when it created incipient peso markets by introducing the 90-day and the 360-day PDBC s. In 1999, the exchange rate was allowed to float and the country moved significantly toward opening up the capital account and increasing the transparency of monetary policy formulation. (Central Bank of Chile, 2001, p. 13)

90-day peso-dollar forwards traded during August revealed expectations that the observed exchange rate would remain stable. This coincides with data from Bloomberg s for a similar time period. In the longer term, however, Bloomberg

reports quarterly depreciation is expected to reach around 1.0% for accumulated depreciation of 5% by December 2002. Depreciation against the TCM5 is greater than for the dollar, because futures in other currencies (euro, yen, pound, Canadian dollar) show some appreciation or less depreciation against the US dollar. Finally, UF-dollar forwards maturing in over one year traded with an average premium of 0.6% over the UF during August, thus indicating some expectations of real depreciation. (Central Bank of Chile, 2001, p. 34)

During the year, the IGPA (the general share price index for the Santiago stock exchange) rose 16.4% while the IPSA (selected share prices on the Santiago exchange) rose 14.3%. Given exchange rate trends, both indices fell, as measured in dollars, although less than the Dow Jones and the index for Latin American ADRs. The Nasdaq has fallen by almost 27% so far this year (Table II.8 and Figures II.17 and II.18). The price/earnings ratio for the Chilean stock exchange has hovered around 19. Positive trends in local stock exchanges were associated with a significant increase in amounts trading in May after reforms to the capital market were announced. Since then, volumes have tended to fall, in an environment characterized by financial difficulties faced by some of the regions economies, which have had an unfavorable impact on Latin American exchanges. (Central Bank of Chile, 2001, p. 28)

Several channels are involved in transmitting monetary policy changes to the rest of the economy and each takes a relatively long and variable amount of time to materialize. Thus, for example, a more restrictive policy stance (reflected in an increase to the monetary policy rate) leads to lower private spending on investment and consumption affecting the gap between aggregate demand and potential output, and, ultimately, inflation. At the same time, an increase in the policy interest rate can also affect the exchange rate (causing the peso to appreciate), eventually reducing inflation for imported products, as well as affecting external demand and the expenditure to output gap. This process, from the moment the policy rate changes to the point where inflation reacts substantially along the series of transmission channels, may take from one to two years. This period of time has been defined as the prudent period considered by the Central Bank to be the horizon for monetary policy. (Central Bank of Chile, 2001, p. 80)

The floating exchange rate currently in effect allows the Central Bank to use its monetary instruments more flexibly and independently than in the case of a rigid exchange rate regime. This is significant, because it makes it possible to combine the price stability sought by monetary policy with the possibility of absorbing impacts from the world economy through a flexible exchange rate. Furthermore, the floating exchange rate, the growing depth and sophistication of domestic capital markets, and integration into the global economy are all elements that substantially reduce the probability of the Chilean economy, with sound fundamentals, being exposed to tension regarding external payments, like those resulting from pronounced fluctuations in the terms of trade or external financing conditions. (Central Bank of Chile, 2001, p. 81)

During the present year, the peso has depreciated substantially against the dollar. Thus, from December 2000 to mid-August, the observed exchange rate depreciated by 20%. This was mainly due to economic instability in the regions countries (Argentina and, to a lesser degree, Brazil) and the drop in the terms of trade, particularly the depressed price for copper. Thus, the nominal exchange rate has been the main adjustment variable in dealing with recent turbulence abroad, which is exactly what is to be expected when using a free floating exchange rate regime such as the one operating in Chile since 1999. (Central Bank of Chile, 2001, p. 26)

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The substantial weakening of the peso during this period disturbed financial markets. The speed and quick succession of movements that led to a decline in conditions abroad exacerbated peso volatility and depreciation, despite the strength of Chiles economy and the coherence of its macroeconomic policies. This led the Central Bank Board to adopt measures to improve the stability of the countrys financial markets. One way of achieving this goal has been by providing securities that satisfy higher demand for instruments for hedging exchange risk. Thus, on 6 July, the Bank announced its decision to auction around US$1 billion in additional PRDs during the second half and extend maturities for this type of instrument by offering an early swap option. Moreover, on 16 August, the Central Banks Board decided to raise the amount of PRD auctions to US$2 billion, over two and four years. As a result of these operations, stock of PRDs by the end of 2001 could reach up to US$4.5 billion. As another way of stabilizing the exchange rate market, the Central Bank decided to use up to US$2 billion of its international reserves to finance currency sales on the exchange market through to years end. (Central Bank of Chile, 2001, p. 26)

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From 1996 to July 2001, the peso depreciated 60% against the US dollar, while Asian currencies depreciated even more. The Korean won lost 65% of its value against the dollar during this period, although it appreciated during 1999 and 2000, thus offsetting some of the 116% depreciation that occurred through January 1998. A similar situation affected the Thaibaht, which lost 70% of its value against the US dollar from January 1996 to July 2001, performing similarly to the Korean currency during this period. Indonesia s rupiah depreciated even more, by 400%, during the same period. In summary, from the perspective of the exchange rate, in recent years the Chilean peso has grown stronger against the Asian currencies, which has reduced the cost of imports from these markets, to the degree that countries transfer depreciations to lower dollar prices (Figures IV.26, IV.27 and IV.28). (Central Bank of Chile, 2001, p. 67)

Unforeseen events could significantly change the expected pace of world economic growth and thus the timing and scope of future monetary policy decisions in the US or the euro zone, and this would also affect Chile s exchange rate. Similarly, the baseline scenario forecasts that emerging financial markets will remain unstable at least in the short term. This is important because although the main financial variables for Chile (except the exchange rate) remain relatively immune to contagion, a major crisis in the region would nevertheless have a significant impact. In this kind of scenario, external financing would become even scarcer and as a result the exchange rate would temporarily suffer additional depreciation. (Central Bank of Chile, 2001, p. 73)

Several channels are involved in transmitting monetary policy changes to the rest of the economy and each takes a relatively long and variable amount of time to materialize.2 Thus, for example, a more restrictive policy stance (reflected in an increase to the monetary policy rate) leads to lower private spending on investment and consumption affecting the gap between aggregate demand and potential output, and, ultimately, inflation. At the same time, an increase in the policy interest rate can also affect the exchange rate (causing the peso to appreciate), eventually reducing inflation for imported products, as well as affecting external demand and the expenditure to output gap. This process, from the moment the policy rate changes to the point where inflation reacts substantially along the series of transmission channels, may take from one to two years. This period of time has been defined as the prudent period considered by the Central Bank to be the horizon for monetary policy. (Central Bank of Chile, 2001, p. 80)

The floating exchange rate regime, furthermore, is perfectly consistent with the medium-term perspective of the current monetary policy stance, given that inflationary or deflationary effects of temporary exchange rate fluctuations tend

to cancel each other out over horizons longer than one year. Furthermore, the growing importance of exchange rate hedging mechanisms and the improved know-how of the private sector in dealing with the short-term fluctuations in the exchange rate that characterize a floating system are elements that tend to reduce the magnitude of inflationary (or deflationary) impacts of changes in the value of the peso. (Central Bank of Chile, 2001, p. 81)

Changes in interest rates provoked by monetary policy can also affect the exchange rate. This variable is the relative price of a foreign currency (normally the dollar) against the Chilean peso and in this sense depends on monetary conditions both in Chile and abroad. Nonetheless, the precise impact of a change in the monetary policy rate on the exchange rate is uncertain, given that its impact will depend on existing expectations about interest rates and domestic and foreign inflation. These expectations, for their part, may be influenced by policy changes. However, if all else remains equal, an unexpected increase in the policy rate normally leads to an immediate rise in the peso (and possibly the UF) against the dollar. Appreciation is due to the fact that higher domestic interest rates compared to external rates applying to equivalent foreign currency assets causes peso (and UF) assets to become more attractive to local and foreign investors. The exchange rate then moves to a level at which investors expect a future depreciation in the peso (and the UF) that will also reduce the attractiveness of peso-denominated securities. Eventually this reaches a point where, given the degree of substitution of dollar securities and peso or UF-denominated securities, those investors would feel the same toward assets in either of the two currencies. Under these conditions, the corresponding interest differential for instruments with any maturity date is approximately equal to the sum of the rate of change expected in the exchange rate for the same period, the exchange risk premium and the risk premium on peso (or UF) instruments. (Central Bank of Chile, 2001, p. 86)

It is useful to remember that monetary policy s impact on the exchange rate may be limited where there is an exchange rate band and capital account regulations. With the reserve requirement reduced to zero in 1998 and the exchange rate band eliminated in 1999, and the fact that in general the exchange rate regime became more flexible, this transmission channel is almost fully effective in Chile. (Central Bank of Chile, 2001, p. 86)

However, many months may pass before any of these effects reach end prices. In fact, the first impact of depreciation will be on wholesale prices of imports, expressed in pesos. How, when and how much of these increases get passed on to end consumers of these goods depends on intermediates price policy, the degree of competition existing at different points in the distribution chain, including retail sales, and the strength of domestic demand. If changes in the exchange rate are eminently temporary, then intermediates price policy may opt for not passing these peso price changes on to imported goods (to avoid unnecessarily altering

customers behavior) and for covering shifts in their earnings with the appropriate financial mechanisms. The same policy may indicate that a peso depreciation will only translate into a peso price increase on the imported good once those involved conclude the shift will last. The degree of competition involved in intermediates activity will also influence this decision, because the greater the competition, the riskier it may be for a single intermediate to quickly pass on a depreciation in an import s peso price. In fact, the intermediate may lose market share if other competitors do not raise the peso price and absorb the depreciation for longer by charging it to their profits. Finally, the strength of domestic demand for the import is also relevant, given that this feeds the importer s margin and that of all the participants all the way along the distribution chain. A rapidly growing economy will show strong demand for imports in general, so that a depreciation in this context may be passed on to end peso prices more quickly with little risk of intermediates being affected by substantial losses to amounts sold. In contrast, where overall demand is depressed, intermediates will find it hard to pass depreciation on to consumers without facing a severe drop in the amount demanded. In this case, intermediates sales margins and activity in general will clearly suffer, which is consistent with the general economic situation. (Central Bank of Chile, 2001, p. 94)

Finally, the relationship between the exchange rate and domestic prices is not one way. For example, an increase in the exchange rate triggered by changes to US monetary policy will generate increases in domestic prices, while increases in domestic prices caused by higher domestic demand will influence the exchange rate. Both the exchange rate and domestic price levels are certainly indicators related to the same element, that is, the value of domestic money (the peso). The exchange rate is the peso's value against other currencies and the price level measures the domestic value of the peso against a basket of goods and services. (Central Bank of Chile, 2001, p. 95)

The possible sale of international reserves together with an issue of exchange-rate-indexed liabilities will help reduce the current mismatch between assets and liabilities, allowing the Central Bank to achieve greater stability in terms of its equity capital and reserves, and thus help make its policies more effective. The nominalization of monetary policy will have a similar effect, helping to bring domestic interest more into line with rates abroad, and also making short-term monetary policy more effective as exchange rate movements become more predictable. (Central Bank of Chile, 2001, p. 96)

In view of the growing instability in international financial markets, which has made the Chilean peso and other regional currencies more volatile and generated higher demand for exchange risk hedging instruments, the Central Bank decided to increase the issue of Central Bank promissory notes in dollars (PRDs) in the second half of the year to meet this demand, announcing the auction of approximately US$1 billion in additional PRDs. The authority also decided

to offer an anticipated swap option during the second half for PRDs close to maturity. (Central Bank of Chile, 2001, p. 101)

Finally, the limited passthrough of depreciation to inflation is not typical of Chile alone. This has also occurred in other economies with similar exchange rate and monetary stances. The floating exchange rate, in effect since 1999, was specifically designed to allow the exchange rate, freely determined by the market, to be the correction variable during the periods of turbulence in the financial system or terms of trade that may affect the economy. (Central Bank of Chile, 2001, p. 9)

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During the second and third quarters of 2001, the Chilean exchange market became solidly anchored to conditions in Argentina, with the peso depreciating significantly given the worsening of the economic crisis in that country. Without a doubt, a 0.6 correlation between the exchange rate and the SSA reflects this, indicating regional contagion. A strong drop in the copper price, pointing to depressed demand worldwide, also affected this regional scenario. Under these circumstances the Board of the Central Bank decided in August to increase the supply of foreign exchange hedging instruments and liquidity in foreign currencies, through the announcement of the auction of US$2 billion in PRDs and US$2 billion more to intervene where justified in the exchange rate market through December 2001. These measures restored calm to the Chilean exchange market, with the dollar falling to under the 670 pesos where it stood prior to the attacks in the US. Moreover, the 3-month LIBOR fell sharply as well, in an effort to speed recovery in the US, making the US currency become much more expensive against the peso. Altogether, these events took the exchange rate to almost 720 pesos per dollar in late October 2001. (Central Bank of Chile, 2002, p. 48)

The peso depreciated well beyond analyst expectations in July and August as a result of the crisis in Argentina and the use by multinational corporations of the countrys futures market as a proxy to hedge Brazilian risk, taking advantage of the total elimination of exchange restrictions in Chile since September 1999. On 16 August, the peso fell to a record low Ps700: US $1, a level that seriously put the countrys inflation target at risk and was not justified by the countrys macroeconomic fundamentals. This prompted intervention by the Central Bank, both directly with moderate sales of US dollar reserves, and indirectly, with the

announcement that it would increase the supply of (PRDs, US dollar-adjusted bonds) from US $2.5 bn to US $4.5 bn to help companies hedge their foreign-exchange risks. The PRD issues will have maturities ranging from two–four years. It also announced that it had set aside US $2 bn from its international reserves to intervene in the exchange market so as to reduce exchange-rate volatility. The strategy succeeded temporarily in supporting the currency, which returned to Ps658 US$1 in late August. However, in the wake of the terrorist attacks in the US, the peso weakened again, reaching Ps727 US$1 on October 8th. This is likely to force the Central Bank to continue its persistent interventions and gradually raise interest rates in 2002. (Economist Intelligence Unit, 2001, p. 18)

A.1.2 September-November 2008

Since April, the nominal exchange rate has depreciated. Immediately after the Bank announced its reserves purchase program, the parity rose between $15 and $20. Subsequently, together with changes in developed economies performance evaluation, price swings in commodities, especially copper and oil, and local developments in the inflation and output scenarios, the parity depreciated further, to 510 and 525 pesos per US dollar in the two weeks prior to the statistical closing of this Report, some 13% higher than the figures in Mays Report. The multilateral exchange rate (MER) depreciated 11% over the same period. In any case, it is difficult to assign a significant part of this increase on the intervention. Overall, the current level of the nominal exchange rate does not differ much from its year-ago level, so its effect on annual imported inflation in pesos is negligible. (Central Bank of Chile, 2008c, p. 8)

The differential between Libor and domestic interest rates in dollars, referred to as onshore spread, over the past year has remained abnormally high. This is due to international financial uncertainty, the lack of liquidity in those markets and a perceived higher bank risk on a global level. These factors have made the spread more volatile and volatility has been heightened by changes in supply and demand for hedge and a greater dollar spot requirement on the part of institutions. Lack of liquidity has meant that, in this context, the forward exchange market does not adequately reflect expectations regarding the exchange rate. However, in this scenario, international arbitrage processes take place with a lag of a few days so brusque changes in the onshore spread do not persist (figure II.10). (Central Bank of Chile, 2008c, p. 22)

The events triggered by the subprime crisisamong them the slackening of United States demand and the depreciation of the dollarhave contributed to reducing the United States current account deficit, which has dropped from the equivalent of over 6.5% of GDP at end-2005 to less than 5% today. Considering the trend prices of oil, the drop could be even greater, to 3.8% of GDP although the imbalance is still significant (figure I.9). As has been mentioned, prolongation of global imbalances is an element of risk that must be corrected so this reduction in the U.S. current account deficit is at least one good effect of the subprime

situation. In recent months the depreciation of the dollar has slowed and in the past few weeks it has even tended to appreciate with respect to the currencies of its main trading partners. Nevertheless, with respect to some Latin American currencies, the dollar is more depreciated than in May. (Central Bank of Chile, 2008c, p. 15)

