

VIII. LIMITING FOREIGN EXCHANGE POSITIONS TO CONTAIN SYSTEMIC RISK¹

A. Introduction

Abrupt exchange rate adjustments can create balance sheet problems throughout the economy, leading to a financial crisis.² In the banking sector, sharp currency depreciations can induce major capital losses for institutions with short positions in foreign exchange (FX).³ The Eastern European experience during the recent crisis illustrates the dangers of having unbalanced FX positions. Prior to the crisis, banks in the region had funded a significant share of domestic lending with increased foreign borrowing. In many cases, the depreciation of domestic currencies left banks with a much smaller capital base as the value of liabilities suddenly increased. The opposite problem may also arise—sudden currency appreciations can affect banks that have relied on domestic funding to finance FX assets.⁴ Even when banks are perfectly hedged (i.e., do not have a mismatched FX position), exchange rate volatility can negatively affect financial positions if there is substantial lending to borrowers who themselves have currency mismatches in their balance sheets.⁵

The financial risk associated with rapid and unexpected foreign exchange movements can be reduced by limiting banks' FX positions. Foreign exchange risk is the risk that, due to variations or fluctuations in currency exchange rates, the value of assets (or liabilities) also changes affecting the overall bank financial position. While banks are unavoidably exposed to a variety of financial risks, few activities involve so much risk as that arising from foreign exchange transactions. Accordingly, central banks (or alternatively supervisory authorities) have tried to control these undesirable balance sheets effects through regulations or prudential measures. Setting quantitative limits on banks' FX positions, both in the spot and forward (derivative) markets, is one such measure.

Limits on FX positions can be also useful in dealing with surges in capital inflows which may pose systemic risks to financial systems. When emerging market economies are in a boom cycle, the authorities may have difficulties managing a strong recovery amid large capital inflows and favorable terms of trade. The recent pattern of recovery in these

¹ Prepared by Carlos Fernández Valdovinos and Chris Walker.

² See for example Allen et al. (2002) for how balance sheet weaknesses could contribute to the origin and propagation of modern-day financial crises.

³ Having a short position is equivalent to having a net liability position (i.e., the value of liabilities is larger than the value of assets). Having a long position is equivalent to having a net asset position (i.e., the value of assets is larger than the value of liabilities).

⁴ In this case, an appreciation will reduce the value of FX assets (when expressed in terms of the domestic currency) without changing the value of domestic liabilities. In other words, the appreciation would generate a decline in bank's capital.

⁵ For a discussion on risks arising from bank client FX mismatches and instruments which could be employed to reduce them, see companion note on Macroprudential instrument to manage foreign-exchange credit risk.

economies, after the 2008–09 global crisis, clearly illustrates this problem.⁶ In such circumstances, a major policy concern is that the pace of capital inflows may put strong upward pressures on regional currencies increasing the likelihood of a sharp depreciation down the road when the flows reverse. Additionally, these flows can create “bubbles” in certain sectors of the economy (for example, by pushing credit and asset prices to levels that may not be sustainable). Changes in banks’ FX position limits can be part of the toolbox to curb inflows for financial stability purposes,⁷ by limiting “carry” trades, dampening currency overvaluation, and preventing overly rapid credit growth. Nevertheless, FX restrictions to contain systemic risks should be carefully calibrated so as not to penalize corporates and other economic agents who rely on banks for core business-related “genuine” hedging needs to managed risks on their balance sheets.

While many countries impose quantitative limits on banks’ FX position, there are several different ways of computing such limits (See Table 1). Limits on FX positions can be set on a gross or net basis. A bank’s *net* open FX position would be calculated by summing: (a) its *net* spot position (i.e., all FX asset items less all FX liability items in the balance sheet); and (b) its *net* derivative position (i.e. all amounts to be received less all amounts to be paid under forward FX transactions, including currency futures and the principal on currency swaps not included in the spot position). However, a bank’s *gross* FX position would include only all FX liabilities (*gross* short position) or all FX assets (*gross* long position). Of course, these *gross* positions could be calculated separately for spot and derivative transactions. Limits on positions by currency are also quite common.⁸

Quantitative limits are usually established as a share of capital. Regulators usually set limits with respect to some measure of overall capital, generally either Tier 1 capital or working capital. Usually symmetric limits for long and short positions apply, but in some cases the limits may be asymmetric. Most quantitative limits apply either continuously (i.e., banks are not able to exceed the limits at any moment during the day) or for overnight positions only. In a few cases the limits apply only to the positions at the end of the week or month. Finally, some authorities have incorporated assets (liabilities) indexed to a foreign currency when calculating net open positions.

