

Economic Watch

Peru

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Economic Analysis

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International reserves in Peru: approaching the optimal level

Is it adequate to accumulate more reserves?

- **International reserves in Peru closed 2012 at 32% of GDP, the highest ratio in the region**

The significant accumulation of international reserves in recent years has been the result of the central bank dollar purchases in the forex market. This high level of reserves has been a key element to absorb the impact of adverse external shocks on the availability of foreign- currency liquidity and on the exchange rate volatility.

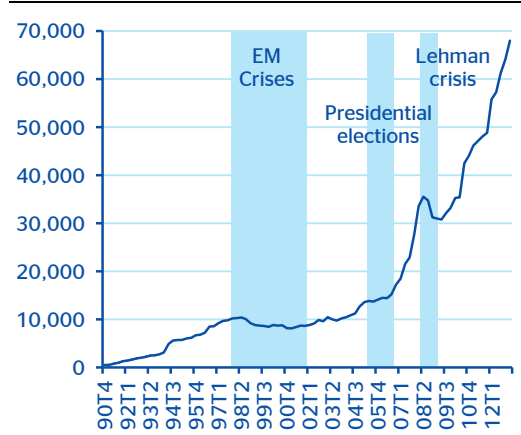
- **According to traditional metrics, international reserves are currently higher than the required level to address a crisis**

But this approach is under severe critics on part of the governments and on the Independent Evaluation Office of the IMF because it does not take into account idiosyncratic factors and the evolution of the financial system and its global linkages.

- **Optimal reserves models suggest that the benefits of accumulating reserves are still larger than the costs**

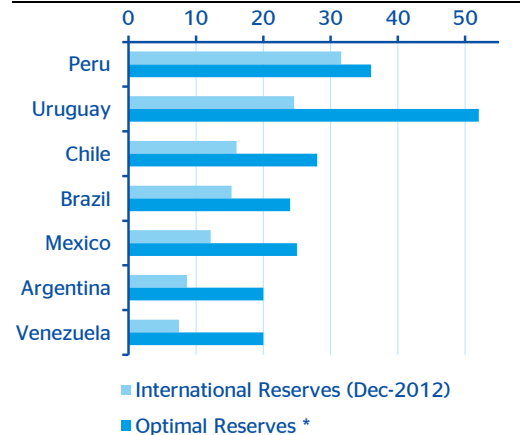
This approach is more comprehensive and estimates the optimal level to be around 36% of GDP. Considering this estimation, the Central Bank has room to keep accumulating reserves at the current pace until 2015. Also, advantages of international reserves holdings not considered in these models suggest that the optimal level could be higher, which gives the Central Bank additional room to continuing accumulating international reserves.

Chart 1
International Reserves (USD million)



Source: BCRP and BBVA Research

Chart 2
International Reserves in LAC-7 (% of GDP)



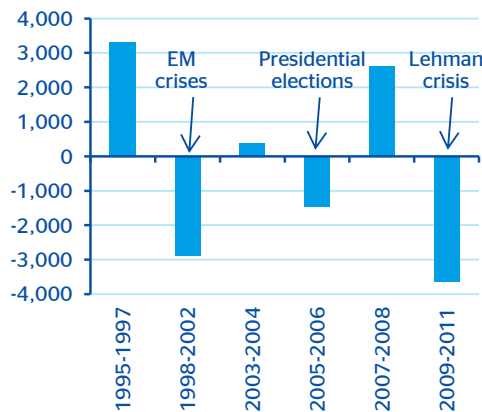
* As estimated by Calvo, Izquierdo and Loo-Kung (2012).
Source: IMF, CIA, BCRP and BBVA Research

Reserve management has been a key element to confront the last international financial crises...

In the last three years, International Reserves (IR) has double in Peru (Chart 1) and at last December, they stood at 32% of GDP, the highest level amongst Latin American largest economies (Chart 2). This comes mostly from the Central Bank's dollar purchases in the forex market.

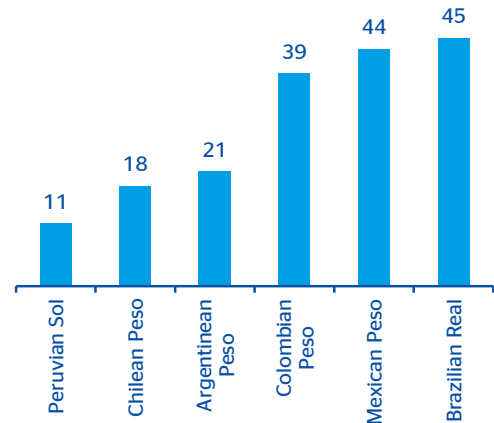
Past international crises have highlighted the relevance of owing a large amount of reserves, and pursuing an active management of them. For instance, between 1997 and 2001, during the series of crisis that hit emerging markets (notably, the Asian, Russian and Argentinean crises), the Central Bank lost 22% of its pre-crisis IR holdings, attenuating the effect of short-term capital outflows (Chart 3) on the exchange rate and foreign currency liquidity during that period.