The Board announced its decision to intervene the foreign exchange market to strengthen the Chilean economys international liquidity position. The Board considered that increasing foreign-exchange holdings on the agreed terms would enable the country to face any further abrupt and severe deterioration of the external situation on a better footing. The foreign-exchange holdings are to be increased by US$8.0 billion by the purchase of currency by interactive auction as from 14 April until 12 December 2008. The Bank will announce its foreign-exchange purchase programs opportunely, being able to revise them according to market conditions, setting for this purchase the conditions corresponding to the period 14 April to 9 May inclusive. At the same time, it was decided that the monetary effects of this measure were offset so that the provision of liquidity in pesos in the market should be consistent with the monetary policy rate. (Central Bank of Chile, 2008c, p. 60)

The expected evolution of this balance sheet considers assumptions compatible with this Reports forecasts. The interest rate on reserves moves according to external rates while the rate on Central Bank promissory notes depends on the evolution of the MPR and on the rate in UF on index-linked Central Bank bonds (BCU). Indexed instruments are likewise supposedly the main means of sterilizing exchange operations. This projection also includes the demand for monetary base. Treasury deposits are assumed will remain at the current minimum levels; as is well known, the Treasurys financial surplus is not invested in the Central Bank in conformity with the provisions in the 2006 ruling on fiscal accountability. Banking sector deposits in the Central Bank are similarly expected to remain at the levels of recent months. Projections for 2008 and 2009 include further capital contributions by the government, similar to those made in 2006 and 2007 to improve the balance between foreign-currency assets and liabilities. Lastly, PDBC (Central Bank discountable promissory notes) transactions are expected to be the variable that clears any excess or loss gap. (Central Bank of Chile, 2008c, p. 53)

Domestically, money markets experienced some constraint in late September but they have been gradually returning to normal. By the end of that month, and coinciding with the period of heaviest turbulence in world financial markets, a large increase in short-term interest rates in pesos was observed, widening the gap with the expected short-term average interbank rate. At the same time, onshore dollar rates showed a significant increase, drifting farther apart from the short-term Libor. Coinciding with the startup of the Central Banks dollar swap programs, peso liquidity provision programs and Central Government deposits,

said interest rates on peso deposits have decLines, but still gaps are somewhat larger than they were in early September. Because of these gaps, the Central Bank decided in December to stretch its swap programs to the whole of 2009, while expanding the mechanisms to provide liquidity in pesos. (Central Bank of Chile, 2008a, p. 9)

Since late September, volatility in exchange rates and stock prices has hit historic highs. The Chilean peso has depreciated more than 34% in nominal terms since the last Report. Part of this depreciation responds to the global appreciation of the U.S. dollar that resulted from the portfolios flight to U.S. Treasury notes, seeking a reduction in risk or an increase in liquidity. It cannot be ruled out, however, that pension funds may have played their part in the exchange rate market stress, through substantial shifts in their foreign exchange hedging positions. (Central Bank of Chile, 2008a, p. 9)

Starting in September, sovereign spreads and exchange rates deteriorated sharply. In the SeptemberDecember four-month span, the average monthly change in the sovereign spreads of a group of emerging economies was about ten times higher than the average monthly change of the first phase of the crisis (August 2007 to September 2008, figure I.12). The strong positive relation between the changes in the spreads in these two periods indicates that this adjustment includes a continuing differentiation across economies. This is very important in the case of Chile, since some countries in the region have very high sovereign spreads (Argentina, Ecuador, and Venezuela). Data on portfolio flows to emerging economies show an outflow of stock investment, which intensified in October and expanded to bonds; this confirms the change in the demand for these economies assets (figure I.13). It is worth mentioning that the outflow eased off in the weeks before the statistical closing of this Report. Also, the majority of emerging economies registered depreciations in the last quarter, even though their performance had been uneven in the previous year (figure I.14). (Central Bank of Chile, 2008a, p. 16)

The main instrument used in the local market is the peso-dollar forward. These contracts establish the future exchange of the two currencies at a date and exchange rate agreed on when the contract is fixed. Other instruments, such as foreign exchange swaps and currency swaps, are also used in the Chilean market, but much less than forwards. They are estimated to represent less than 10% of total transactions. (Central Bank of Chile, 2008a, p. 76)

An eight-basis-point increase in the differential between the Libor and the local currency rate triggers an immediate drop in the spread of approximately 13 basis points, which is reversed in the next few days. This, in turn, generates a depreciation of the exchange rate, but we cannot reject the hypothesis that the impulse is not statistically different from zero. (Central Bank of Chile, 2008a, p. 9)

The peso has weakened sharply since September, from Ps512 US$1 in early September to Ps663 US$1 in mid-November (its weakest nominal level since 2003)

as dollar liquidity dried up and copper prices tumbled following the escalation of the global financial crisis. The BCC has exchanged its reserves accumulation programme (which had been designed to curb strong real appreciation in 2003-08) for a commitment to step in to defend the currency. Given the willingness of the BCC to intervene and Chile's good access to foreign exchange through a strong level of reserves and its sovereign wealth funds, we consider that the bout of weakening is abating, and estimate that the peso will end this year at Ps668 US $1, revised up from our November estimate of Ps581 US $1. Given a deteriorating external position in 2009, we do not expect a bounce-back in the nominal exchange rate, despite recent overshooting. We now expect the peso to end 2009 at Ps692 US$1 and 2010 at Ps713 US$1 (previously Ps603 US$1 and Ps622 US$1), an annual average depreciation in real trade-weighted terms of around 16% and 2% respectively. (Economist Intelligence Unit, 2008, pp. 7–8)

A.1.3 October-December 2019

The national financial market has been affected by the significant change in the economic scenario due to the ongoing social crisis that erupted in Chile on 18 October. In particular, the increase in uncertainty regarding the countrys short-and medium-term evolution has caused a deterioration in a set of financial indicators: the stock market fell, the peso depreciated significantly, and fixed-income rates generally increased, as did money market interest rates, in both pesos and dollars. These movements have been highly volatile, and in some cases they have exceeded what would be expected from the increase in country risk perceptionthe EMBI and the CDS spread have risen, but mildly. The domestic credit market, has also been affected by the heightened local uncertainty. While credit interest rates remain low from a historical perspective, several qualitative information sources show a tightening of financial conditions. Moreover, debt placements have been less dynamic since October, especially in the consumer segment. (Central Bank of Chile, 2019c, p. 19)

About investment, its expected evolution for 2020 is revised significantly, with a 4% year-on-year fall projected in the baseline scenario. This obeys to a substantial decline in private non-mining investment, consistent with the greater uncertainty and the sharp drop in business confidence as reflected in the November IMCE, the higher costs faced by companies in various areas (among them, due to the effects of the peso depreciation on the cost of imported machinery) and the deterioration of financial conditions, including the fall in stock prices and increases in corporate interest rates and spreads. The negative impacts on investment are offset, partially, by large mining investment projects that are already in progress, the significant increase in public investment and the expansionary monetary policy. The foreseen performance of investment relies, also, on qualitative information garnered by the Bank, which confirms that the development of the main investment projects in the mining and manufacturing sectors has not been affected, while in other areas previously committed investments are being

reassessed in their timing and amounts. The Banks survey showed that more than half of the respondents were rethinking their investment plans for 2020, while a minor portion had already decided not to carry them out. (Central Bank of Chile, 2019c, p. 9)

This higher uncertainty has resulted in strong movements in financial market prices, occasionally stronger than the greater perception of country risk would suggest. The Bank has responded to these changes by adopting various measures to provide an adequate degree of liquidity to markets and mitigate volatility in key financial prices. These measures are not intended to set levels for certain prices, such as the exchange rate, but rather to avoid excessive volatility or abrupt movements that may prevent the healthy adjustment of the economy and cause concern in markets and households. In particular, the Board decided to intervene in the exchange market with an amount of up to US$20,000 million, spanning from Monday 2 December 2019 to 29 May 2020. This will be implemented via a spot sale of dollars in the amount of up to US$10 billion and a sale of forex hedging instruments of up to US$10 billion. The monetary effects of this measure will be sterilized, so that the provision of liquidity in pesos is consistent with the monetary policy interest rate. (Central Bank of Chile, 2019c, p. 10)

In the baseline scenario, inflation is forecast to approach 4% in 2020, largely in response to the idiosyncratic depreciation of the peso, which would result in an above-average degree of pass-through to inflation. This, because in these circumstances there are no shock-absorbing factors, like the fall in dollar prices of imported products that occurs when the dollar appreciates globally. Certainly, the contraction observed in fourth-quarter GDP and the weaker outlook for 2020 widen the activity gap, partly cancelling out the greater inflationary pressures of the tradable component of inflation. However, the recent idiosyncratic depreciation of the Chilean peso limits the scope for monetary policy action, with respect to a situation where currency weakness is transversal for all the trading partners. (Central Bank of Chile, 2019c, p. 11)

The Board estimates that there are scenarios in which growth can be within the forecast ranges, but require a different MPR path to ensure the convergence of inflation to the target. On the one hand, it is possible that the economy will perform below expectations. This could happen if the investment is hurt beyond projections, for example if the large-scale mining projects and/or housing investments suffer a more pronounced adjustment. In a scenario like this, unemployment could increase even further and growth could fall in the bottom of the forecast range, increasing the probability of a recession (i.e. two consecutive quarters with a negative quarterly GDP variation) during 2020. There are also scenarios of more intense pressures for a peso depreciation, due to, say, a resurgence of external uncertainty and/or a deepening of the crisis at home. While this scenario would also imply a wider activity gap, it would be accompanied by a depreciation that would increase inflationary pressures. Finally, one cannot

rule out a scenario where more significant labor cost pressures predominate, leading to higher unemployment and inflation, together with a deeper contraction of activity. Although a scenario of lower uncertainty and more quickly restored confidence is also possible, the Board considers that, in the current context, scenarios with weaker activity and labor market are more likely, although it is more difficult to anticipate their consequences on inflationary dynamics. (Central Bank of Chile, 2019c, p. 11)

During the first days of the crisis, the financial markets did not experience any major changes, as the effects of the pension fund movements dominated. Thus, the implications for the exchange rate, fixed-income interest rates, and money market liquidity were limited, although the impact on the stock market was somewhat greater. However, from the second week of November on, the heightened uncertainty resulted in an increase in preferences for liquidity and foreign assets, causing a deterioration in liquidity conditions in dollars and in pesos, reflected in an increase in the onshore spread and the deposit-swap rate spread, respectively. This was mainly driven by an intensification of portfolio movements that were already occurring before the crisis: namely, a reduction of positions in local-currency instrumentsespecially fixed-incomeby the institutional investors in favor of foreign assets. An additional effect was the increase in fixed-income rates, which was strongly related to an increase in the term spread. Corporate rates also rose, in line with the growth of the credit risk spread component. Specifically, the evolution of sovereign and corporate rates is largely explained by the change in local fixed-income positions by the pension funds and mutual funds, respectively. (Central Bank of Chile, 2019c, p. 20)

To provide adequate liquidity to the financial system, on 13 November the Central Bank implemented a program of currency swap auctions and repo operations. On 14 November, the Bank announced complementary measures, with the suspension of the issue of PDBCs, an increase in the frequency and length of repo operations, the incorporation of bank bonds and deposits as guarantees for the latter operations, an increase in the frequency of swap auctions, and the offer of a Central Bank security repurchase program. Over the following days, money market and fixed-income rates came down substantially, in response both to these measures and to the signing of political agreements. The cost of financing in dollars has fallen more slowly, mainly due to the continuous outflow of institutional investors to riskier foreign-currency assets. On 19 November, the Central Bank introduced an operational adjustment to provide more flexibility to the auction calendar. This set of measures has contributed to facilitating the adjustments in the money market, thereby avoiding major stress. (Central Bank of Chile, 2019c, p. 20)

In the fixed-income market, these measures have provided a counterweight in the movement of long rates in the period, but they have not changed the general upward trend. Thus, the rates on two-, five-, and ten-year inflation-indexed Central

Bank securities increased 75 bp, on average, since the start of the social crisis. Five- and ten-year BCP rates also increased (40 bp on average). The sovereign spread, measured as the CDS spread, has risen (+20 bp since 18 October), but it is still fairly low (around 55 bp). At the same time, these spreads have fallen in many economies worldwide. (Central Bank of Chile, 2019c, p. 21)

The stock and currency markets have mainly been dominated by the effects of the social crisis. Since 18 October, the IPSA stock index has fallen 9%. This contrasts with emerging, developed, and Latin American indexesthe MSCI in local currencywhich have risen between 2 and 5%, indicating that the movements in the local stock exchange reflect domestic factors. In the case of the peso, the uncertainty associated with the social crisis has been complemented with a significant shift in the pension and mutual funds toward portfolios with a larger share of overseas instruments. Thus, the nominal exchange rate hit historical peaks of around $830 to the dollar. Comparing the average of the ten business days prior to the cutoff date of this and the September Report, the NER increased significantly, in contrast to the currencies of comparable countries. Almost all of this increase occurred after 18 October, a clear signal that the movements in the peso were essentially idiosyncratic. Similarly, the real exchange rate (RER, index: 1986=100) also increased substantially: from 95 in August to 105 in the days leading up to the cutoff of this Report; a value not recorded since October 2008. This is above the averages of the last fifteen and twenty years, consistent with the increased uncertainty of the last several weeks. (Central Bank of Chile, 2019c, p. 21)

The exchange rate has been quite volatile, both daily and intradaily, a trend that intensified in the last weeks of November. Thus, to avoid excessive volatility or sudden movements in the exchange rate, which could affect the healthy adjustment of the economy and trigger market turmoil and personal anxiety, the Central Bank announced a sterilized intervention in the foreign exchange market on 28 November, involving spot dollar sales for a total of up to US$10.0 billion and the sale of currency hedging instruments also totaling up to US$10.0 billion, from 2 December through 29 May 2020. Following this announcement, volatility decLines, although the full effects will only become evident as the weeks pass. (Central Bank of Chile, 2019c, p. 21)

Unlike past episodes, the recent movements are not related to an external crisis, but are instead explained by essentially domestic factors. Until mid-October, the fluctuations in the peso-dollar exchange rate were relatively aligned with other Latin American economies and commodity exporters (figure II.12, panel a). In contrast, since 18 October the path of the Chilean peso has diverged significantly from other currencies. The application of an empirical model that estimates the exchange rate level based on its usual fundamentals confirms this conclusion, showing a substantial decoupling since the start of the crisis (figure II.12, panel b). This decoupling is not explained, in principle, by changes in the

usual determinantsnamely, copper and oil prices, the interest rate differential between Chile and the United States, etc.but rather could reflect changes in the country risk perception or in future expectations that imply a depreciation of the real exchange rate (RER). (Central Bank of Chile, 2019c, p. 24)

On 13 and 14 November, the Bank announced measures to provide liquidity in dollars and pesos to the financial system. These measures included a 30- and 90-day currency swap program with a minimum rate equivalent to the LIBOR plus 200 bp (in order to limit the increase in the spread in dollars); a repo program in pesos, through a collateralized window with a rate defined as a floating MPR (traditionally the MPR plus 25 bp) and with fairly long maturities; the authorization of repo operations backed by securities that have not traditionally been accepted; the suspension of the issue of discount promissory notes (PDBC); and the initiation of a buyback program for UF-denominated Central Bank securities. These measures had a significant effect on long-term rates and bank and corporate bond spreads (figure II.15, panel a). In the case of the onshore spread, the program managed to reduce the spread from the recorded peaks to around 200 bp (figure II.15, panel b). (Central Bank of Chile, 2019c, p. 26)