⁶ Recently, some countries have imposed capital controls to various degrees. These restrictions may be useful in addressing both macroeconomic and financial-stability concerns in the face of inflow surges, but before imposing them, countries should first exhaust their macroeconomic-cum-exchange-rate policy options. See Ostry et al. (2011) for a discussion.

⁷ See the Annex I for more details on how countries have used the instrument to limit arbitrage and carry trade for a financial stability purpose.

⁸ In addition to limiting banks’ foreign currency exposure, some countries impose capital requirements on open foreign exchange positions. Cayazzo et al (2006) indicate that Poland, Singapore and Sweden have capital charges on foreign exchange exposures. Argentina, Bolivia, Chile, Costa Rica and Honduras have only limits on these exposures. The remaining of the 17 countries surveyed, including some LAC countries, have both capital charges and limits on foreign currency exposures.

Table 1. FX Open Positions in Selected LAC Countries

Country	Limit (Percent)	Type	Short vs. Long	Recent change
Brazil	30	Spot plus derivatives	Same	No
Colombia	20	Spot plus derivatives	Short is 5 percent	Yes *
Mexico	15	Spot plus derivatives	Same	No
Paraguay	50	Spot plus derivatives	Same	Yes (30 percent)
Peru	75	Spot plus derivatives	Short is 15 percent	Long (100 percent), Short (10 percent)
Uruguay	150	Spot plus derivatives	Same	No

* In May 2007, a limit on the **gross foreign exchange derivative position** of banks was introduced.

Currently, most LA countries impose some restrictions on banks' FX positions.

However, they vary considerably and there are wide differences in the relative treatment of short and long positions. The table presents current limits in selected LAC economies. Recently, in response to strong capital inflows, some LAC countries have addressed exchange rate pressures and the potential build-up of vulnerabilities in financial systems, by changing FX open position regulations. For example, Colombia has added a separated ceiling just for the gross FX open positions in derivatives (discussed below) to its overall (net) FX open position limit. The central bank of Paraguay has loosened banks' long open position limits to support capital outflows. The limit on banks' long (short) open position was changed to 75 (15) percent of capital in Peru, from a previous limit of 100 (10) percent of capital.

B. Potential Macprudential Benefits

Limits on spot FX positions can serve both as a macroprudential tool and as an effective exchange rate policy instrument. Net open positions may allow dealers to speculate against the domestic currency by building positions before an expected currency depreciation (or appreciation) takes place. Expectations of value changes in the domestic currency that lead banks to take sizable open positions might become self-fulfilling. Accordingly, long position limits offer the macroprudential benefit of protecting banks against sudden exchange rate appreciation, while reducing the scope for speculative attacks against the domestic currency in the face of depreciation pressures.⁹ Thus, a number of countries have used the limits as an active exchange rate policy tool, tightening them when facing depreciation pressures and relaxing them when those pressures abated.

Limits on banks FX derivatives positions may also offer both prudential and exchange rate policy benefits, especially in an environment of strong capital inflows. Certain types

⁹ In contrast, short position limits will protect banks from an abrupt depreciation and reduce their ability to take speculative short net open FX positions that could lead to sharp currency appreciations.

of restrictions on banks' derivative positions may be characterized as macroprudential rather than as capital controls, in that they limit banks' operations by type of instrument rather than by residence status of the banks' counterparties, while directly limiting financial risks. However, insofar as these restrictions affect the liquidity and functioning of currency derivatives markets, they may also be used to change the relative incentives for capital inflows (therefore affecting exchange rate dynamics) as is the case with spot position limits. Such dual-purpose restrictions may include limits on net FX derivatives positions; limits on gross derivatives positions; changes in margin or provisioning requirements associated with derivatives positions; and, taxes or unremunerated reserve requirements applied to derivatives positions.

Limits on forward market operations offer possible financial stability benefits, to the extent that banks facilitate speculative behavior through derivatives markets. For example in Korea, Brazil, and elsewhere in the years before the 2008 financial crisis, many corporations engaged in “overhedging,” increasing their short U.S. dollar positions above expected export revenues, in the expectation of benefiting from local currency appreciation and/or from favorable interest rate differentials. In each of these markets, banks sold derivatives to domestic counterparties in the nonfinancial sector, in increasing amounts as the domestic currencies appreciated. As currencies plummeted during the financial crisis, the nonfinancial counterparties found themselves with huge losses, exacerbating instability and accelerating depreciation. Had there been tighter macroprudential measures in place to restrict banks' derivatives sales (for example, by having limits on banks' gross derivative positions) this vulnerability would not have been so great.