Chart 3
Peru: cumulative short-term capital flows (USD million)



Source: BCRP and BBVA Research

Chart 4
Depreciation in Latin America during the Lehman crisis (var. % in nominal terms)

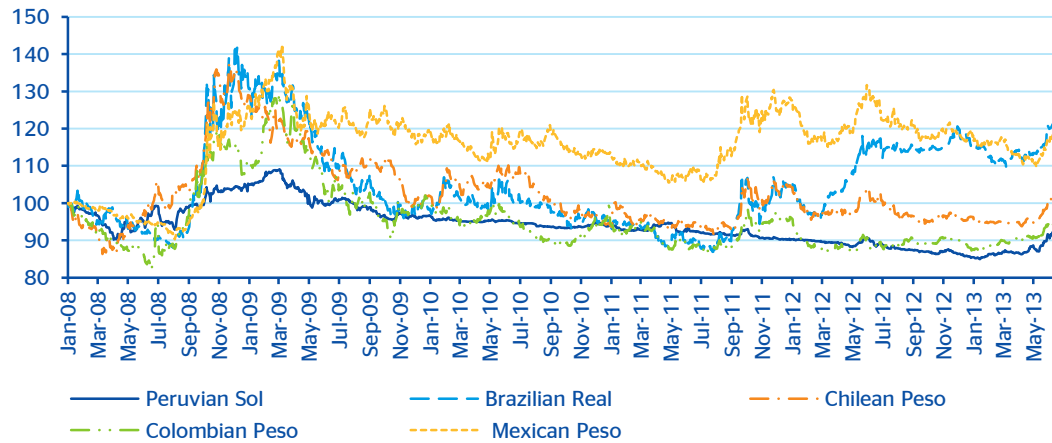


* From July 2008 to March 2009.
Source: Bloomberg and BBVA Research

More recently, during the upsurge of the international financial crisis after the Lehman's bankruptcy, IR fell 16% in a relatively short period of time (from September 2008 to February 2009). During this period the Central Bank sold a record amount of USD 6.8 billion in the foreign exchange market (almost 20% of the stock in 2Q08), provided liquidity in dollars through repurchase agreements (repos) in foreign currency and reduced marginal reserve requirements for dollar deposits. As a consequence of these measures, depreciation of the domestic currency was lower than the observed in other countries of the region (Chart4). Due to the dollarization of the economy and currency mismatches of the private sector, the Central Bank of Peru intervenes more actively in the forex market to moderate exchange rate volatility in order to avoid severe balance sheet effects on families and firms. In the case of a significant depreciation, these balance sheet effects trigger higher delinquency rates that have damaging effects on the financial system and the surge of a credit crunch that amplify the effects of an external shock on the economy.

In order to count with a sufficient amount of international reserves to act as a buffer stock during a crisis, it is necessary to accumulate them in good times. Thus, during episodes of positive capital inflows, the Central Bank tends to purchase dollars. It is noteworthy that these interventions also have the goals of reducing the volatility of the exchange rate (Chart 5) and attenuate its pace of appreciation. The achievement of these goals limits wealth effects on dollarized agents and also reduces expected depreciation during crises, which acts as a complement to reserves losses.

Chart 5
Currencies in Latin America (Index)



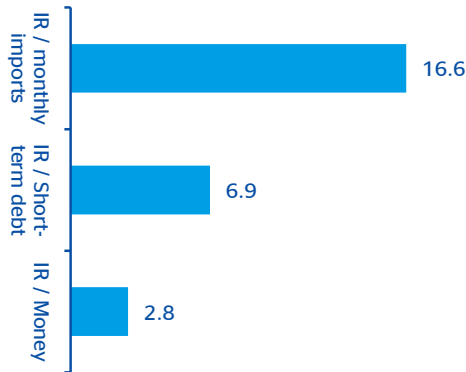
Source: Bloomberg and BBVA Research

Following this strategy, last year, net foreign exchange acquisitions by the Central Bank of Peru reached the record figure of USD 13.2 billion, almost four times the amount in 2011. In the first five months of this year, it has already bought USD 5.2 billion, bringing IR to USD 66.8 billion or 33% of GDP. This level is ten-fold the amount sold during last crisis. It is noteworthy that these purchases have generated incremental costs to the Central Bank due to the operations of sterilization it needs to conduct in order to partially withdraw the monetary expansion originated by foreign exchange interventions (we will return to this point ahead). Then the question arises; are there any grounds to consider this accumulation of IR as adequate?