On Thursday, 28 November, the Bank announced an intervention program for the foreign exchange market to reduce the volatility of the exchange rate (figure II.16). This program considers spot dollar sales (via auctions) and forwards (currency hedging), each for up to US$10.0 billion between December 2019 and May 2020. As in 2008 and 2011, the monetary effects of these measures will be sterilized, to keep the liquidity provision in pesos consistent with the monetary policy rate. Since the intervention has only recently been implemented, it is too soon to evaluate the definitive results. However, exchange rate volatility has fallen significantly since the start of the program in the first days of December. (Central Bank of Chile, 2019c, p. 26)

The information collected indicates that the effect of the social crisis on economic activity could be substantial in Novemberin some sectors greater than in October. Going forward, it is relatively certain that the crisis will also affect unemployment in December, and a large share of firms believe that the effects will last for six months or more. The surveys revealed immediate effects on employment, and a majority of firms project that the workforce will be reduced in 2020. There is also a large degree of uncertainty regarding investment plans for next year. With regard to financial conditions, respondents report a decline in the demand for credit, in particular for consumer, mortgage, and commercial loans. On the supply side, the adjustments are smaller in magnitude, including a longer credit approval process and higher interest rates. In any case, the lack of precedents for this phenomenon makes it difficult to predict the direction and magnitude of the effects on the economys performance. The information that becomes known over the coming weeks will be especially important for determining the significance of the changes in the macroeconomic scenario and their effects on the evolution of inflation in the medium term. (Central Bank of Chile, 2019c, p. 36)

The exchange rate, in turn, stayed around the level reported in the September Report through 18 October. Thereafter, idiosyncratic factors caused a significant depreciation of the Chilean peso both against the U.S. dollar and in multilateral terms (MER and MER-5). This reflects both the uncertainty deriving from the social crisis and the significant pension and mutual fund movements toward portfolios with a larger share of overseas instruments. As indicated in past Reports, the inflationary effects of exchange rate fluctuations depend on their origin. Thus, the pass-through coefficient from the exchange rate to inflation in one year is lower when the fluctuation originates in a global shift in the value of the dollar, since in that case there are counteracting effects that reduce costs, such as a reduction in prices in dollars of goods imported from trading partners whose currencies have also depreciated. In contrast, in the case of an idiosyncratic depreciation of the peso, as in recent weeks, the countervailing factors do not materialize, implying a higher pass-through coefficient. Consequently, higher inflation is projected for tradable goods in the coming year. At the same time, the output contraction in the fourth quarter has led to a significant widening of the gapeven considering the impact of production disruptions on potential growthand its future evolution suggests that the closure will be slow. Thus, the baseline scenario projects that weak demand will be partially offset by the higher pass-through of the peso depreciation to prices. (Central Bank of Chile, 2019c, p. 40)

The inflation path for the next two years will be determined by two critical factors. On the one hand, lower inflationary pressures stemming from capacity gaps. The contraction of activity in the fourth quarter causes a significant widening of the gapeven considering the impact of productive disruptions on potential growthand its future evolution points at them closing at a slow pace. On the other hand, cost-push pressures are now stronger than in the past. In particular, it is necessary to note that the recent depreciation of the peso has responded to mostly idiosyncratic factors, episodes in which the evidence suggests that its pass-through to local prices is greater, since the buffering factor of falling dollar prices, which would operate in the face of a global appreciation of the dollar, is not present. (Central Bank of Chile, 2019c, p. 47)

There are also scenarios of more intense pressures for a peso depreciation, due to, say, a resurgence of external uncertainty and/or a deepening of the local crisis. While this scenario would also imply a wider activity gap, it would be accompanied by a depreciation that would increase inflationary pressures. Finally, one cannot rule out a scenario where more significant labor cost pressures predominate, leading to higher unemployment and inflation, together with a deeper contraction of activity. (Central Bank of Chile, 2019c, p. 48)

All the Board members agreed that the diagnosis of the current state of the economy was highly uncertain, so in the coming months efforts would need to concentrate on making comprehensive evaluations of the macroeconomic scenario

in order to determine its most likely short-term evolution. In addition, in the immediate future the consequences of the disruptions in economic activity and the protraction of disturbances of the public order had been clearly reflected in the drop in Octobers Imacec. Still, in the medium term the situation could be further complicated by increased uncertainty. It was affecting consumer and business confidence, financial asset prices and the value of the dollar, signaling a perception that negative effects would last longer. Among many issues, this was related to the lack of certainty on several political, economic and social issues so, to avoid major adverse effects, new agreements were required in order to narrow the spaces of uncertainty as quickly as possible. In fact, it was noted that the Reports baseline scenario pointed to very low growth in 2020 to begin recovery in 2021, which relied partly on the assumption that uncertainty would dissipate throughout this period, so that companies and individuals would invest again and regularize their consumption decisions. Absent this, the economy could stagnated for several years. (Central Bank of Chile, 2019b, p. 2)

They also agreed that the decision to hold the MPR at 1.75% dominated every other option. First, the current degree of monetary expansion was estimated to be consistent with the cyclical weakness of the economy, with the high level of uncertainty regarding its future evolution, and with the fiscal stimulus program that the government had announced in previous days. Second, the necessary consistency between exchange rate intervention and monetary policy limited the room for rate reductions over the coming months, as speculation on the latter could generate the kind of volatility the intervention sought to avoid. Finally, it would be inconvenient to consider raising the MPR, as the Reports scenario did not contemplate rises for some time, even taking into account the short-term inflationary impact of the peso depreciation. (Central Bank of Chile, 2019b, p. 3)

One Board member recalled that in the recent past the Banks reaction to an environment of deteriorating activity had been to boost the monetary stimulus, always keeping in mind the right calibration of the impact of the peso depreciation on inflation, which now would be even bigger due to its idiosyncratic nature. This time around, however, he thought that the prudent thing to do was to signal a flat MPR during a period, because the direction that the social unrest had taken had created a climate of stress and uncertainty that could take various forms. In particular, he noted that the Bank had adopted. (Central Bank of Chile, 2019b, p. 3)

During the second half of the year, the Bank has moved forward according to its regulatory plan. The first changes to the Compendium of Foreign Exchange Regulations were put out for public consultation, as part of a modernization process; it was also put out for public consultation the regulation for the extension of the Real Time Gross Settlement (RTGS) System that will allow settling interbank payments denominated in US dollars. This project is part of the initiatives for strengthening the local financial infrastructures in foreign currencies. In line with

this, in July a process towards the inclusion of the Chilean peso in the global cash settlement system operated by CLS Bank was started. (Central Bank of Chile, 2019a, p. 9)

In the emerging economies, long-term sovereign rates have fallen significantly since the last FSR (figure I.4). At the same time, there has been a reduction in the associated volatility (figure I.5). The volatility of the peso-dollar exchange rate remains around 10% annually, which is in the upper part of the distribution, consistent with the flexible exchange rate regime (figure I.6). (Central Bank of Chile, 2019a, p. 13)

The severe stress scenario considers a sharp contraction of GDP in the short term and a lower growth rate in the medium term relative to the test period. Specifically, annual output growth would reach 4.6% in the most critical quarter, to then converge in the medium term to a rate of 1.4% in 2021. This scenario is similar to past episodes of significant financial fragility. The adverse stress scenario, in turn, is based on the 5th percentile of the distribution of the GDP forecast presented in the September Monetary Policy Report (figure III.11). (Central Bank of Chile, 2019a, p. 35)

A stressed VAR is used with 15-day movements in the exchange rate, at 99% confidence. While this variable is not explicitly included in exercises prior to 2019-I, it is included as part of total risk in previous results. (Central Bank of Chile, 2019a, p. 36)

In Australia, the Reserve Bank (RBA) is in charge of carrying out the top-down stress test, which encompasses impacts on bank solvency and liquidity and considers interconnectedness and systemic risk, among other factors. In 2019, the RBA analyzed the system based on a small group of major banks (International Monetary Fund, 2019). The tests contemplate a baseline and an adverse scenario over a horizon of three years. The baseline scenario is anchored on estimates from the World Economic Outlook, including output growth, the unemployment rate, house price indices, liquidity and the exchange rate. The adverse scenario, in turn, includes three sets of shocks: a drop in house prices; lower world growth, especially in China; and less favorable global financial conditions than expected. (Central Bank of Chile, 2019a, p. 43)

Section 3 describes the debt dynamics of the sector, with an emphasis on external debt. This is followed by a presentation of financial indicators and an analysis of the potential risks for firms with access to capital markets. In particular, the financial situation of these firms is considered in a context in which corporate debt levelsacquired after the 200809 financial crisishave been a recent subject of concern at the international level (Fed Board, 2018; IMF, 2018). The discussion shows that corporate debt also increased in Chile in this period, reaching a level comparable to the developed economies. This section also analyzes the recent evolution of foreign currency mismatches in these firms and the associated

currency risk. The analysis indicates that the mismatches are confined to a small percentage of firms and thus do not constitute a significant source of vulnerability for financial stability. (Central Bank of Chile, 2019a, p. 46)

The currency mismatch was 4.3% of assets, with a peak of almost 10% in 2002. Cowan et al. (2005) note that firms have been dealing with a floating exchange rate since the late 1990s. The effects of the float on hedging were not immediate due to the existence of adjustment costs. Between 2007 and 2018, the average currency mismatch of firms fluctuated between 2.3% at year-end 2007 and 6% in March 2017. One determinant of these fluctuations is the impact of the exchange rate hike on dollar-denominated liabilities, which was partially offset by dollar assets and currency derivatives, consistent with the development of this market in recent years. (Central Bank of Chile, 2019a, p. 52)

A comparison of stress test results over time reveals that the initial position of the firms has improved in the last four years, to the extent that the percentage of assets held by firms with a lower interest coverage has fallen systematically (figure IV.14). From an international perspective, the current position of the corporate sector in Chile is also favorable vis-à-vis the large economies. According to the GFSR (2019), Germany would be the economy with the lowest debt at riskan indicator based on firms with an interest coverage ratio of less than onewhich would reach 9% of total corporate debt. In the case of Chile, the most recent estimate of this indicator is 7%, after a downward trend in recent years. In sum, the results show that the corporate sector is more resilient to unexpected changes in interest rates and the exchange rate due to their use of primarily long-term debt with maturities outside the test horizon, combined with a limited currency mismatch. (Central Bank of Chile, 2019a, p. 55)

On the one hand, firms with access to the capital marketswhose currency mismatches make them vulnerable to sudden changes in the exchange rate or in external financing conditions, as happened during the turbulent periods of the 1980s and 1990sdo not present significant currency mismatches. This translates into a lower vulnerability to exchange rate fluctuations than in the past. A stress test simulating adverse changes in economic activity, financing conditions, and the exchange rate, on the level of the late 1990s, confirm this conclusion. Furthermore, the exercise shows that the vulnerability of these companies has fallen in recent years. (Central Bank of Chile, 2019a, p. 57)

In the coming months, a public consultation will be opened on the changes involving foreign exchange operations that can be carried out with Chilean pesos, which should contribute to increasing the participation of nonresidents in the local exchange market. In parallel, the CBC is promoting the incorporation of the Chilean peso in the Continuous Linked Settlement (CLS) system, which is managed by CLS Bank (see chapter VI), which will require efforts not only by Central Bank, but also by the private sector. The combination of these measures represents a highly important contribution to the internationalization of the peso. (Central Bank of Chile, 2019a, p. 68)

Following a sharp depreciation of the peso since protests began in October, we expect the depreciating trend to continue in the remainder of 2019, reflecting dented investor confidence. We expect the peso to end 2019 at Ps764.7:US$1. However, the extent of the decline will be contained by the central banks announcement in end November of a US$20bn foreign exchange intervention, which is to continue over a six-month period. As a result, we expect the peso to end 2020 at Ps695.9:US$1. The intervention, which amounts to nearly half of the countrys foreign exchange reserves, will result in an appreciation of the peso as investor confidence is restored after the current protests end. The appreciation will begin in 2020 and will gain momentum from 2021 before the currency begins to stabilise at about Ps645:US$1 in 2023-24. Moderately high and rising copper prices will support the peso over the forecast period, as will firmer external demand for Chiles exports. Perpetual risks to our forecast include unexpected volatility in copper prices or global risk sentiment, along with deeper domestic political instability than we currently project. (Economist Intelligence Unit, 2019, p. 8)

A.1.4 December 2019-May 2020

A second transmission channel is related to the deterioration of financial conditions. The global increase in risk perception and large adjustments in financial prices limit access to financing by governments and businesses. This has prompted several central banks to take steps to maintain the proper functioning of markets. In Chile, among other measures, the Board adapted the operation of the liquidity programs it has been applying since November 2019, included corporate bonds as eligible collateral for all the Banks peso liquidity. (Central Bank of Chile, 2020b, p. 8)

One must bear in mind that the economys performance from last October to date provides a fragile starting point for dealing with Covid-19. Even though the latest Imacecs December 2019 and January 2020 reported a recovery in activity levels, the sanitary measures have a greater impact on sectors that had already been hit by the social crisis. In turn, household consumption follows a significant contraction in the latter part of last year, while investment was sustained by the performance of the construction component and other works, mainly related to mining projects. In the labor market, although until the moving quarter ending in January the national unemployment rate reported by INE showed a limited increase, other indicators showed a significant deterioration in job quality. In particular, the rise in informal wage-earning employment, which lacks all the benefits of formal wage-earning employment, including the payment of medical leave, is cause for concern. Various financial variables, such as the exchange rate, stock prices and credit growth, were also at less favorable levels than before the onset of the social crisis. (Central Bank of Chile, 2020b, p. 10)

Within the MPF, the inflation-targeting regime is complemented by a floating exchange rate regime, which facilitates the economys adjustment to real shocks and avoids significant or protracted deviations of the exchange rate from its

fundamentals. The floating exchange rate is a crucial aspect of the MPF, as it supports a countercyclical monetary policy. Under a float, the monetary authority can use its policy instruments flexibly and independently to respond to the shocks facing the economy, thus helping to bring the output level closer to the economys productive capacity. Nevertheless, the Bank reserves the option of intervening in the foreign exchange market in the event that volatility in that market becomes so high that it could represent a risk to the Banks primary mandate of price stability and the normal functioning of the payment system, but it must never do so with a final objective of a specific exchange rate level. From December 1999 through the cutoff date of this Monetary Policy Report, the CBC has announced its intention of intervening in the foreign exchange market on five occasions. (Central Bank of Chile, 2020b, p. 14)

For the December Monetary Policy Report, the macroeconomic scenario had changed abruptly when the social crisis erupted in mid-October. Successive waves of violence had had an impact on the productive system, which deepened in light of the greater uncertainty and the deterioration of expectations evident in the available data. The financial markets reacted sharply, with drops in the stock market, a substantial depreciation of the peso, and increases in interest rates and credit ratings. In some cases, the shifts went beyond what would be expected given the greater risk perception. In this context, the Board had adopted several measures to improve liquidity in pesos and in dollars and announced an intervention in the foreign exchange market to mitigate the extreme volatility and foster an adequate adjustment. (Central Bank of Chile, 2020b, p. 17)

The baseline scenario in December incorporated a GDP contraction of 2.5% in the fourth quarter of 2019, and the year closed with growth around 1%, considerably below the September forecast. Going forward, the growth forecast ranges were revised downward, to 0.51.5% in 2020 and 2.53.5% in 2021 (versus 2.753.50% and 3.04.0% in September, respectively). With regard to demand, consumption and investment, especially nonmining investment, had been revised significantly, in particular in the tradable component. This was consistent with the sharp deterioration in expectations, the higher cost of imported goods due to the exchange rate depreciation, and a tighter credit supply, as revealed in a special round of the Bank Lending Survey. (Central Bank of Chile, 2020b, p. 17)

The negative economic scenario will translate into a deterioration of the financial position of firms, limiting their payment capacity. As of the first quarter of 2020, the total debt of the firms reached 131% of GDP. This represents an increase respect to the previous FSR; this was mostly due to the depreciation of the peso against the US dollar, which in turn revalues external debt. A fraction of large firms that report their balance sheets to the FMC will need additional financing to complement their cash flow. Given their relative size, these firms play a relevant role in job creation, have numerous commercial relations with smaller firms and maintain sizable debt within the portfolio of banks. Since these

firms are financed mainly through domestic and external bonds, covering their new funding needs with bank loans alone could constrain financing for medium size firms. At the same time, some companies whose main source of financing has traditionally been the local banking sector had also shown vulnerabilities, incubated since October 2019 due to the onset of social protests which increase their liquidity needs. Therefore, in order to provide sources of financing for the corporate sector it is fundamental to move forward in the activation of the bonds market. (Central Bank of Chile, 2020a, p. 9)