By limiting banks' ability to operate in spot and derivatives markets, or by raising the cost of doing so, the authorities can, in theory, also make the market less liquid and potentially less attractive for foreign carry traders, even without targeting them directly. If domestic banks are forced or induced to restrict their futures market operations, then, under normal conditions of capital inflows, foreign investors will have to pay a higher price to buy the domestic currency forward. This will reduce their expected return on carry trade operations and, consequently, reduce demand for carry trade investments, at least through the derivatives channel. Derivatives markets restrictions can, in principle, be made even more effective when combined with prudential limits on spot FX market operations.

However, such restrictions are not free of potential costs or risks. One concern is that the effect of a forward position limit on the spot price of a currency may well be an appreciation rather than a depreciation, given that the futures price often strengthens. As with other restrictions or taxes, if derivatives position limits are imposed in isolation they may result in circumvention of capital inflows. A further risk is that the development of domestic derivative markets, which is often a difficult-to-achieve stage of financial deepening, could be impaired or reversed by the heavy-handed imposition of market restrictions.

C. Conclusions

Controlling exchange rate risk is a major task in LA economies. The historical evidence indicates that sharp exchange rate depreciations during crises have often been followed by abrupt appreciations during booming cycles. Such high exchange rate volatility may have detrimental effects on banks' balance sheets (directly and indirectly through its impact on borrowers' balance sheets). Central banks and supervisory authorities have sought to lessen these risks through various prudential measures and regulations. Limiting banks' FX positions is a widespread prudential measure to manage exchange rate risk.

Limits on FX spot positions are valid macroprudential tools when they are used to curb exchange rate volatility and moderate capital inflows. In principle, the limits are macroprudential tools to protect the capital of banks against sudden fluctuations in the exchange rate. However, many countries have actively used them to deliver more exchange rate stability. The tool has been especially valuable during the current cycle in emerging markets, where strong inflows have fed booms in credit and asset prices and generated exchange rate appreciations. Recently, several countries have tightened (or established new) FX position limits to impair the mechanism for carry trade. These regulatory changes have been part of the toolbox to curb inflows for financial stability purposes, seeking to limit "carry" trades, dampen currency overvaluation, and prevent overly rapid credit growth.

Similarly, there appears to be some scope for the use of macroprudential measures in forward markets to restrain capital inflow pressures. The empirical basis for judging the effectiveness of macroprudential restrictions on forward positions is limited, given that they have not been used with great frequency, and that they are often imposed in conjunction with other measures. However, as with spot position limits, the available evidence suggests that they have the potential to be useful both in protecting financial stability and in shifting the incentives for foreign exchange market arbitrage. In disrupting arbitrage by domestic banks, they can reduce the potential return to carry trade operations. Among the measures that have been implemented, unremunerated reserve requirements based on forward positions appear somewhat more promising than outright limits, given the usual efficiency considerations that apply to the choice between taxes and quotas.¹⁰ There also appears to be strong justification for using gross derivatives position limits, possibly in conjunction with net (i.e., derivatives plus spot) FX limits, as a means of controlling specific risks, such as the derivatives carry trade risk. Importantly, the regulatory framework should be carefully designed so that it does not disrupt genuine hedging needs of corporates and other economic agents.

¹⁰ An alternative approach, which would also shift marginal incentives without imposing hard limits, would be to increase the risk-based capital charges on banks' currency derivative positions.

Annex 1. Country Experiences and Case Studies

This annex surveys the experiences of four countries—Korea, Colombia, Brazil, and Israel—in an effort to ascertain the potential effectiveness of macroprudential restrictions on banks' spot and derivatives FX positions. Korea and Israel are included because they have experienced capital inflows surges similar to those faced by many Latin American countries. While there is an attempt to appraise country experiences analytically, the approach is necessarily somewhat descriptive. The country experiences described are illustrative—this is not meant to be a complete listing of macroprudential FX measures.