According to traditional metrics, reserve holdings are high enough in Peru...

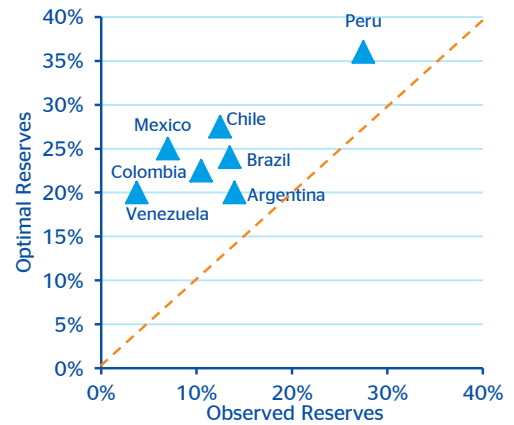
There are two main approaches to assess the adequacy of IR: traditional metrics and cost benefit models. Under the first approach, reserves are compared to some possible source of foreign currency demand during a crisis. In this context, three rules of thumb have been prominently used to evaluate the level of IR. Thus, three decades ago, it was widely accepted that IR should cover at least 3 months of imports. In the nineties, the Guidotti-Greenspan rule stated that they should not be inferior to short-term debt (STD). And, last decade it was widely accepted that they should stand above 20% of broad money (M2). In comparison, currently, the stock of IR in Peru is much higher than those thresholds as it represents almost 17 months of imports, 7 times STD and almost 3 times M2 (Chart 6).

Chart 6
Peru: International Reserves (times)



Source: BCRP and BBVA Research

Chart 7
Optimal and actual reserves in Latin America in 2010 (% of GDP)



Source: Calvo, Izquierdo and Loo-Kung (2012) and BCRP

Following this tradition, IMF (2011) constructed a combined ratio for reserve adequacy. It relies on a cross country estimation of the relative riskiness of different potential drains of reserves: STD, other portfolio liabilities (OPL), M2 and exports (X). As a result, it defined a risk-weighted liability stock that should be covered by IR, dependent on the exchange rate regime:

Fixed: 30% of STD + 15% of OPL + 10% of M2 + 10% of X

Floating: 30% of STD + 10% of OPL + 5% of M2 + 5% of X

According to this metric, the adequate level of IR for Peru locates in the range between USD 17.5 million and USD 26,3 million. In consequence, actual reserves are 1.6 times superior to the upper limit of this range.

...but, this approach has been heavily criticized

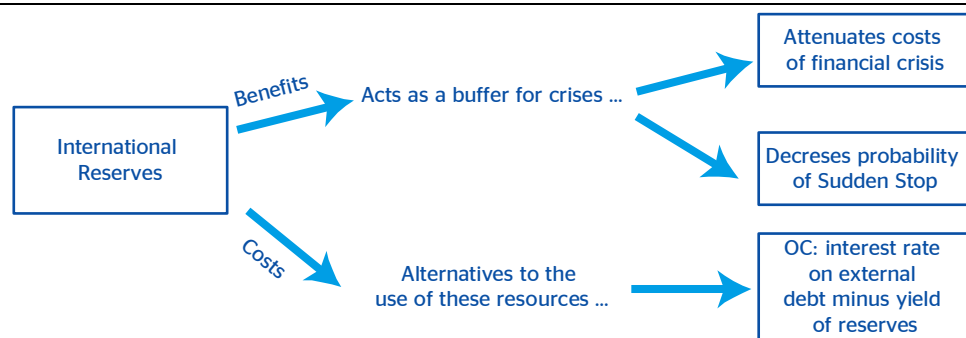
This approach has been criticized by the Independent Evaluation Office (IEO) of the IMF (2012), mainly because it does not pay attention on idiosyncratic factors of countries and does not take into account that financial linkages evolve over time. As of the first critique, IEO (2012) states that even staff members at the IMF and country officials considered that the fact that the weight attached to each of the components is constant represents a drawback to the metric as it does not capture the details of every economy. As of the second, given that the weights are calculated according to historical patterns, they might need to be frequently adjusted to incorporate new structural and financial linkages between countries.