In recent months, the emerging economies have been hit with a variety of shocks. In addition to the direct effects of the pandemic, whose consequences will depend on idiosyncratic factors, there has been a reduction in commodity prices, an increase in risk aversion, and the outlook of a global recession. In this context, the majority of emerging long-term sovereign rates increased significantly since the last FSR, which reported a downward trend for a large share of these countries. These rates have also been more volatile. In Chile, sovereign rates have increased marginally, resulting in a recovery of their lower volatility relative to other emerging economies, which had increased due to the effects of the social protests toward the end of last year. The volatility of the peso-dollar exchange rate was in the high end of the distribution, after increasing much more than comparable countries in late 2019, although it has tended to decline in recent days, landing below the median of a sample of emerging economies. These fluctuations are consistent with the floating exchange rate regime. (Central Bank of Chile, 2020a, p. 16)

In this sense, Chile has a favorable external position, based on a set of factors. First, a large share of external liabilities corresponds to foreign direct investment (FDI), while external portfolio liabilities are predominantly fixed-income. The increase in this component in recent years was driven by an increase in nonresidents' appetite for sovereign debt, and their share of this type of asset has grown even while local pension funds continue to account for a large share. As mentioned in past FSRs, these agents act as mitigators against external shocks, keeping the volatility of long-term interest rates relatively low vis-à-vis other emerging countries. Second, the floating exchange rate regime implies that external shocks are absorbed by the exchange rate and do not affect long-term funding costs in local currency. Essentially, the successive depreciations have been absorbed by other agents in the economy, without major repercussions on their balance sheets, in part because local agents have a limited exposure to currency risk. In particular, households do not use foreign currency loans to finance their homes or their consumption needs. The government, in turn, has a foreign currency surplus. Third, there is a deep local debt market where firms can issue long-term bonds domestically and where large institutional investors channel household savings to these firms. An inflation-linked unit of account (UF) makes it possible to issue this debt at a fixed interest rate and relatively long maturities. In this sense, the CBCs commitment to keeping inflation low is crucial for the adequate

functioning of the private long-term debt market. Finally, external corporate debt is mainly concentrated in two sources: loans from related firms (FDI) and overseas bonds. As mentioned in past FSRs, loans from related firms are usually recorded as loans from a parent company to a local subsidiary, such that this type of financing represents a strategic decision by the parent company regarding the mix of capital versus debt, with no implications for financial or currency risk exposure. In the case of external bonds, the available information indicates that it is largely hedged against currency risk, either because the firms have business in foreign currency or because they use derivatives to close the position. (Central Bank of Chile, 2020a, p. 24)

The stress in the financial markets affected corporate and bank bond spreads, which increased over 75 bp in March and 40 bp in the year. Although spreads could compress, given the bond purchase program, the higher long-term funding cost for banks could limit the flow of credit operations at those maturities, such as home financing loans. With regard to short-term funding, the deposit-swap rate spread has increased recently, which suggests that the liquidity conditions of bank deposits have decreased. However, the increase was reversed by a reduction in the reference rate. (Central Bank of Chile, 2020a, p. 51)

Under a severe stress scenario, the annual GDP growth rate would reach -9.4% in the most critical quarter, to then converge in the medium term to a rate of 1.4% in 2022, thus exceeding past episodes of significant financial fragility. The scenario also considers an exchange rate depreciation and a shift in the spot and forward yield curves, with an increase of 300 bp in the short-term interest rate and 100 bp in the long rate. Additionally, currency risk considers exchange rate volatility equivalent to a 16% variation. (Central Bank of Chile, 2020a, p. 52)

For this year, plans include issuing the necessary regulations for the operation of a large-value clearing house in U.S. dollars, for settling payments in peso-dollar spot operations, which can then be cleared through the RTGS system in U.S. dollars as discussed above. Additionally, as part of the process of structuring a network of infrastructures to facilitate the international integration of the Chilean financial system and mitigate the risks of foreign exchange settlements, work continues on the incorporation of the Chilean peso in the Continuous Linked Settlement (CLS) system, although this is a medium-term process. This latter initiative requires the issue of regulations to recognize international payment systems for clearing and settling payments locally, as authorized by the BCA. (Central Bank of Chile, 2020a, p. 83)

After ending 2019 at Ps744.6:US$1, the peso has remained on a declining trend; it depreciated in January and February (by 7.2% and 2.3%, respectively) after a mild appreciation observed in December 2019, owing to caution following anti-government protests last year, as well as investor fears around the countrys exposure to Chinese demand and commodity prices. Although currency weakness will persist for the next few months, we expect central bank intervention in

foreign-exchange markets (an intervention of up to US$20bn was announced in November last year and will last for six months) to result in the appreciation of the peso, to Ps688.2:US$1 at end-2020, aided by a restoration in consumer and investor confidence after the protests end. The appreciation will gain momentum from 2021, before the currency begins to stabilise at about Ps659.5:US$1 in 2023-24. (Economist Intelligence Unit, 2020, p. 10)

We expect the Covid-19 pandemic to weaken the peso in 2020, owing to strong investor fears surrounding the country's exposure to global demand, especially from China. The peso has remained on a depreciative trend since the start of 2020, and had lost 11.7% of its value by April. This depreciation was due to caution following anti-government protests in 2019 and investor fears regarding the country's exposure to global demand and commodity prices. Although the currency regained some of its lost value in May (about 4%), it will still remain relatively weak for the next few months. However, we expect the BCCh to step in with its foreign-exchange intervention programme (an intervention of up to US$20bn was announced in November last year and will remain in place until January 2021), in the event of a sudden and sharp swing in the currency. We expect a recovery in global investor sentiment to eventually contribute to a partial reversal of the recent steep peso weakening. Nonetheless, we anticipate that the exchange rate at end-2020 will still be weak, at Ps808.2:US$1. We expect the peso to appreciate from 2021 onwards, averaging Ps700.2:US$1 in 2021-24. (Economist Intelligence Unit, 2020, p. 9)

A.1.5 June-August 2022

In the local financial market, the exchange rate, interest rates and the risk premium have shown a volatility that goes beyond what is observed in other economies. The peso/dollar exchange rate fluctuated at unusually high levels in mid-July, with a marked divergence from its external determinants, causing distortions in the functioning of the markets and prompting the Central Bank to announce an intervention program (Box I.2). Upon said announcement, tensions in the price formation process in the forex market eased, observing a decrease in volatility and in the exchange rate. In any case, compared to the statistical cut-off date of the previous Report, the peso depreciated in nominal and real terms. (Central Bank of Chile, 2022c, p. 5)

The upper part of the MPR corridor reflects sensitivity scenarios where the global inflationary problem calls for a more aggressive response of monetary policies around the world, particularly the Federal Reserve. In such an event, there would be a sharp deterioration in global financial conditions and growth, with sharp declines in commodity prices and a further appreciation of the dollar. In a scenario where domestic inflation and expectations remain high, further peso depreciation would require a tighter monetary policy response than that in the central scenario. The same would occur if, irrespective of the cost pressures of the external scenario, local inflationary dynamics were more persistent as a result

of the high medium-term inflationary expectations of households and businesses. (Central Bank of Chile, 2022c, p. 6)

In the local financial market, variables such as the exchange rate, interest rates and the risk premium have shown movements that exceed those observed in some comparable economies (figure I.5). Towards mid-July, the exchange rate fluctuated with unusually high intensity and volatility, which strained price formation in the forex market and led the Central Bank to announce an intervention program on 14 July (box I.2). After the announcement, the parity dropped significantly, and with less volatility than before the intervention. At the statistical close of this Report, the exchange rate had increased by nearly 10% compared with the June Report. The real exchange rate, meanwhile, has risen in recent months, standing between 3% and 4% above its second-quarter average. (Central Bank of Chile, 2022c, p. 13)

Chile has had a floating exchange rate regime since September 1999. Essentially, the nominal exchange rate is determined by supply and demand in the foreign exchange (forex) market, without the participation of the Central Bank. In a context of financial integration, the floating exchange rate allows for an independent monetary policy and facilitates the adjustment of relative prices in the face of shocks, which mitigates their consequences on the real economy and avoids prolonged exchange rate misalignments. (Central Bank of Chile, 2022c, p. 24)

By mid-July, the depreciation process was accompanied by a sharp increase in exchange rate volatility at a time when agents were finding it difficult to determine the equilibrium price. The abrupt instability in the forex market did not occur in other countries in the region, suggesting that local market tensions were of idiosyncratic nature (figure I.21). This behavior, and the risks it posed to the performance of other markets, such as fixed income, motivated the decision to announce an intervention and liquidity provision program on 14 July. The purpose of this program was to facilitate the adjustment of the Chilean economy to a domestic and external environment with high levels of uncertainty. The program, which began on 18 July, will last until 30 September, and involves an amount of up to US$25 billion, of which up to US$10 billion will be sold in the spot market and up to US$10 billion in hedging instruments, plus a liquidity provision through a swap program for up to US$5 billion. (Central Bank of Chile, 2022c, p. 25)

Exchange market volatility has decreased significantly since the intervention was announced (figure I.21). This observation is confirmed by formal empirical analysis in the work of Acevedo et al. (2022), who find a significant reduction (6.3%) in the parity in the days immediately after the announcement controlling for the usual exchange rate determinants, as well as in volatility indicators with a somewhat longer lag. This suggests that, to date, the ongoing intervention has achieved its objective of assisting the proper functioning of the forex market,

facilitating the economys adjustment to the current external and internal conditions. This supports the notion that, under the right circumstances, exchange rate interventions can reduce the risks associated with highly stressful situations in the forex market and contribute to the proper functioning of markets and the economy. The future trajectory of the exchange rate, however, will depend on the evolution of its fundamentals and the way in which the current sources of uncertainty, in both the external and internal environment, are resolved. (Central Bank of Chile, 2022c, p. 25)

The exchange rate increase is a major factor behind the higher inflation outlook in the central scenario. This scenario assumes that the real exchange rate (RER) will remain above the June estimate over the entire projection horizon. The depreciation of the local currency occurs in a context of tightening external financial conditions, with a strengthening of the dollar at a global level, although idiosyncratic elements continue to influence its behavior (figure I.5a). The projections of this Report consider the information publicly available until Thursday September 1. However, an exception is made this time for the exchange rate. Considering the movement it had in the last couple of weeks, the inflation projections use as a starting point a nominal exchange rate of $890 per dollar, which is close to the dollar average observed in the week prior to the release of this Report. (Central Bank of Chile, 2022c, p. 30)

In the short term, the Banks equity is projected to return to negative. However, in the central scenario of the long-term projection, the profitability of both international reserves and local assets and the lower relative cost of debt will gradually decrease the net worth deficit of the Central Bank of Chile. Thus, it is projected that the net worth will return to positive by September 2037. This projection is based on several assumptions, including: (i) growth in line with the Central Banks trend GDP projections; (ii) a local inflation tending to 3%; (iii) the real exchange rate converging towards the end of 2025 to its average of the last 10 years, remaining at that level over the projection horizon; (iv) withdrawal of the liquidity infused into the economy through the bank-bond purchase programswhich investments are held in portfolio to maturityand the special programs FCIC1-LCL, FCIC2 and FCIC3; (v) no long-term debt issuance; (vi) adjustment of the short-term debt to maintain the net worth identity of the balance sheet; and (vii) the growth of assets in local currency is absorbed in liabilities with the PDBC, monetary base, and FPD. (Central Bank of Chile, 2022c, p. 36)

On July 14, 2022, the Central Bank of Chile announced a new program of extraordinary measures to be implemented between 18 July and 30 September 2022. This program consists of two partsone oriented to foreign exchange intervention including the sale of spot dollars for up to US$10 billion and the sale of foreign exchange hedging instruments for up to US$10 billion. The other part of the program is aimed at providing liquidity in dollars with foreign exchange swaps for up to US$5 billion, complemented with a liquidity program in pesos through

REPO transactions with the same maturities. (Central Bank of Chile, 2022c, p. 46)

Specifically, the intervention in the foreign exchange market considers: sales of spot dollars for up to US$10 billion, sales of foreign exchange hedging instruments for up to US$10 billion, and a foreign exchange swap program for up to US$5 billion, among other measures. (Central Bank of Chile, 2022c, p. 62)

The domestic financial market had adapted to the deteriorating global financial conditions, in a context of high local uncertainty. Since the last Meeting, the IPSA had fallen by nearly 5%, the sovereign risk premium (CDS) had increased and the nominal 10-year interest rates (BTP-10) showed no major variation. The exchange rate had depreciated sharply (just over +20% since the last meeting), with high volatility. Up to that moment, the markets had been able to absorb the shocks adequately and the volatility in the forex market had not been transmitted to other segments of the financial system, which had operated with adequate liquidity levels. (Central Bank of Chile, 2022b, p. 3)

It was pointed out that, under normal circumstances of orderly macroeconomic conditions, it would be natural to evaluate the recent macro developments and the monetary policy outlook, by placing more weight on its medium-term effects than on the short-term inflationary impact. This was true both for what was happening with the sharp depreciation of the peso and the evolution of the external scenario. It was argued that, unfortunately, the Chilean economy was not in a normal situation; on the contrary, it continued to show significant imbalances: the activity gap remained wide; inflation was at levels not seen in many decades; and the current account deficit also showed very significant values. (Central Bank of Chile, 2022b, p. 4)

The discussion focused on the events that were occurring in the forex market, and there was agreement that the situation should be monitored on an ongoing basis, since changes were taking place at unusual speed. In fact, in recent days a significant increase in exchange rate volatility had been accumulating, which could introduce a difference with respect to the assessment made early in that week. It was agreed that the Bank had no limitations to act in the foreign exchange market, but that any action in this matter should be analyzed on its merits, referring to the functioning of such market and its potential repercussions on other segments of the financial market. Consistently, the Board agreed that, despite existing communicating vessels, the monetary policy decision does not relate to a specific exchange rate level, but rather to the evaluation of the inflationary implications of movements in the currency parity. (Central Bank of Chile, 2022b, p. 5)

The external macroeconomic scenario has evolved negatively in recent months, becoming the main risk threatening global financial stability. The sharp rise in inflation —augmented by the intensification of the conflict between Russia

and Ukraine— has led to a response by central banks, who have considerably increased their monetary policy rates. In turn, this has tightened financial conditions and liquidity, increasing the likelihood of a global recession in 2023. The Feds tightening of tone and decisionsplus the uncertain future trajectory of its policyhas contributed to a global dollar strengthening cycle and has increased the sensitivity of financial markets to new developments. (Central Bank of Chile, 2022a, p. 3)

The higher volatility of the exchange rate and local interest rates takes place in a context of less capital market depth, which reduces its ability to stabilize external pressure and where uncertainty levels are at historic highs. Although the capital market has not deteriorated further, the liquidation of long-term savings, the weakening of the macroeconomic environment and greater uncertainty have affected the investment profile of various agents and the dynamism of the financial market. This has reflected on a reduction in the issuance of instruments, the amounts traded, the duration and liquidity of institutional investors portfolios and on their participation in the forex derivatives market. (Central Bank of Chile, 2022a, p. 4)

The banking sector shows resilience, with contained risks and high levels of provisions, liquidity, capital, and profitability. Lending has reduced its dynamism, which is consistent with the process of normalization of imbalances, tighter supply conditions and weakened demand, according to the third quarter Bank Lending Survey. Although non-performing loans have increased somewhat, their levels remain low. Banks have been preparing for a possible further deterioration of the loan portfolio by increasing their provisions, both specific and additional. Currency mismatches are limited and, together with adequate levels of liquidity, they have allowed banks to weather the increased volatility in exchange rates and interest rates. Profits rose significantly in the last year. This is the result among other factors of the increase in the monetary correction margin and greater operating efficiency, which have compensated for the lower interest spreads. Stress tests show that banks would remain solvent and with adequate liquidity to face possible severe stress scenarios. (Central Bank of Chile, 2022a, p. 5)