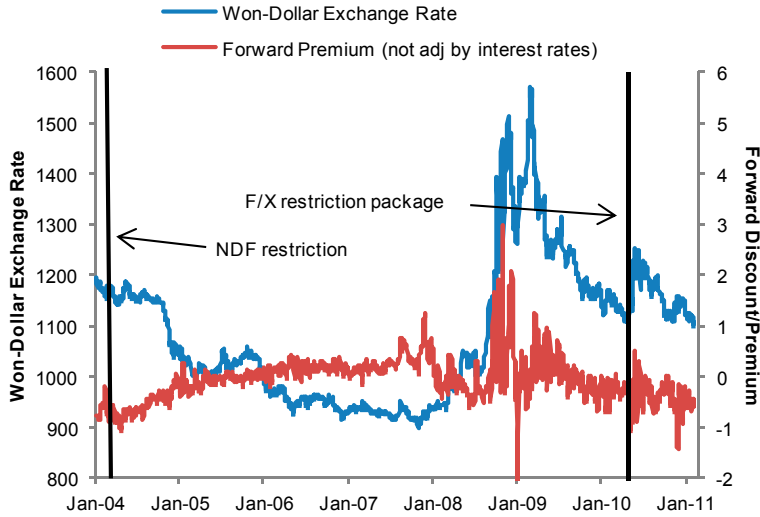
Korea

Korea, with an export-based economy and a partially open capital account, has often used macro-prudential restrictions on banks' derivative positions in response to capital inflows. In general, it has imposed these restrictions jointly with other prudential measures, or in conjunction with outright capital controls. Two recent instances were in 2004–05, when it imposed a restriction on banks' positions in nondeliverable forward markets, and in 2010, when it limited both net and gross derivative positions.

Korean shipbuilders have strong demands for foreign currency hedging. Korea is the world's largest shipbuilder by capacity. Given the sector's long production cycle, shipbuilders generate strong demand for forwards to hedge future export receipts—usually they sell dollars forward and buy Korean won, often with a five year horizon. As described above, this has at times been accompanied by overhedging. The demand for Korean won forwards can stimulate capital inflows, putting upward pressure on the won. Onshore banks, mainly foreign bank branches, have been the dominant providers of FX hedging for exporters. To fund these positions, banks have borrowed U.S. dollars off shore, exchanged them for won in the spot market and invested in Korean won interest rate products on shore (see Annex 2). The rise in banks' external liabilities added to the already high inflows coming through the equity and bonds markets.

During 2004–05, Korea limited domestic banks' access to the offshore nondeliverable forward (NDF) market in Korean won. At the time, the NDF market was the principal forward market for Korean won, with high liquidity reflecting Korea's position as one of the world's largest exporting nations. Because the won was not (and is not) deliverable offshore, the NDF market also functioned as a proxy spot market for foreign investors desiring exposure to the won but disinclined to bring funds onshore. The Korean authorities were concerned that, as a focus for foreign speculation on the won, the NDF market was driving appreciation in the onshore spot market. To disrupt this process, they imposed restrictions on domestic banks' NDF positions on January 15, 2004.

Figure A1. Korea: Exchange Rate and Unadjusted Forward Premium



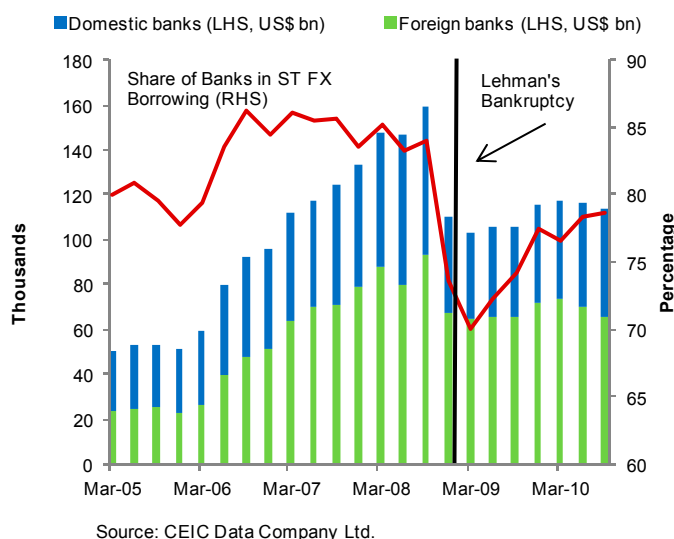
Source: Bloomberg and staff calculations.

The restrictions did not have the intended effect. Until the restrictions were imposed, domestic banks had functioned as the main buyers of dollars (i.e., suppliers of notional won) in the NDF market. Once they were taken out of the market, the supply of notional won diminished, and the won appreciated in the forward market. As shown in the figure, the imposition of the measure in 2004 was followed by won appreciation in the spot market and even more pronounced appreciation in the forward market (entailing a reduction in the forward discount). Concluding that the measure had been ineffective, the authorities eventually reversed the restriction in the course of a wider-ranging capital account liberalization in 2005. By 2007, banks could buy FX derivatives contracts without any limits. Many banks were also relying on borrowings from overseas to cover potential losses arising from forward trading. As a result of this lax policy regime, the FX derivatives trading substantially contributed to the rise in short-term overseas borrowing and external debt during 2006–07.¹¹

In 2009 and 2010, in the wake of the global financial crisis, Korea again faced strong capital inflows. The authorities became concerned that persistent inflows could increase vulnerabilities in the financial sector, fuel asset market bubbles, and lead to rapid exchange rate appreciation. On June 17, 2010, they implemented a package of measures, in order “to mitigate capital flows volatility arising from shifts in banks’ access to short-term external funding sources.”

¹¹ According to official sources, almost half of the increase in the country’s total external debt of US\$195 billion during 2006–07 was due to the increase in FX forward purchases by banks.

Figure A2. Korea: Banks External Liabilities



The new measures limited the net open forward FX positions of banks (including through standard forwards, FX swaps, cross-currency interest rate swaps, and non-deliverable forwards). The measures announced in June 2010 included ceilings on FX derivative positions of banks, tighter restrictions on the provision of FX-denominated bank loans, and stricter liquidity ratios requiring domestic banks to raise the ratio of long-term financing for FX loans to 100 percent (from 90 percent). Currency forward trades by domestic banks were capped in value at 50 percent of the bank's equity capital, while foreign bank's positions were restricted to 250 of equity capital.¹² The measure was designed to limit banks' short-term external debt by reducing the amount of FX forward positions they were permitted to offer without increasing capital. As foreign branches tended to have much smaller capital bases than domestic banks they were allowed to have a higher limit. The measure succeeded in preventing bank's external debt from returning to precrisis levels.^{13,14} In contrast to the earlier quota on NDF positions, the measures have also been somewhat more successful in stemming appreciation, possibly because they were more comprehensive. Also of note is that the forward premium held fairly steady after the measures were imposed, limiting the incentive for banks and other market participants to arbitrage any interest rate gap.

¹² Complementary, the limit on currency forward transactions by local companies were also cut to 100 percent of future revenues (from 125 percent).

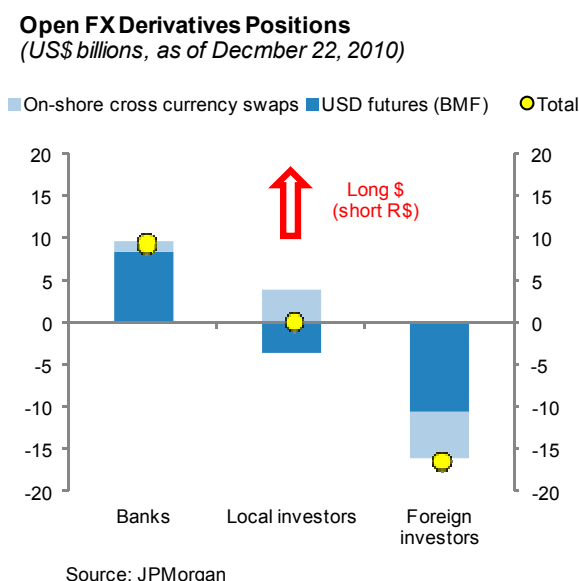
¹³ However, they were not able to substantially stem total inflows as (i) corporates were still able to engage in contracts off-shore using nondeliverable forwards, and (ii) no new restrictions were imposed on portfolio debt and equity inflows, which were major sources of inflows.

¹⁴ In December 2010, Korea announced that a levy will be imposed on nondeposit foreign currency liabilities held by domestic and foreign banks, with a higher rate levied for short term debt than longer debt. The measure is expected to be implemented starting the second half of 2011.

Brazil

Low interest rates in advanced economies and returning risk appetite have triggered a surge in capital flows to Brazil and other emerging markets. Brazil is presently an attractive destination for capital flows due to sound macroeconomic policies, good growth prospects and large interest rate differentials. Capital inflows were at record highs in 2010 and were entering the country mainly through the equity market and FDI. Balance of payments data shows that, at end November, FDI reached US\$33 billion; foreign equity inflows US\$36 billion; and foreign fixed income investment US\$26 billion.