The Central Banks financial policy agenda is consistent with the challenges set out in the Report and aims to promote a stable, resilient, and inclusive financial system. The Bank completed the convergence of its liquidity risk regulation to international standards and continues to modernize its foreign exchange regulation. In addition, in June it modernized its regulation on savings accounts to make this product more accessible to households and facilitate its digital implementation. The Bank continues to focus on consolidating a payments system with new players and inclusive for users. In addition to the development of its digital payments and financial infrastructure agenda, following up on initiatives for low-value and high-value clearing houses in foreign currency. Also noteworthy is the progress made in initiatives such as the Financial Innovation Law known

as the Fintech Law which will contribute to boosting competition and inclusion in this area, and the draft of the financial sectors Resilience Law. (Central Bank of Chile, 2022a, p. 7)

The external macroeconomic scenario has deteriorated significantly since our previous FSR, becoming the main source of risks to global financial stability. The sharp rise in inflation plus the response of central banks have tightened financial conditions and liquidity, contributing to increasing the likelihood of a global recession in 2023. In an environment of a globally strengthening dollar, risk appetite has been reduced, affecting asset prices and increasing volatility in global financial markets, especially fixed-income instruments. This scenario is compounded by multiple sources of vulnerability, including the weaker international corporate sector and the dwindling Chinese economy with its real-estate sector, which is also a cause for concern in the developed world. Locally, and in a context of still high uncertainty, the financial market has attached to global trends, although the greater volatility of the peso and long-term sovereign rates stands out. Going forward, the main threat for emerging economies is that a worsening of the international scenario will intensify capital outflows and trigger episodes of high volatility. In the country, the greatest vulnerability comes from the capital market, which has been unable to restore its depth and stabilization capacity in the face of financial pressures from abroad. Thus, at this juncture, it is necessary to prioritize measures and policies aimed at promoting stable long-term savings. (Central Bank of Chile, 2022a, p. 8)

Global financial and liquidity conditions have worsened, magnifying the risks to emerging economies (box I.1). The recent hardening of the Feds tone and decisions, together with the uncertainty surrounding the future path of its monetary policy, have led to a cycle of global appreciation of the U.S. dollar. Thus, in the face of an increase in global risk aversion, financial conditions have tightened and relative demand for short-term liquid financial assets has increased. This has put pressure on term premiums and has reduced the liquidity of sovereign fixed-income instruments. (figures I.2 and I.3; Acharya et al., 2022). (Central Bank of Chile, 2022a, p. 8)

The exchange rate and long-term interest rates continue to exhibit unprecedented degrees of volatility. Exchange rate volatility is in the higher part of the distribution of a sample of countries (figure I.8). Last July, the peso depreciated with unusually high intensity and volatility, which strained price setting in the forex market and augmented the risk of spilling over to other assets. In view of these events, the Board of the Central Bank of Chile announced a foreign exchange intervention program in force until the end of September which provided support for the proper functioning of this market. In terms of long-term sovereign rates, Chile used to show lower volatility than the group of comparable economies, but in the last two years the local economy moved to the middle of the distribution of countries in this dimension (figure I.9). In addition, the usually negative relationship between exchange rate movements and long rates has been reversed

from the beginning of 2021. These developments have occurred in a context of a shallower capital market and greater economic uncertainty since the end of 2019 (figure I.10). (Central Bank of Chile, 2022a, p. 12)

The literature has found that a dollar appreciation has a high correlation with a more contractionary monetary policy in the United States especially if it is sudden, with lower levels of risk appetite and global liquidity, which has adverse effects on economic growth[3]/. In the past, dollar appreciations have been followed by increases in external financing costs, a decrease in credit (Bruno and Shin, 2015), and capital outflows, resulting in lower economic growth (Obstfeld and Zhou, 2022; Hofmann and Park, 2020). Evidence has it that a less predictable than usual monetary policy in the U.S.as is now occurring has a significant impact on emerging economies. These surprises have persistent effects on capital outflows, activity, and the exchange rate (Ciminelli et al., 2022; Iacovello and Navarro, 2019; Hoek et al., 2020). In Latin America, there is evidence that a surprise Fed policy rate increase of 100bp is associated with a 200bp increase in the average spread in the region and has contractionary effects on activity. By country, these impacts show high heterogeneity and are more intense when there is less financial strength at the time of the surprise policy rate increase (Beltrán, 2022). (Central Bank of Chile, 2022a, p. 16)

In a context of higher exchange rate volatility (chapter I), the corporate sector exhibits a limited currency mismatch (figure II.4)3/. Thus, companies with a mismatch of more than 10% accumulate 11% of total assets, while those with a mismatch of less than -10% account for 15%, which is similar to the averages of the last ten years. In any case, the risk remains that a deepening of the pesos volatility could reduce the firms ability to effectively hedge their exchange rate mismatch, affecting their bottom line4. (Central Bank of Chile, 2022a, p. 20)

The sheer magnitude of the CLP depreciation in recent weeks and rapidly rising risk that distressed FX market price dynamics could destabilize the broader financial system (beyond adding more fuel to an already very hot inflation backdrop led the central bank to overcome the initial reluctance and move to intervene in the FX market. This is a welcome development, in particularly, if coupled with a decisive conventional monetary policy strategy. (Goldman Sachs, 2022, p. 14)

The Chilean peso will be under depreciation pressure until late 2023, owing to interest-rate rises in the US, a wide current-account deficit and jitters about constitutional reform. It will strengthen in 2024-27, assuming a more benign policy and global environment. (Economist Intelligence Unit, 2022, p. 2)

A.2 Brazil

A.2.1 May-November 2002

The volatility of the exchange rate and of the assets market continues to be the main focus of uncertainty for inflation forecasts, particularly for 2003. The exchange rate depreciation has led to an upward review of the projected figures, in

addition to increasing uncertainties in relation to the persistence of this depreciation and to the extent of its pass-through to market prices. According to the forecast models, the highest impact of the recent exchange rate depreciation on market price inflation is likely to be felt still in 2002. However, Copom believes that an additional pass-through will occur in 2003, even assuming that the exchange rate will remain at the same level observed on the eve of the Committee meeting. (Banco Central do Brasil, 2002, p. 8)

The exercise involving the exchange effect considered that it is not reasonable to presume a continuous real trajectory of exchange depreciation. Aside from this, the alteration in the real rate of exchange would only have a permanent impact on the debt stock if the entire exchange debt were to mature and be redeemed at the less favorable rate or, in other words, eliminating any debt rolling or refinancing of the debt through instruments not indexed to exchange. On the contrary, the fiscal loss is partially or totally reversed whenever the real rate of exchange appreciates. The effect of a gradual return of the real rate of exchange to its median level of the past fifteen years is shown in the table below, in comparison to the basic scenario. The effect is substantial: the debt/GDP ratio drops by approximately 25 percentage points in ten years. (Banco Central do Brasil, 2002, p. 69)

Since the Copom meeting in August, the impact of the exchange ratevariation has been reassessed. According to the models used by the Central Bank, the behavior of the inflation of market prices in the yearup to August is consistent with the exchange rate depreciation observed in the period. However, given the magnitude of the exchange rate depreciation observed throughout the year, the exchange rate pass-though may increase. In particular, the possibility of a higher pass-through is increased in an environment of recovering growth. However, in this scenario of recovered economic activity and improved expectations, an exchange rate appreciation can be reasonably expected. Nevertheless, Copom has deemed it was necessary to add to the next year's inflation forecast an exchange rate pass-through that was repressed this year. (Banco Central do Brasil, 2002, p. 110)

The volatility of the exchange rate and of the other markets continues to be the main focus of uncertainty for inflation forecasts, particularly for 2003. The exchange rate depreciation has led to an upward review of the projected figures, in addition to increasing uncertainties in relation to the persistence of this depreciation and to the pass-through to market prices. As explained in section 6.1, according to the forecast models, the impact of the recent exchange rate depreciation on market price inflation should be observed still in 2002. Nevertheless the Copom believes that an additional pass-through may be felt in 2003, even if the exchange rate remains at the level observed on the eve of the Committee meeting (R$ 3.20). (Banco Central do Brasil, 2002, p. 112)

During the 18 working day period between May 23rd and June 19th, Banco Central do Brasil intervened in the open market by withdrawing and providing

liquidity at one working day tenure and yields of 18.40% and 18.50% p.a., and average volumes of R$ 6.5 billion and R$ 0.9 billion, respectively. In the same period, Banco Central operated with daily spread auctions to level out the banking liquidity. In all operations in which Banco Central provided liquidity to the market, the yield was 18.60%. In the liquidity withdrawing interventions, the yield fell to 10% from 15%, ending the period at 18.30%. In the 18-day period, the average liquidity withdrawn and provided in the leveling operations, reached R$ 0.7 billion and R$ 0.2 billion, respectively. There were also two selling auctions of LTN with repurchase agreements, totaling R$ 3.4 billion and with an average tenure of 20 working days. (Banco Central do Brasil, 2002, p. 132)

Between July 17 and August 20 the BCB carried out two partial rollovers of the BCBs Notes E Series (NBCE), by offering exchange rate swaps with varied maturities. For the rollover of R$1,9 billion in NBCEs, due on July 25, the reference value of the swap contract reached R$1,1 billion. For the rollover of the R$7.6 billion NBCE maturing on August 15 the equivalent of R$4,7 billion exchange rate swaps were placed. The BCB also offered exchange rate swaps against the R$2,3 billion National Treasury Note D Series (NTN-D), maturing on August 7, but these were not placed due to low demand. It should be pointed out that in this period only 50% of the exchange rate indexed debt was rolled over as a result of the weak demand for exchange rate hedging. (Banco Central do Brasil, 2002, p. 156)

In the second half of 2002, the Brazilian economy faced a crisis of confidence in the domestic and international scenarios of relevant magnitude. Internally, the uncertainties about the evolution of the electoral process and the future of the economic policy contaminated the financial markets and the capital flows. The deterioration in the perception of credit risk and the increase in prices volatility had affected public securities and the exchange rate, promoting stress. Thus, the exchange rate registered a depreciation of 24% in the second half of 2002, the dollar rate reached R$3.95/US$, with severe impacts on the inflation trajectory. It forced the Banco Central to raise the Selic interest rate by 700 basic points in the last quarter of the year. (Banco Central do Brasil, 2003, p. 9)

In the FX market, expectations of negative exchange flows, caused by cutbacks in voluntary private capital inflows, led to increased pressure on the spot market and had a significant impact on the exchange rate. With the increase in the exchange rate, more economic agents turned to the market and tried to anticipate the currency purchases to meet external commitments scheduled to mature by the end of the year. This vicious circle process was intensified, particularly in the second half of the year. Spot market currency purchases resulted in a reduction of the market s hedge position. This, in turn, was reflected in partial rollover of maturing National Treasury and Banco Central dollar-linked instruments (securities and swaps). The spot exchange rate moved to a level above that of the futures market and, with this, the dollar-denominated spread for three-month

operations spiraled to more than 60% per year in October. The consequent reduction of the current value of positions in FX instruments led many financial institutions to resort to the spot market in order to maintain their FX exposure levels. Finally, the steady depreciation of the real discouraged them from assuming short positions in the FX market. The most critical months were July and September, when devaluations were 20.5% and 28.8% respectively. (Banco Central do Brasil, 2003, p. 12)

In this scenario, the exchange rate reached a maximum of R$3.95/ US$ on October 22, representing an increase of 70.2% in the year and 38.8% in the second half alone. To curtail the impacts, Banco Central took the following measures: sales of dollars in the spot market; opening of dollar-denominated trade credit lines; continued offer of FX hedge; reduction in the banks foreign exchange exposure limit from 60% to 30% of regulatory capital; increase in reserve requirements on demand and time deposits; and a restricted monetary policy starting from October. In addition to these measures, the government formalized a new US$30 billion loan with the IMF, with prompt disbursement of US$6 billion in 2002. Despite these efforts, however, the end-of-year rate of the American dollar was still above the level of R$3.50/US$. (Banco Central do Brasil, 2003, p. 13)

Market operations, increased R$43 billion in the half-year period, coming to R$64 billion at the end of the year. The drastic reduction of external flows, observed even in short-term trade lines, and the lack of interest in Brazilian assets were expressed by high depreciation, increased volatility of the exchange rate and prices of the external public debt. The Embi-Brazil, between July and the end of September, increased from 1,600 to 2,440 points and, in October, the American dollar rate closed at R$3.95, with the spot-market rate higher than that of the futures market, when the 3-month dollar- denominated spread surpassed 60%p.y. The S o Paulo Stock Exchange index reflected this scenario, with accumulated losses of 24% from July to October, as well as the inflation rate, particularly the General Price Index - Market (IGP-M), which monthly growth came to 5.19%, in November. (Banco Central do Brasil, 2003, p. 27)

Some of the measures adopted to minimize these developments, were the intervention of Banco Central in the public securities market and the FX market, the rise of the interest rate and of reserve requirements on demand deposits and time deposits, the reduction of the banks FX exposure limits, the increase of the fiscal surplus goal and the new loan contracted with the IMF. Following the presidential election, a reversion of the expectations took place, as a result of the prompt statement that there would not be any fundamental change in the economic policy, from fiscal discipline to inflation control, and that the contracts and the payments would be honored. At the end of the year, several asset price indicators, the exchange rate, the country-risk and the yield curve had already showed some signs of recovery. (Banco Central do Brasil, 2003, p. 27)

The instability wave that swept the global financial markets was due to several factors, amongst which the uncertain behavior of the world economy, corporate

frauds involving major multinational companies and the possibility of war against Iraq. These factors altogether provoked a rise in the risk premium of countries and companies, the fall of stock exchanges, the rise in oil prices, the depreciation of the dollar against both the euro and the yen, and a generalized credit restriction. (Banco Central do Brasil, 2003, p. 27)

Brazilian financial asset prices and BRL plunged again this week. This is because of concerns about fiscal and debt sustainability at a time of political uncertainty because of the risk of a regime switch and the absence of concrete economic plans for the next government. The monetary and fiscal tightening combined with domestic and external debt management initiatives and additional IMF support could gradually rebuild confidence in local markets. We believe that conditions are set for Serra start narrowing his distance from frontrunner Lula in the next four weeks which, together with recent measures, could stabilize Brazilian financial markets. (Goldman Sachs, 2002, p. 1)

Over the last two weeks, Brazilian financial markets sold off strongly. The turbulence was caused in part by a rise in political risk, with local financial institutions growing increasingly uncomfortable about holding domestic public debt maturing after January 2003, when the new administration takes office. Investors worry about fiscal sustainability and the lack of specific economic policy proposals from the presidential candidates for permanently resolving this problem. The turbulence was also due to financial and regulatory developments that altered the balance in local financial markets, a balance shaken by higher political risk and a complex domestic public debt structure. (Goldman Sachs, 2002, p. 1)

These developments caused a strong sell off across all Brazilian financial asset classes. While there are reasons for concern, the intensity and speed of the sell off suggests an overshooting of asset prices, one that could be reversed through policy actions and better political news. This is indeed what has happened since June 13, when the government announced it would draw US$10 billion from the Fund, tightened fiscal and monetary policies, and announced external and domestic debt management initiatives. We believe that there is scope for reinforcing the measures with a temporary lighter and pre-announced schedule of domestic debt issuance by the Treasury. Such initiatives could "hold the fort" for the next four to eight weeks while the PSDBs candidate Serra consolidates his electoral platform and coalition with PMDB, and gradually starts rising in the polls. (Goldman Sachs, 2002, p. 1)

A.2.2 September- November 2008

In the United Kingdom, the worsening of the crisis in the real estate sector was responsible for the Pound Sterling depreciation. At the end of August, the currency reached the lowest level in the latest 25 months against the American dollar. In Japan, the recent Yen depreciation re ects the countrys concerns on the effects of global deceleration on domestic economy, strongly dependent on exports.