Figure B1. Brazil: Open FX Derivatives Positions
(US\$ billions, as of December 22, 2010)



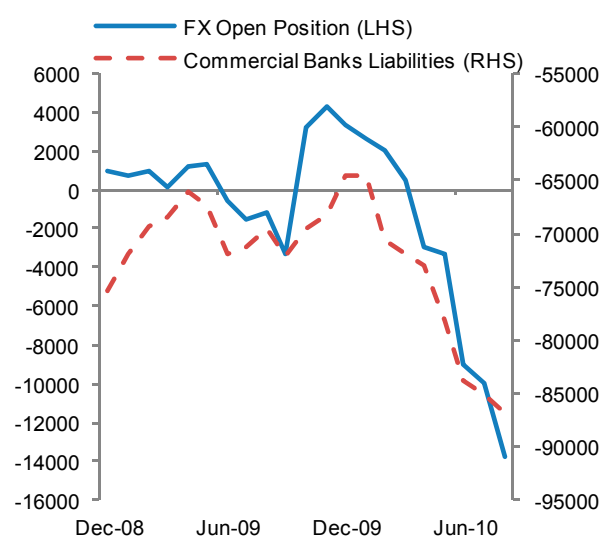
Capital controls and macro-prudential measures were part of the toolbox to curb inflows and avoid excessive credit growth. Brazil was among the first emerging markets to raise taxes on foreign fixed income investment. In October 2009, it re-imposed a moderate tax on foreign inflows to the bond market, at a level of 2 percent, and extended the tax to equity inflows. In October 2010, the Brazilian government raised the tax (“IOF”) on fixed income investments in two consecutive hikes from 2 percent to 6 percent and raised the tax on daily margin adjustments on foreign positions in FX and interest rate forward contracts from 0.38 percent to 6 percent.¹⁵ Another set of measures was announced in November 2010 to strengthen the prudential framework for the financial system, including an increase in capital requirements on long-term consumer loans and an increase in reserve requirement rates on sight and time deposits.

¹⁵ The tax on equity investment stayed at 2 percent, while FDI (including external borrowing by Brazilian banks and firms) continued to be exempted.

The financial sector has been instrumental to the recent surge in capital flows. Part of the carry trade recently observed was conducted using a mechanism similar to that in Korea. Foreigners, who wanted to have exposure to the Brazilian *real*, took a short dollar position in the futures market (i.e., sold U.S. dollars forward). Local banks usually took the opposite (long) position buying US\$ forward. To hedge their exposures, banks used the underlying cash market and took external credit lines (not subject to the IOF tax). They went on to sell the proceeds to the central bank and invest the funds in onshore BRL assets (see Annex 2). In these transactions, banks earned a (currency-risk-free) arbitrage profit which was proportional to the spread between the domestic dollar rate implied by domestic futures market (called the *cupom cambial*) and the offshore dollar rate paid on external borrowing (Libor rate plus a spread).

Banks external liabilities soared in recent months. Data shows that banks have accumulated large short positions in spot U.S. dollar, taking advantage of the difference between international and local interest rates. At end October 2010, banks external liabilities had increased by US\$24 billion year-on-year. The raise was equivalent to about half of central bank FX market intervention during that period. While part of the recent increase has been reportedly used to lend domestically, a large proportion of the external borrowing was taken for hedging purposes as described above. Notice that these hedging transactions finally resulted in the same exchange rate market pressures that would arise as when the carry trade is conducted directly in the cash market (for example, by foreigners purchasing domestic bonds).

Figure B2. Brazil: Commercial banks - FX Open Positions (spot) and External Liabilities
(Millions of U.S. dollars)



Source: Central bank of Brazil and staff calculations

External borrowing was not constrained by existing regulatory limits on net open FX positions. Current regulations state that a bank's net open position, including spot and derivative transactions, should be at most 30 percent of capital. Since the transactions supporting the carry trade involved assuming both a long (in the futures market) and short (in the spot market) FX position, they cancelled out when calculating net open positions. The net open position limits were clearly not binding. Banks short positions (as percentage of capital) barely fluctuated in recent months and remained very small compared to the short position limit.¹⁶

Changes in the regulatory framework would help to moderate capital inflows and prevent the building-up of vulnerabilities in the banking sector. The carry trade relies on the domestic banks' ability to increase their short spot position in the FX market (i.e. to borrow in FX) as a hedge to their positions in the futures markets. Changes in regulations could be targeted at limiting this ability, reducing the vulnerabilities associated with the bank's intermediation role between the futures and spot markets.

Prudential measures could also target banks' ability to increase their net FX derivative position. Possible alternatives include: a general tax on banks' derivatives margin positions, a limit on gross derivatives positions, or a tax on gross derivatives positions. Each of these would be likely to have some effect on arbitrage.¹⁷ Banks that are naturally long dollars in the futures market would be less inclined to purchase dollars forward at any given price, and therefore less inclined to borrow dollars in the spot market. In an environment of persistent capital inflows, this would mean a widening of the basis spread,¹⁸ making it less attractive for market participants in Brazil to engage in synthetic dollar borrowing operations. Taxes or restrictions on forex futures positions would target more directly the mechanics of carry trade in the futures market and may be perceived as being less intrusive toward the banks' other commercial functions.¹⁹

Colombia

Faced with heavy capital inflows and rapid appreciation, on May 6, 2007 Colombia imposed a restriction on banks' gross currency derivative positions, limiting them to 500 percent of capital on both the short and long sides. At the same time, the central bank imposed an unremunerated reserve requirement on banks' external borrowing. The two

¹⁶ The net open position of the banking system has remained usually below 6 percent of capital since 2008.

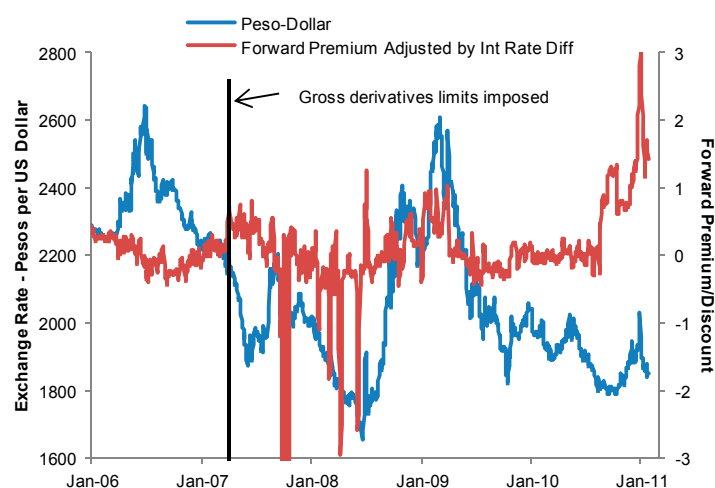
¹⁷ Thus, instead of having an overall net open position limit (including spot and derivative operations), banks would be subject to separated quantitative limits for these two types of transactions.

¹⁸ That is an increase in the interest-rate-adjusted forward premium.

¹⁹ Alternatively, authorities could impose a levy on foreign borrowing or subject these external funds to some kind of unremunerated reserve requirements. The disadvantage of a reserve requirements policy is that it would affect the total amount of external borrowing and, therefore, would make hedging more costly for all agents (including those not having a speculative purpose, like exporters). The Brazilian central bank recently implemented a measure requiring banks to deposit the equivalent of 60 percent of their short spot dollar positions in cash at the central bank, at no interest. This requirement applies to the amount that exceeds US\$3 billion or Tier I capital, whichever is lower.

measures combined did not appear to have an immediate effect on arbitrage between spot and forward markets. They were, however, followed by continued appreciation of the Colombian peso. Subsequent studies—notably Clements and Kamil (2009)—have concluded, however, that the measures were unsuccessful in limiting exchange rate appreciation. In a series of subsequent measures, the central bank extended the URR to portfolio inflows, adjusted the URR, and eventually eliminated it. The limits on gross derivatives positions were maintained, however. The sharp divergence of the adjusted forward premium from its “parity” value of zero in 2010 (figure) suggests that those gross position limits may still be working to constrain arbitrage between spot and forward markets.

Figure B3. Colombia: Exchange rate and Adjusted Forward Premium



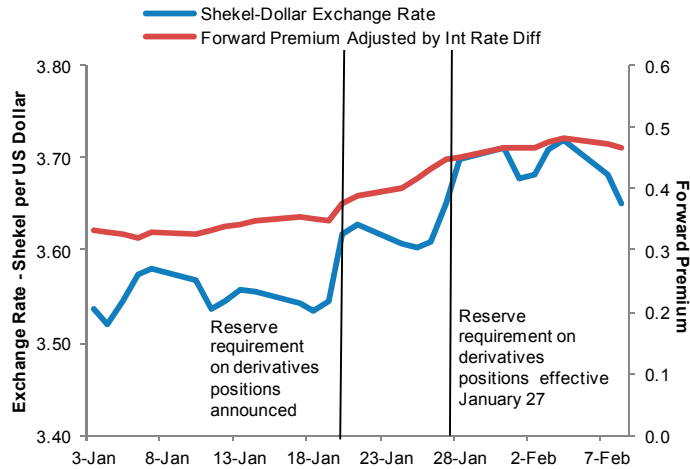
Source: Bloomberg and staff calculations.