On the other hand, the recurrent release of additional accounting write-offs by international financial institutions has favored the amount of carry-on operations, mitigating the adverse effects of the Yen/Dollar parity on the deceleration of the Japanese economic activity. In the Euro Area, the recent depreciation of the Euro against the dollar mirrored, especially, the negative performance of European economic indicators. On August 8, the American dollar grew 2.1% against the Euro, the highest growth in the latest seven years. (Banco Central do Brasil, 2008a, p. 59)

The extension and length of the US mortgage crisis developments over the local and European banking systems still prevail, as well as about the impacts over the credit availability for business and households in those regions. Systemic risk perception is still high, as financial problems have aggravated due to a cyclical deterioration in credit quality, which tends to tighten financial conditions and, as a consequence, the risk of more intense economic deceleration. In this context, US government intervention in large mortgage companies can be seen as a necessary condition, although probably insufficient to overcome such crisis. Most common opinion among analysts indicates that activity in Europe and Japan should decelerate throughout the second half of 2008. In developed economies, therefore, prospects for the adoption of tightening policies seem limited; on the other hand, although showing some moderation at the margin, emerging countries growth remains strong and, up to now, was apparently little affected by the mortgage crisis in the US, partially counterbalancing the activity deceleration in mature economies. In fact, due to the pressure over the availability of production factors, the inflation elevation pointed to the maintenance of monetary tightening policies in several emerging economies. The prospects for the monetary policy in emerging countries became even more complex in the last weeks, when several currencies, not only from commodity-exporting countries, significantly depreciated in relation to the US$, in the midst of an increase of volatility and risk aversion indicators in international financial markets. Nevertheless, policies aiming at the reduction of external vulnerability of Brazilian economy have been successful, contributing to reduce, though not eliminate, the effects of the external environment on local economic activity, which has been driven essentially by domestic demand. (Banco Central do Brasil, 2008a, p. 142)

Regarding the external scenario, the global economy still shows divergent pressures, with more evident signs of deceleration and still high inflation rates. The prevailing interpretation still points to the expansion, at a moderate pace, of economic activity in 2008 and 2009, but data released in the last few weeks indicate a more intense cooling of activity in mature economies, mainly in the Euro area, the United Kingdom and Japan, while signs of economic activity deterioration also appeared in the US, despite the fiscal and monetary stimuli previously adopted. There are evidences that the deeper weakening of economic activity in Europe and parts of Asia was predominantly due to the negative shock in the terms of trade caused by the elevation of commodities prices (which could be reversing). The secondary effects derived from the increase in raw materials prices,

and the pressures of heated demand over supply expansion capability, which are particularly evident in emerging economies, have sustained current inflation rates at high levels, with significant consequences, in several cases, over inflation expectations. Furthermore, a severe financial crisis in the USA and, to a minor extent, in Europe, must be added to this adverse scenario. In this context, although the presence of inflationary pressures has been a concern for an important number of monetary authorities, their policy reactions have been heterogeneous, and this situation tends to persist. The US economy, specifically, started to decelerate in the last quarter of 2007 and it still continues to suffer the impacts of the housing sector crisis, with spillover effects on the labor market, whose weakening, together with the increase in the prices of oil by-products, has reduced consumer s confidence, significantly contributing for depressing expenditure. Although fiscal and monetary stimuli have limited the risks of a deeper activity contraction, the dominant expectation still indicates a more consistent recovery only from 2009 on. Even after an important reinforcement of the capital base of significant financial institutions, uncertainties about the extension and length of the US mortgage crisis developments over the local and European banking systems still prevail, as well as about the impacts over the credit availability for business and households in those regions. Systemic risk perception is still high, as financial problems have aggravated due to a cyclical deterioration in credit quality, which tends to tighten financial conditions and, as a consequence, the risk of more intense economic deceleration. In this context, US government intervention in large mortgage companies can be seen as a necessary condition, although probably insufficient to overcome such crisis. Most common opinion among analysts indicates that activity in Europe and Japan should decelerate throughout the second half of 2008. In developed economies, therefore, prospects for the adoption of tightening policies seem limited; on the other hand, although showing some moderation at the margin, emerging countries growth remains strong and, up to now, was apparently little affected by the mortgage crisis in the US, partially counterbalancing the activity deceleration in mature economies. In fact, due to the pressure over the availability of production factors, the inflation elevation pointed to the maintenance of monetary tightening policies in several emerging economies. The prospects for the monetary policy in emerging countries became even more complex in the last weeks, when several currencies, not only from commodity- exporting countries, significantly depreciated in relation to the US$, in the midst of an increase of volatility and risk aversion indicators in international financial markets. Nevertheless, policies aiming at the reduction of external vulnerability of Brazilian economy have been successful, contributing to reduce, though not eliminate, the effects of the external environment on local economic activity, which has been driven essentially by domestic demand. (Banco Central do Brasil, 2008a, p. 132)

Oil prices remain highly volatile, but reduced considerably since the last Copom meeting. Future markets and the consensus among analysts suggest that oil prices could stabilize around current levels. However, uncertainty concerning

these evaluations is remarkably high, as the prospective scenario depends on the evolution of demand, especially in emerging countries, on the supply s reaction to stimuli derived from previous changes on relative prices, besides geopolitical issues that affect oil prices. Nonetheless, despite the great uncertainty regarding oil prices trajectory, the main scenario adopted by the Copom, which assumes unchanged gasoline prices in 2008, remains plausible. However, it bears highlighting that, no matter the behavior of domestic gasoline prices, international oil prices at historically high levels affect domestic prices both through productive chains, such as the petrochemical, as well as by the deterioration they may cause on economic agents inflation expectations. The prices of other commodities also showed important reductions since the last Copom meeting, finally reacting to the greater pessimism about the prospects for global economic growth and to the continuity of the global financial scenario on the future trajectory of Brazilian inflation continues to be subject to contradictory effects and surrounded by significant uncertainties. On the one hand, the prospects of more pronounced deceleration of global activity in the upcoming months, which are apparently consolidating, point to an accommodation of both commodities prices and external demand, and can also influence local financial conditions. On the other hand, the cooling trend has caused an increase in risk aversion, impacting the demand for Brazilian assets, and consequently, depreciating their prices. In this scenario, the additional reduction of net exports can occur, with similar effects over the behavior in the prices of certain Brazilian assets. Moreover, the recent trajectory of price indices still evidences the existence of mismatches between the supply and demand growth, and consequently, of significant inflationary risks, in several economies, even though the intensity is now probably lower than in the middle of last year. In light of the deterioration of inflation prospects occurred in the last months, in a more uncertain environment, the Committee evaluates that the risk of materialization of a less benign scenario is still high. The Copom emphasizes that the main challenge of monetary policy in this context is to guarantee the maintenance of favorable results achieved in the last years. Particularly, monetary policy should act so that initially limited impacts on price indices, partially derived from relative prices adjustments that occur in global scale, do not cause persistent deterioration of inflation dynamics due to the worsening of expectations. The Copom thinks that the maintenance of monetary stability is an essential condition for the relative prices system to continue efficiently signaling the necessary adjustments on current consumption and production patterns of the economy. (Banco Central do Brasil, 2008c, p. 5)

The maintenance of inflation rates in line with the targets path and the consequent consolidation of a long-term stable macroeconomic environment will contribute for the progressive reduction of macroeconomic risk perception. The Copom thinks that the persistence of a cautious and timely monetary policy stance has been critical to increase the probability, even in light of global inflationary pressures, that inflation in Brazil will evolve according to the targets path in 2009. For this higher probability to continue to materialize, however, it is

necessary that forward-looking inflation indicators, particularly the expected dynamic of aggregate supply and demand, converge throughout the relevant period for the monetary policy. 20. The Copom emphasizes, once again, that there are important time lags between the implementation of monetary policy and its effects on economic activity and inflation. Therefore, the evaluation of alternative options for monetary policy should necessarily focus on the forward-looking inflation scenario and its risks, instead of current inflation indices. (Banco Central do Brasil, 2008c, p. 7)

The Copom evaluates that, in light of the economy heating signals and the behavior of inflation expectations, the risks for the materialization of a benign inflationary scenario, in which IPCA would resume the evolution in line with the targets path, are relevant. In fact, the deterioration of the forward-looking scenario is still present in the inflation projections considered by the Committee. The Copom also considers that the persistence of significant mismatch between the paces of expansion of aggregate supply and demand continues to represent risk for the inflationary dynamics. Under these circumstances, monetary policy should continue to act through the adjustment of the basic interest rate, while the balance of risks to the inflationary dynamics requires. This adjustment aims, on the one hand, to reduce such mismatch and, on the other hand, to avoid that inflationary pressures initially localized over price indices lead to persistent deterioration of expectations and of the inflation forward-looking scenario. (Banco Central do Brasil, 2008c, p. 8)

Under the inflation-targeting regime, the Copom guides its decisions according to the projected inflation, the analysis of several alternative scenarios for the evolution of the main variables that determine the forward-looking prices dynamics, as well as the balance of risks associated to their projections. Domestic demand has continued to expand strongly and supports the economic activity dynamics, including sectors less exposed to external competition, when the effects of stimuli factors, such as income growth, are still acting over the Brazilian economy. On its turn, the external sector contribution to a favorable inflationary scenario, in light of the strong rhythm of domestic demand expansion, of global inflationary pressures, as well as depreciation in the prices of Brazilian assets, have become less effective, at a moment when the effects of investment over the productive capacity of the economy still need to consolidate. In such environment, the monetary authority should act in order to avoid that the with the dollar appreciation and the increase of risk aversion as a result of the fear of global economy deceleration. Between July 21 and September 8, one-, three-, and six-month rates increased by 83 bps, 78 bps and 61 bps, respectively. Moreover, two- and three-year rates fell by 57 bps, and 69 bps, respectively. Real interest rates, measured by the differential between the one-year forward nominal interest rate and the smoothed twelve-month ahead inflation expectations, increased to 8.96% on September 8, up from 8.79% on July 21. (Banco Central do Brasil, 2008c, p. 8)

On July 28 and August 26, the BCB carried out reverse FX swap auction amount-

ing US$2.7billion, with the rollover of August and September redemptions. In its open market operations, the BCB carried out, from July 22 to September 8, weekly five- and seven-month fixed rate repo operations, borrowing. The average daily balance of these operations reached R$63.1 billion, of which R$44.9 billion were seven-month operations. In the same period, the BCB conducted 35 overnight repo operations, borrowing. The BCB also conducted daily, at the end of day, one- and two-working-day-tenure liquidity management operations. Operations with tenors less than thirty days, including daily liquidity management operations, averaged R$35.5 billion, borrowing. In addition, on July 24 and 30, and on August, 6, 13, 20 and 27, the BCB conducted borrowing operations with tenures from 11 to 19 working days, totaling R$10.5 billion, R$14.1 billion, R$6.6 billion, R$5.6 billion, R$20.5 billion and R$3.6 billion, respectively. Moreover, the BCB also conducted, on July 24, a borrowing operation with tenure of 35 working days amounting R$157.4 billion. These operations averaged R$186.8 billion, on a daily basis. (Banco Central do Brasil, 2008c, p. 13)

The sharp contraction of liquidity on a global scale has resulted in restricted access to external credit lines for banks and domestic companies, which in turn has led to a tightening of liquidity in the foreign currency market. This fact, boosted by growing risk aversion, contributed to a subsequent reduction of operations in the domestic inter-bank market. In this environment, the Central Bank has adopted several measures aiming to provide foreign currency liquidity at the time it promoted changes in the rules on reserve requirements and provided incentives to the trading of assets between nancial institutions, aiming at a normalization of the domestic money market. (Banco Central do Brasil, 2008b, p. 7)

The aggravation of the crisis in the international financial markets caused a sharp liquidity contraction on a global scale, reflected in restrictions to external credit lines access by banks and national companies, as well as in reduced operations in the domestic interbank market in an environment of growing risk aversion. In this scenario, the Central Bank adopted measures aimed at promoting liquidity in foreign currency, at the same time it carried out alterations in the rules governing reserve requirements, even including incentives to asset negotiations among financial institutions. (Banco Central do Brasil, 2008b, p. 55)

The worsening of the international financial markets crisis has been sustaining the dollar appreciation against the other currencies, except for the Japanese yen. The quotations for the pound sterling continue to be impacted by the prospects of relaxation of the BoEs monetary policy because of the lesser demand for government papers of the United Kingdom. The evolution of the euro, particularly conditioned, up to November, by concerns inherent to the solvency of financial institutions and by the apparent lack of regional coordination regarding the policies adopted by the member-countries, which was later resolved, also reflects the perspective of additional cutbacks in the basic interest rates by the ECB. The impact of the volatility registered in the stock exchanges and on the foreign exchange markets continues to raise the wariness to risk on the part of investors,

favoring the process of dismantling of carry operations and, consequently, the appreciation of the yen against the dollar. (Banco Central do Brasil, 2008b, p. 66)

Between the end of August and November 14, the dollar appreciated 16.4% against the euro and 23.5% against the pound sterling, but depreciated 10.7% against the yen. In the year, up to November 14, the dollar appreciated 35% against the pound and 16% against the euro, while it depreciated 13% against the yen. (Banco Central do Brasil, 2008b, p. 66)

In this environment, as of September 18, the Central Bank, looking to highlight the temporary nature of the measures and reaffirm its commitment with the floating exchange rate, began to intervene in the exchange market, by announcing auctions of repurchase lines. On October 10, the Central Bank, in order to make it clear that the provision of liquidity in foreign currency aimed at normalizing the domestic market, informed that there were no previously limits fixed for its intervention. (Banco Central do Brasil, 2008b, p. 93)

On October 9, the National Monetary Committee published Resolution n. 3,622, regulating the FX loans. These loans were limited to 360 days, including renewals, at the Libor cost added with a percentage fixed by the Central Bank according to market conditions. The guarantees were defined in two modalities, namely: i) sovereign bonds denominated in dollars issued by Brazil and countries with rating equal or above A and ii) Advances on Exchange Contracts (ACC), Advances on Exchange Deliveries (ACE), and other external financing modalities. Later, through Resolution n. 3,624, dated October, 16, the CMN determined that the Central Bank should decide whether the resources are to be directed, total or partially, to foreign trade operations. (Banco Central do Brasil, 2008b, p. 95)

FX loan operations will be carried out through auctions by banks authorized to operate in foreign exchange, which will define, inclusively, the spread over Libor rate.In case of maturity expiration of assets given as guarantee during the period of the operation, the bank may complement the guarantee or pay off the corresponding value.The bank may be held responsible for the management of assets given as guarantee. (Banco Central do Brasil, 2008b, p. 98)

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The balance of payments forecasts for 2008 and 2009 were revised in relation to those in the September Inflation Report. This was due to the repercussions of a

deepening crisis of the financial markets both in terms of world economic activity level, impacting the balance of payments result, and of liquidity conditions, affecting the prospects concerning its financing conditions. Besides incorporating the new international outlook, revised forecasts mirror the external results observed in the latest months and the modifications in the external debt service compatible with its stock in September. Additionally, Central Bank interventions in the foreign exchange market and repurchases of sovereign external debt by the National Treasury, carried out up to November. (Banco Central do Brasil, 2008b, p. 109)

The behaviour of domestic prices has not yet shown signs of significant exchange rate pass-through. However, it is important to highlight that there exist lags between the changes in the exchange rate and their effect over consumer prices. This is because there is a whole chain going from imports priced in local currency at the dock to the distribution sector and then to final consumers. Secondly, agents may be waiting for a clearer picture for adjusting prices, in face of the high volatility of the exchange rate in the latest months and thus of the uncertainty about its level over the relevant horizon. In principle, the latest changes of wholesale prices have pointed to mild exchange rate pass-through in the short run. However, if agents perceive that the recent changes in the exchange rate are rather permanent than transitory it is likely that the pass-through becomes more intense. It is quite possible that a scenario materializes in which economic growth is weak and the exchange rate pass-through is low, but still the corresponding inflationary effects are non-negligible. (Banco Central do Brasil, 2008b, p. 129)

In such a scenario, inflation may rise in the short run but fall in the medium run because the transmission mechanism from the exchange rate to prices operates faster than that of the output gap. Under this circumstance, monetary policy must prevent price movements caused by the exchange rate depreciation from contaminating inflation expectations or translating into second-round effects due to adjustments in wage and price to levels prevailing before the depreciation. (Banco Central do Brasil, 2008b, p. 129)

The growth prospects of the Brazilian economy pose another risk to the inflation outlook. Up to the third quarter of the current year, the economy was expanding fast, led by strong growth of the domestic demand. However, despite greater resiliency of the Brazilian economy to external shocks, there are signs that the global crisis is affecting the domestic economic activity more intensively than anticipated. There are several factors pointing to the slower pace of the economic activity: consumption and investment decisions are postponed due to the higher uncertainty brought about by the crisis, more restrictive credit conditions in both the external and the domestic credit markets (higher interest rates, shorter maturity and tighter lending standards), fall of the world demand, and exchange rate depreciation which is raising the cost of imported investment goods. In fact, both leading and coincident indicators of economic activity, such as sales and

production of manufactured goods, confidence indices, rate of capacity utilization and vacation shutdown in some companies, already signal the downturn. (Banco Central do Brasil, 2008b, p. 129)

The recent international financial turbulence, intensified since September, has been causing significant exchange rate movements. The American dollar increased, between the end of August and the end of November, 16% as compared to the Euro, 18% against the Sterling Pound, 31% against the Australian dollar and 41% as compared to the Real. The increase in the risk aversion and the capital repatriation has also been strengthening the Japanese Yen, which grew 12% as compared to the American dollar and 24% when compared to the Euro, in the same period. In this context, it is natural that monetary authorities worry about the possibility of pass-through of the exchange rate change to prices. Given the relevance of the present subject, this box aims at showing a summary of the recent literature on this topic. (Banco Central do Brasil, 2008b, p. 137)

The period since the last Copom meeting was marked by the intensification of severe stress on international financial markets, which originated in the US and Europe, but whose impact on emerging economies has become more significant. The increased risk aversion, observed since mid-September, after the bankruptcy of an important US financial institution, led the authorities in the US, Europe and Oceania to intervene in an unprecedented way in their financial systems, using a wide range of instruments, in order to ensure minimum conditions of operation and liquidity in money markets. Although systemic risk perception is still high, such initiatives, accompanied by programs to reinforce the capital base of relevant financial institutions, seem to have managed to restore the functioning of the interbank markets. (Banco Central do Brasil, 2008b, p. 156)

The international liquidity contraction contributed to a deleveraging process by asset managers, which in turn has been pressuring down the prices of financial assets. In the environment of increased risk aversion and shortage of capital flows, pressures on emerging economies currencies have intensified. In this context, the recent announcement of the currency swap agreements between the US Federal Reserve and the Central Bank of Brazil, as well as with the Monetary Authority of Singapore, the Bank of Korea and the Bank of Mexico, should contribute to mitigate without, however, eliminating the impacts of international financial turmoil on emerging markets. (Banco Central do Brasil, 2008b, p. 155)

An unfavorable forward-looking scenario is still present in the inflation projections considered by the Committee. The Copom also thinks that the persistence of a significant mismatch between the growth paces of aggregate supply and demand continues to represent a risk for the inflationary dynamics, but evaluates that the expected trajectories of domestic consumption and investment have become more uncertain. Under these circumstances, monetary policy should act according to the requirements of the balance of risks of the inflationary dynamics, through the adjustment of the basic interest rate, although not necessarily in a

continuous way, aiming, on the one hand, to reduce that mismatch and, on the other hand, to avoid that inflationary pressures, initially restricted to some price indices, lead to a persistent deterioration of expectations and of the inflation forward-looking scenario. Finally, the Committee thinks that the consolidation of more restrictive financial conditions could intensify the effects of monetary policy over aggregate demand and, throughout time, over inflation. (Banco Central do Brasil, 2008b, p. 158)

After Lehman Brothers declared insolvent, instability increased in the international financial markets, once risk aversion and lack of liquidity affected more decisively real economy funding, mainly in the US. The financial crisis assumed a more generalized aspect worldwide, spreading geographically. Credit channels were obstructed by uncertainty and liquidity and solvency problems that emerged subsequently. In addition to that, the exchange rate depreciation movement, simultaneous in various economies, found international trade in contraction, or, in the best hypothesis, in a situation of significant deceleration. (Banco Central do Brasil, 2008b, p. 163)

In the period between the September and the October Copom meetings, the future yield curve shifted sharply upwards, with an increase in the slope. The period was characterized by high volatility and increased risk aversion in the international markets, as a result of the development of the financial crises in the US and in Europe and of the fear of global economic deceleration. The risk aversion boosted the generalized reduction of the leveraged positions in several markets, generating high losses in the international stock exchanges and the dollar appreciation. Under this scenario, the future interest rate in domestic markets recorded a sharp increase, intensified by the BRL depreciation against the dollar. At the end of the period, the central bank operations in the FX market and the selling/purchase auctions of fixed-income securities carried out by the Treasury contributed to smooth this movement. (Banco Central do Brasil, 2008b, p. 164)

Between September 8 and October 27, one-, three-, and six-month forward rates increased by 47 bps, 38 bps, and 72 bps, respectively. Moreover, one-, two-, and three-year forward rates increased by 146 bps, 268 bps, and 359 bps, respectively. Real interest rates, measured by the differential between the one-year forward nominal interest rate and the smoothed twelve-month ahead inflation expectations, increased to 10.33% on October 27, up from 8.96% on September 8. (Banco Central do Brasil, 2008b, p. 164)

On September 29, the BCB carried out a reverse FX swap auction, with the rollover of the redemption of October 1. This operation amounted to US$0.5 billion, or 26% of the total redemptions. From October 6, the BCB offered traditional FX swap auctions on a daily basis, in which it assumed a long position in domestic interest rates and a short position in FX. In the month through October 27, these operations totaled US$19.1 billion. (Banco Central do Brasil, 2008b, p. 164)

FX Forecast: We are downgrading our 3-, 6- and 12-month BRL forecasts to R$2.10, R$2.05 and R$2.00 from a previous R$1.55, R$1.60 and R$1.70 per US Dollar. Our forecasts are more bullish than the forwards. For the next three months, we maintain our forecast that the BRL will be trading within a wider range than normal, at R$1.90 - R$2.40. (Goldman Sachs, 2008, p. 27)

Motivation for Our FX View: Our downgrade reflects a more challenging global economic environment. The strong increase in risk aversion and tighter credit conditions will reduce capital inflows to Brazil, reducing the surpluses in the capital account and the balance of payments. This would require a weaker exchange rate to curtail import growth in order to realign a growing current account deficit with declining external financing. In the short term, if sentiment in global markets improves and risk appetite recovers significantly, then the BRL could strengthen toward R$1.90. (Goldman Sachs, 2008, p. 27)

Monetary Policy and FX Framework: Since 1999, BACEN has pursued an inflation targeting regime. For 2008, 2009 and 2010, the IPCA inflation target is 4.5% +/- 2.0%. To this end, COPOM targets the interest rate SELIC. Brazil has a managed floating FX regime, marked by large, frequent and discretionary intervention in the spot and derivatives FX markets. (Goldman Sachs, 2008, p. 27)

A.2.3 February-March 2020

In the quarter ended in May, the Commodities Index Brazil (IC-Br) retreated by 15.80% in US dollar, but rose by 9.15% in Brazilian real, highlighting the large and opposite movements of the exchange rate and the price of commodities in foreign currency. The decline in the US dollar index mainly resulted from a sharp drop in the price of oil, which fell from approximately US$50/barrel to US$25/barrel between the beginning of March and the end of April, but ended May quoted at US$35/barrel, as part of the world was already in the process of reopening, and there was greater coordination between members of OPEC+. Despite the initial sharp drop, some recovery in agricultural and metal commodity prices has also been observed. (Banco Central do Brasil, 2020b, p. 29)

Still regarding the stock of corporate credit, the growth projection for the non-earmarked segment increased (from 6.0% to 15.6%) in spite of the deterioration of the prospective scenario for economic activity. This change is based on the perspective of greater credit demand by corporations, a movement that begun to be perceived from the second half of March onwards, when companies sought for liquidity to deal with a worsening crisis. The expectation for exchange rate depreciation, in relation to 2019, although below that observed in March-April 2020, should also contribute to the increase of credit granting in this segment, due both to its direct impact on contracts that have foreign currency charges, or to the stimulus conferred to exporters to anticipate foreign sales. In addition, the intensification of SFN financing of large companies, vis-a-vis operations abroad

and in the domestic capital market, should enhance corporate banking credit throughout 2020. Regarding earmarked corporate loans, an expansion of 1.0% is projected, compared with a previous estimate of a decline of 8.0% in the balance. The reversal of this trend is due both to the programs that suspend payments of financing installments in place, with emphasis on the postponement. (Banco Central do Brasil, 2020b, p. 49)

This period was characterized by the world economic crisis, due to the financial crisis begun in the real estate market in the United States. The impact was brief and deep in Brazil: only two quarters of recession with an accumulated GDP decline of 5.5%. The effective real exchange rate reached a maximum devaluation of 22.2% in 2008Q4, and started to appreciate afterwards. On the financial side, another consequence of the crisis was the reduced availability of financing for emerging countries, mostly impacting the country in 2008Q4 and 2009Q1. (Banco Central do Brasil, 2020b, p. 52)

Gasoline is the sub-item of the IPCA that has the highest weight among the components of the administered prices group (4.59% in May 2020). Gasoline's price depends on the international oil and foreign exchange rate variations, which in the current scenario have fluctuated substantially. Since January, the oil price retreated about 40% and the Brazilian real depreciated approximately 25% against the US dollar (Figure 1), mainly reflecting the Covid-19 pandemic effects and, domestically, the exchange rate changes. The amplification of the volatilities of the international oil price and of the exchange rate are shown in Figures 2 and 3, respectively. In this context, the assessment of how and to what extent the gasoline price determinants are passed through to the consumer price is relevant. (Banco Central do Brasil, 2020b, p. 57)

Considering the methodology used by Aneel to build the exchange rate premise in each process, it is estimated that the average exchange rate considered in the 2019 adjustments was R$/US$3.94. Under the hypothesis of exchange rate stabilization at R$/US$4.95 as of mid-June, it is estimated that the average exchange rate for purposes of adjustments is R$/US$5.09 in 2020. In rough calculation, the 29.2% increase in this average exchange rate would, in 2020, have an effect of 2.9 p.p. on the average readjustment of the distributors of the IPCA areas, considering only the economic component. (Banco Central do Brasil, 2020b, p. 63)

Stress tests based on scenario analysis with joint variations over time, on variables such as GDP, jobs level, inflation, interest rate, and exchange rate, or based on sensitivity analyses for the main risks evaluated independently (credit, interest, exchange rate, and real estate devaluation), persist indicating that the banking system has adequate loss absorption capacity in all simulated scenarios, with no relevant non-compliances. (Banco Central do Brasil, 2020a, p. 8)

During pandemic, there was a significant devaluation of the Brazilian Real relative to U.S. Dollars. Considering that a relevant share of companies debt is in the

external market, total corporate indebtedness closed first half of 2020 with an increase of 18.1%, mainly due to the exchange rate variation. Once external market debt remained almost stable in USD (Chart 1.2.3.3), corporate indebtedness growth was 4.0% in the semester, disregarding exchange variations. However, when financial and operational hedges are considered, the balance of foreign currency debt of the companies for which no source of foreign exchange protection has been identified is restricted to only 4.9% of GDP, an increase of 1.8 p.p. since December of 2019. This rise was strongly influenced by devaluation of local currency mentioned above: maintaining exchange rate maintaining exchange rate of December of 2019, there would have been a rise of 0.5 p.p. (Banco Central do Brasil, 2020a, p. 24)

The most relevant channels of shock transmission in the SFN pointed out by respondents, in their majority, had a significant increase in probability in the last survey in relation to the February 2020 survey, with emphasis on the channels Increase in risk aversion and uncertainty, affecting consumption and investment decisions, as well as Capital flight or strong currency depreciation (Table 1.6.2.3).83 It is also worth mentioning the increased probability in the channels Widespread credit rating downgrade, including sovereign ratings and Decline in depositors confidence, including flight-to-safety. The assessment on the Liquidity squeeze, including interbank markets and foreign credit channel worsened in the May survey but returned in the August survey, reflecting the effectiveness of the BCB economic measures as a response to the Covid-19 crisis. (Banco Central do Brasil, 2020a, p. 45)

Although the hedge and overhedge structure neutralize the effects of exchange variation on the result and the equity of the IAs, after the tax effects on hedge results, situations of devaluation exchange rate can result in significant impacts both in determining the minimum capital levels and in need of liquidity. In such cases, the FIs will need a greater volume of liquidity to cope with margin calls and daily settlements given the increase in volatility and more capital, as the hedge/overhedge operation result in the constitution of deferred tax assets that, in general, are deducted from capital to determine the operational limits. (Banco Central do Brasil, 2020a, p. 71)

Although the local market has a daily volume of open contracts higher than the needs of positioning of the IAs, between USD 150 and 230 billion for US Dollar Spread Futures (DDI) Contracts, and between USD 45 and 65 billion for US Dollar Future Contracts (DOL) contracts (Chart 2.3.2), the amount needed to meet the needs of hedge and overhedge cannot be overlooked. Movements strategic repositioning of IA make the institutions to access markets with high volumes. This demand for derivative contracts can cause price distortions and affect market balance highly sensitive as the FX risk market. (Banco Central do Brasil, 2020a, p. 78)

B Selected Narratives from Other Episodes

B.1 Chile

B.1.1 April-June 2004

The peso has lost ground in nominal and real terms since the start of the year, although more noticeably against the US dollar than a broader currency basket. This has occurred despite improved terms of trade. It is estimated that part of this peso depreciation in recent months reflects the more expansionary domestic monetary stance, prospects of increases in rates abroad in a shorter term, the rise in emerging countries sovereign spreads, a stronger US dollar, and a correction to a possible over-reaction occurred in the second half of last year. In any case, a methodological assumption for projections is that the real long-term exchange rate will remain below levels observed in recent days, which is consistent with changes in conditions affecting the parity of external and domestic interest rates and variables that determine it in the long term. This working assumption suggests a slight real appreciation in the next 24 months. (Central Bank of Chile, 2004b, p. 11)

The financial climate facing emerging economies is less favorable that early in the year, although there have been some upsurges in the interim. Domestically, economies face a rather more promising global outlook with still falling domestic interest rates. However, exchanges have posted declines, especially in recent weeks, reflecting market concern about greater risk associated with how and when developed economies will start increasing their interest rates. Thus, in recent weeks investors have shifted their portfolios, preferring investment in these economies. This has boosted sovereign spreads, while US companies have also increased, although less. Long-term US rates have risen, causing external financing conditions to worsen since last January, although conditions remain very favorable. (Central Bank of Chile, 2004b, p. 26)

In Chile, the economy has also started to enjoy stronger growth in 2004, while inflation has remained under the 3% annual target. In the most recent issue of the Monetary Policy Report (May 2004), Central Bank growth projections ranged from 4.5% to 5.5% for this year, the result of better external conditions, lower interest rates and the monetary policy impulse. Fiscal accounts and the balance of payments current account should close the year with a surplus and inflation is projected to gradually move toward the 3% target rate over the next 24 months. Between last December and January, the Central Bank cut its policy rate by 100 bp, to reach 1.75%. Short- and long-term market rates fell by similar magnitudes and since then have held relatively steady. During the second quarter of 2004, 90- day deposit rates averaged 1.7%, 90-day lending rates reached 4.9% while those for five-year BCPs averaged 4.5% (figure I.2). During the first quarter of the year, the peso depreciated against both the dollar and a basket of currencies for Chile's trading partners, a trend that deepened during the second quarter. In

the medium term, the local market is looking ahead to increases in the monetary policy rate, but somewhat more slowly than what is expected in the US. Likewise, the differentials between domestic and external rates are consistent with a flat trayectory for the peso, notwithstanding its usual volatility. (Central Bank of Chile, 2004a, p. 8)