Israel

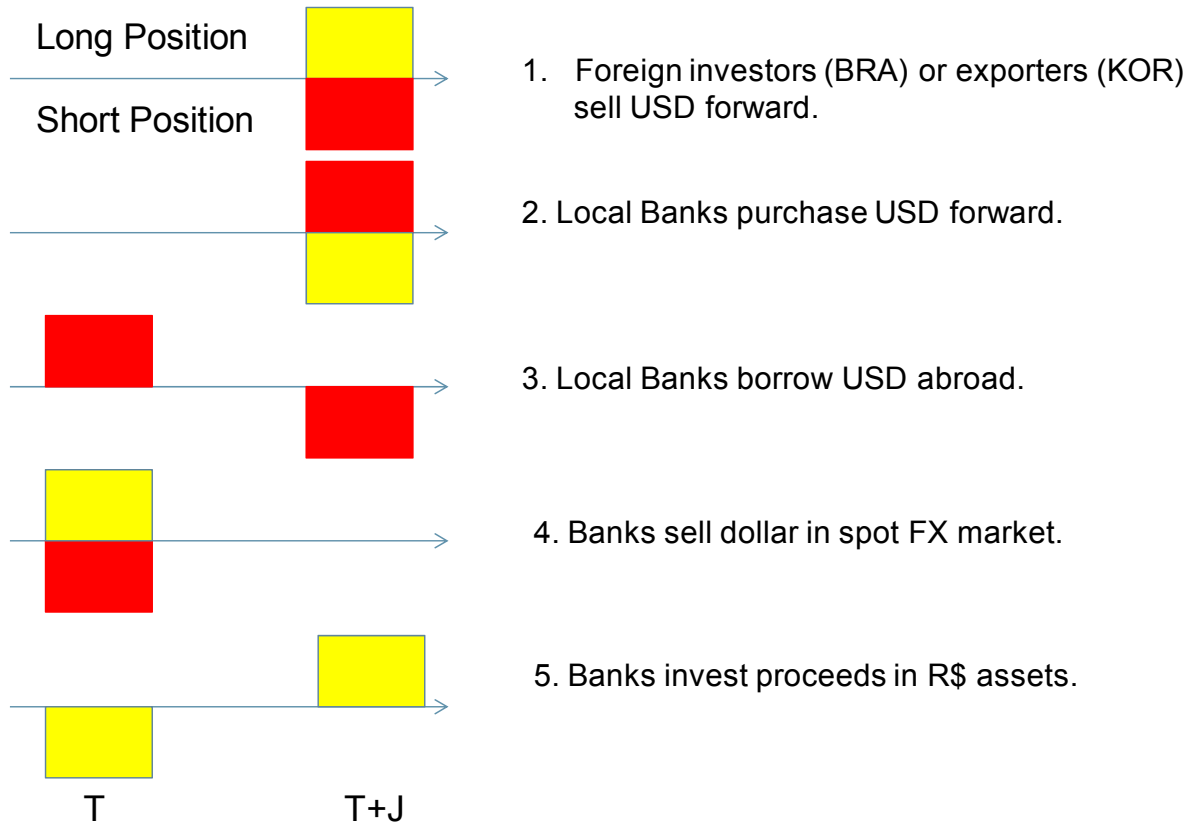
In response to heavy inflows, Israel implemented derivatives market restrictions in January 2011. On January 20, Israel announced restrictions on banks' currency derivatives transactions with nonresidents, effective January 27, in order “to strengthen the Bank’s ability to achieve the objectives of its monetary, foreign exchange, and financial stability policies.” Derivatives transactions were to be subject to a 10 percent reserve requirement, presumably on the basis of the market value of the position. The initial impact of the reserve requirement appears to have been consistent with the Bank’s objectives (figure). As in Korea in 2010, the implementation of the measures was followed by exchange rate depreciation and by a widening of the forward market premium, reflecting a weakening of interest rate

arbitrage. The volume of derivatives transactions declined after the measures were implemented, also pointing to weakening arbitrage. Although this new regulation would not qualify as macroprudential, given that it discriminates on the basis of the residency of the counterparties, an overall reserve requirement that does not distinguish on the basis of residency would likely have similar effects.

Figure C1. Israel: Exchange rate and adjusted forward premium



ANNEX 8.2. CARRY TRADE USING FUTURES MARKET



Source: Benelli (2010).