The peso depreciated in the first half of the year, with the dollar's value against the peso rising from an average 574 pesos in January to 644 pesos in June, in contrast to appreciation experienced the previous year. Trends in the exchange rate reflected lower short-term interest rates in Chile and changing expectations about monetary policy in the US, and the impact this had on most emerging economies. In the first quarter of 2004, the exchange rate became increasingly volatile compared to historic levels, but later fell to about 10% annually. (Central Bank of Chile, 2004a, p. 20)

B.1.2 May-July 2008

The volatility and level of the peso-dollar exchange rate have swung sharply in recent months. In the first quarter, exchange rate volatility reached a maximum of 15.4% a year, far higher than the historical average of 8%. The exchange rate level fell from 496 pesos to the dollar to a minimum of 431 pesos to the dollar, which amounts to a drop of 15% (figure II.6). As mentioned earlier, both effects were generated, in part, by the global depreciation of the dollar, the favorable terms of trade seen recently, and, to a lesser extent, the expanding interest rate differential between Chile and the U.S. (box II.3). In recent weeks, however, exchange rate volatility has fallen to 10%, while the level was 472 pesos to the dollar at the close of this Report. (Central Bank of Chile, 2008b, p. 23)

B.1.3 January -March 2010

The peso fluctuated substantially, ending the period at a 5.9% higher level than in the December Report (based on the ten business days prior to the close of each Report). The nominal exchange rate has fluctuated considerably in this period, partly as a result of a global phenomenon, but an important part has been in response to local factors. The importance of certain idiosyncratic factors is seen in the fact that multilateral indicators such as the MER and the MER-5 recorded smaller fluctuations than the peso-dollar exchange rate: 2.6 and 1.9%, respectively. However, considering the level of the nominal exchange rate and currency parities prevailing at the statistical closing of this Report, the RER is at levels consistent with its long-term fundamentals. The baseline scenario assumes that in the long run, the RER will not differ largely from the levels observed in the two weeks prior to the statistical closing of this Report. (Central Bank of Chile, 2010, p. 29)

B.1.4 September-October 2011

The foreign exchange market has also been more volatile, echoing the external situation. After appreciating to nearly $460 to the dollar in early September, it reached $533 to the dollar in October. As of the closing date of this Report, the currency was trading at around $515 to the dollar, a depreciation of 10% relative to the closing date of the September Report. The depreciation of the peso reflects, in part, gains by the U.S. dollar at the international level, due to greater risk aversion, and the drop in the copper price. In multilateral terms, the peso has depreciated less, by 6%; the figure becomes 7% when only the five main trading partners are considered and 5% when the U.S. dollar is excluded (figure II.9). The peso's loss in value is similar to the average of other commodity exporters and emerging economies, especially when current values are compared with the lowest exchange rates for local currencies against the U.S. dollar in 2011 (table II.1). (Central Bank of Chile, 2011, p. 21)

B.1.5 May-July 2013

In the foreign exchange market, although with some fluctuations, the peso has depreciated 6.3% since March in a context of widespread appreciation of the U.S. dollar and a lower copper price. This couples with a smaller spread between the nominal rates on 5- and 10-year U.S. and Chilean Treasury notes. During April, the currency appreciated to trade at a minimum of $467 per dollar. This trend was reversed in May (figure II.9). At the close of this Report it stands at about 500 pesos per dollar. In any case, the depreciation of the peso has been aligned with the currencies of other emerging economies, especially commodity-exporters (table II.2). Considering the main trading partners, the depreciation has been milder, at 5.3%. Deleting the U.S. dollar from the currency basket, the depreciation decreases to 5.1%. (Central Bank of Chile, 2013a, p. 22)

World stock exchanges, albeit with fluctuations, are located at levels higher than those as at the statistical closing of the June Report (figure II.7). Developed markets' performance has been, on average, higher than that of emerging markets. Measured by MSCI indices, they rose 3.8 % in local currency (3.4 % in USD). Emerging stock markets, in turn, have shown recovery in the same period from 2.4% in local currency (0.4 % in USD). The Chilean stock exchange, as measured by the IPSA, fell 6.3% in local currency from the closing of the previous Report, and 8.2 % in dollars, given the depreciation of the peso. While this decline is explained significantly by factors inherent in some companies, there is a general decline in the local stock market. Nevertheless, from a longer term perspective, the IPSA behavior does not differ substantially from the average of stock markets in Latin America. Thus, the latter and the IPSA have decLines since the beginning of 2012 by 15.7% in local currency and 14% in dollars, respectively. The IPSA's performance has also been in line with the price/profit ratio of the domestic stock exchange. This ratio is located close to its average values, while

other emerging stock exchanges are under their means. (Central Bank of Chile, 2013b, p. 19)

B.1.6 July-September 2015

As already mentioned, the new and significant depreciation of the peso of recent months is the key factor behind the recent rise in headline and projected inflation. The peso/dollar parity increased 14% from June and about 50% from its lowest record of 2013, reaching around $700 per dollar at the close of this Report. The increase in the nominal exchange rate is the economys natural and desirable response to changes in domestic and international macroeconomic conditions. The global appreciation of the dollar, the evolution of commodity prices and the further weakness of the emerging world in general and Latin America in particular, have significantly affected the parity in recent months. The currency depreciation is not exclusive to Chile, as it is shared by most of our trading partners, and many of them suffer it much more intensely. In multilateral terms, the peso depreciation has been smaller: 10% compared to the close of the last Report; 29% from its trough in 2013. This explains partly why the RER increased less than the nominal rate. In August, the RER would have been somewhat above 100 in its usual measure, equivalent to an increase of 8% from last May and 17% from its lowest level of 2013. At the close of this Report, the RER was above the values considered to be its long- term equilibrium, but consistent with the current evolution of its fundamentals. Thus, as a working assumption, this Report assumes that, by the end of the projection horizon, the RER will show a slight appreciation from its average for the ten days prior to the close of this Report. (Central Bank of Chile, 2015, p. 9)

B.1.7 July-November 2023

In this context, interest rates have reacted with rises in developed markets and mixed movements in emerging ones, a global appreciation of the dollar and, in recent weeks, a reduction in risk appetite. The Chilean peso has depreciated significantly from June to date. This is explained both by changes in the interest rate differential and by the greater risk aversion associated with incoming news, such as the situation in China, the fiscal outlook in the U.S. and the uncertainty about the global disinflation process. Other local financial variables have performed more favorably, such as the stock market and risk premiums, amid lower internal uncertainty. (Central Bank of Chile, 2023, p. 4)

Financial markets have responded to this scenario with differing trends in short-term interest rates —rises in the developed world and mixed movements in emerging markets— and the depreciation of a significant set of currencies, amid financial risks that remain in force (figures I.2 and I.4). The increase in short-term rates in developed economies contrasts with the falls in several emerging countries, consistent with the divergence of the expected trajectories of their monetary policies. This differential has influenced the strengthening of the dollar globally

for several weeks, a trend that has been reinforced by a decrease in risk appetite in the last month, which also would have put upward pressure on the U.S. long-term rates. Several factors have contributed to the lower risk appetite, among them, the downgrade of the credit rating of the US sovereign debt and of some regional banks in that country, and the greater uncertainty about China s activity and real-estate sector. Meanwhile, stock markets show mixed movements and risk indicators have decreased in Latin America since the statistical closing of our latest Report, despite increases in recent weeks. All in all, the risks of a reversal in financial asset prices and capital outflows from emerging economies remain, in an environment in which interest rates remain high and global liquidity continues to shrink. (Central Bank of Chile, 2023, p. 11)

In the local financial market, the beginning of the MPR reduction cycle and the expectation of future cuts have also affected the interest rate differential with foreign countries. This is one of the main factors behind the peso's depreciation in recent months (figure I.4). Considering the average of the 10 days prior to the closing of this Report, the peso/dollar parity was around $860 (+8% with respect to the closing of the June Report). This rise is also explained by the increase in global risk aversion, linked to different events, such as the situation in China, the fiscal outlook in the United States and the uncertainty about the global disinflation process. (Central Bank of Chile, 2023, p. 12)

B.2 Brazil

B.2.1 April-July 2004

The most meaningful alteration in the economic environment since the April Copom meeting has occurred in the external scenario, due to the change in market sentiment regarding the US monetary policy and the increase in oil prices. Although some reallocation of investment portfolios had already been anticipated, the move was more abrupt than expected. The short-term instability impacted several currencies, as well as emerging markets risk premiums. From April to May Copom meetings, the exchange rate depreciated to R$3.10 from R$2.89 per US dollar, and the country-risk measured by the JP Morgan Embi+ increased to 728 basis points from 543 basis points. However, this greater instability does not characterize a crisis, due to both its temporary nature and the sound fundaments of the Brazilian economy. (Banco Central do Brasil, 2004, p. 4)

Although the recent realignments in the exchange rate and in oil prices may have a long-lasting component, the Copom members were unanimous in considering that the Brazilian economy, due to the soundness of its fundaments, is in a position to absorb this external shock without damaging the macroeconomic stability and growth perspectives. The significant adjustment of the current account, the reduction of the FX-linked debt, the adjustment of the consolidated public sector accounts, the combination of floating exchange rate with inflation targeting, the economic activity rebound in the last quarters and the credibility

gains in macroeconomic management help to absorb the consequences of the external shock. (Banco Central do Brasil, 2004, p. 6)

B.2.2 August-October 2011

It is important to emphasize that in the period of highest stress that followed the aggravation of the international financial problems in 2008/2009, the exchange rate depreciation, on the contrary of what happened in previous crisis, determined reduction of the politic strengthening relation of the international reserves —which went from US$180 billion, at the end of 2007, to US$346 billion in July 2011, and contributed for the creditor installment of the DLSP indexed to exchange rate to increase from 17.5% to 30.7%, in the same period— enabled that the conduction of the fiscal policy gained more degrees of liberty in periods of stress in the financial market. (Banco Central do Brasil, 2011, p. 43)

As a consequence of the stabilization and correction of unbalances, which determined important structural changes, the inflation targeting regime maturing process stands at an advanced stage, and it reflects favorably in the dynamics of neutral interest rate and in the power of monetary policy. Evidences under this respect can be observed, among other factors, through the accomplishment of inflation targets in the last seven years, at the same time that real interest rates have reduced. Progress in the financial markets structure, the reduction of both FX and inflationary risk premia, among other factors, seem to have determined significant reduction in the neutral rate. The generation of primary surpluses consistent with the maintenance of the decreasing trend for the public debt/GDP ratio also contributed for it. From another point-of-view, some of these developments, combined to others, such as the extension of contract tenures, also suggest that the power of monetary policy in Brazil has been increasing in the last years, despite the substantial uncertainty that surrounds the calculation of non-observable variables. The Committee also considers that there are evidences that the monetary policy traction increased in the recent past and, compared to what was observed some years ago, currently inflationary pressures are contained with more efficiency by monetary policy actions. (Banco Central do Brasil, 2011, p. 122)

B.2.3 May-July 2013

After the May Copom meeting, the domestic yield curve showed increase in all its extension, with highlight for the long part. The period was characterized by the increase of volatility and of risk aversion in global scope. In the external scenario, the expectation of reduction of the monetary stimuli by the Fed resulted in valuation of the US dollar against the main emerging currencies and in increase of the rates related to the US Treasury securities. In the local market, according to market analysts, among the factors underpinning this movement, it bears highlighting the upward revision of the expectations regarding intensity and length

of the tightening monetary cycle, the uncertainties regarding the effective accomplishment of the fiscal targets of the federal government, the devaluation of the BRL against the US dollar and the downward prospect of the sovereign rating by a risk classification agency. Between May 27th and July 8th 2013, one-, three- and six-month interest rates increased by 0.63 p.p., 0.66 p.p. and 0.70 p.p., respectively. The rates for one, two and three-year maturities increased by 0.86 p.p., 1.24 p.p. and 1.55 p.p., respectively. The real interest rate, measured by the ratio between the one-year nominal interest rate and the inflation expectation (smoothed) for the next twelve months, increased from 2.53%, on May 27th, to 3.35% on July 8th, mainly due to the rise in nominal interest rates. (Banco Central do Brasil, 2013, p. 12)

B.2.4 July-October 2015

This chapter of the Inflation Report presents the Monetary Policy Committee's (Copom) assessment of the behavior of the Brazilian economy and of the international scenario since the release of the previous Report in September 2015. The chapter also presents the analysis of the inflation prospects up to the fourth quarter of 2017 and of the Gross Domestic Product (GDP) growth up to the fourth quarter of 2016. Inflation projections are presented in two major scenarios. The first scenario, termed baseline scenario, assumes that the Selic rate will remain unchanged over the forecasting horizon at 14.25% per year, which is the level set by the Copom at its most recent meeting on November 25, and that the exchange rate will remain at R$3.90/US$. The second scenario, termed market scenario, employs the expected paths for the policy interest rate and for the exchange rate drawn from the survey carried out by the Banco Central do Brasils Investor Relations and Special Studies Department (Gerin) among independent analysts. It is important to stress that these scenarios are used only as support for monetary policy decisions and that their assumptions should not be viewed as Copom forecasts about the future behavior of interest and exchange rates. The projections released here are based on the information set available up to the cutoff date December 18, 2015. (Banco Central do Brasil, 2015, p. 61)

B.2.5 March -July 2018

Funding has presented a slight growth over the first half of 2018, which turns into stability when external funding values are adjusted to make up for the fluctuation of the Brazilian Real versus the U.S. Dollar. Time deposits are still absorbing part of the reduction in the stock of repurchase agreements collateralized by securities issued or endorsed by institutions within the same prudential conglomerate (due to the edition of Resolution 4,527 on 9/29/2016), and savings deposits have posted a positive net fundraising in the first half of 2018 as well as over the entire year of 2017, after negative results in 2015 and 2016. The stability of funding via agribusiness credit bills (LCA) and the decrease via real estate credit bills (LCI) is due to a shift by the main issuers to cheaper means of funding (Chart

1.1.1). (Banco Central do Brasil, 2018, pp. 11–12)

> Offshore funding dependence is low and its share in total funding had slight growth as a result of the devaluation of the Brazilian Real in the first half of 2018. However, in foreign currency, there was a small reduction in the total balance at the end of the semester compared to the previous semester, basically as a result of the decrease in the amount of funds kept abroad (Charts 1.1.3 and 1.1.4).The external funding internalized in the domestic market reached the amount of BRL 450 billion, of which BRL 134 billion were allocated in lines related to export, import or onlendings. The financial institutions had access to external credit in a volume sufficient to meet domestic needs, in both free-purpose and trade finance lines. This situation is expected to continue in the next semester, with funding costs rising due to the international conjuncture and the internal uncertainties of the electoral period. (Banco Central do Brasil, 2018, pp. 12)

B.2.6 July-October 2019

> The exchange rate used in the scenarios that assume a constant path for this variable is R$4.05/US$[23], over the R$3.85 value assumed in the June 2019 Inflation Report (Figure 2.1). The median of expectations for the end-of-year exchange rate extracted from the Focus survey of September 13, 2019, points to decrease in 2019, stability in 2020 and 2021, and increase in 2022. It is worth noting that when quarterly averages are considered, the exchange rate from the Focus survey also shows appreciation in 2020Q1. Compared to the values of 6.14.2019 assumed in the June 2019 Inflation Report, the end-of-year exchange rate rose from R$3.80/US$ to R$3.90/US$ for 2019, from R$3.80/US$ to R$3.90/ US$ for 2020 and from R$3.85/US$ to R$3.90/US$ for 2021. For the end of 2022, the exchange rate is expected to be at R$3.95/US$. (Banco Central do Brasil, 2019, p. 47)

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