In addition, IEO 2012 also discusses the IMF role in giving advice about the appropriate level of reserves. According to this office, "the focus on reserve accumulation as a risk for the international monetary system was not helpful in that it stressed the symptom rather than the underlying causes". According to country officials interviewed for its evaluation, this approach was misguided for several reasons. First, IR represent assets of governments and central banks interested in maintaining international monetary stability and in preserving the value of their assets. Second, global reserves remain small relative to global financial assets. Third, from an historical perspective, concerns about global financial stability should focus more closely on trends in private asset accumulation. Fourth, currently, there are more pressing issues to focus on, such as global liquidity conditions, capital flows and exchange rate volatility. In this context, the IEO concludes that the IMF has not presented a persuasive analysis on why excessive reserves constitutes a major problem for the international monetary system and that its new metric has been received with scepticism for country officials given its rigidity.

Research based on cost-benefit analysis estimates that Peruvian reserve holdings are below optimal ...

This second approach has been mostly adopted an academic research and it mainly focuses on the precautionary benefits of IR during crises. Following this line, the benefits of holding IR are not only referred to its function as a substitute of foreign liquidity during crises, but also to the effect of its accumulation on lowering the probability of crises itself (Chart 8). But, as well as benefits, there are costs from this accumulation, which are frequently formulated as the difference between the interest rate paid on external debt (for a net debtor country) and the yield of the assets invested by the reserve manager.

Chart 8
Optimal reserve approach: Classic View



Source: BBVA Research

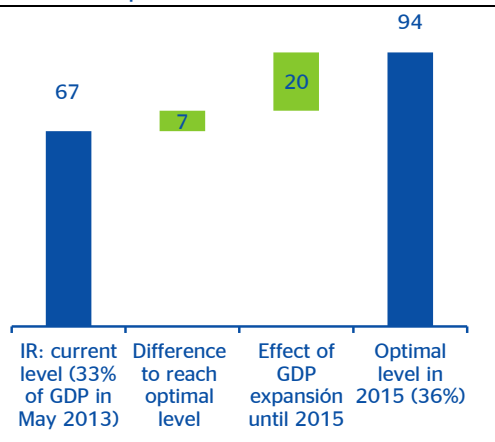
Based on this approach, Calvo, Izquierdo and Loo-Kung (2012) have recently estimated optimal reserves for a sample of countries. In the case of Peru, this optimal level hovers around 36% of GDP, which is above actual reserve holdings, currently standing at 33% of GDP.

Another important result of this estimation is that reserve demand for Peru is higher than the correspondent to the rest of (big) countries in Latin America (Chart 7). This high level of (theoretical) reserve demand can be attributed in the model to both, the higher level of liability dollarization in Peru and the higher adjustment needed on the real exchange rate following a sudden stop. In relation to the first factor, any given rate of depreciation increases the costs of a crisis in the presence of dollarization. In this sense, as mentioned before, the role of the Central Bank as a lender of last resort in foreign currency is crucial to avoid financial disruptions and, additionally, active exchange rate management avoids major losses to dollarized agents. In relation to the second, the high export dependency on commodities makes the necessary RER adjustment to equilibrate the commercial balance higher, which elevates the probability of a sudden stop for any given amount of reserves. This structural feature of the economy, at increasing the expected costs of a crisis, also makes the benefits of accumulating IR higher, as it is needed a greater amount of reserves to reach any given (low) probability of crises.

... and the Central Bank has room to continue accumulating them at a similar pace than last year

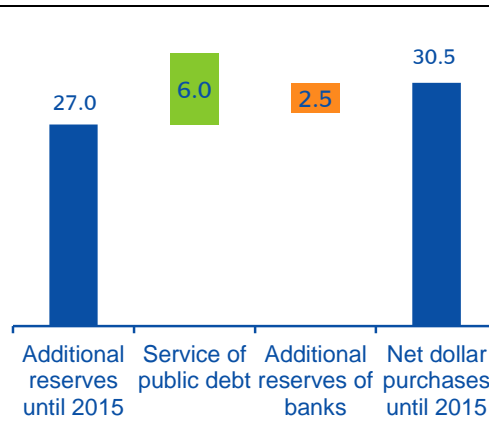
The difference between reserves the level of reserves in May this year (USD 66,8 billion) and the theoretical level (36% of GDP) is equivalent to approximately USD 7.0 billion. But, the room of the Central Bank to intervene in the market is greater, mainly due to GDP expansion and dollar purchases to attend public external debt service, attenuated by the increase of banking deposits in the Central Bank (which act as reserves for dollar deposits). Taking into account these factors, the Central Bank has room to purchase USD 30,5 million net by 2015, and reach a level close to USD 94 billion (see Chart 9 and 10). That means that the average dollar purchases could reach one billion dollar per month in the next two and a half years. That level is similar to the monthly average net purchases in 2012 and the first five months of this year.

Chart 9
International reserves:
current and optimal level (USD billion)



Source: BCRP and BBVA Research

Chart 10
Central Bank room to intervene in the FX until 2015 (USD billion)



Source: BCRP and BBVA Research

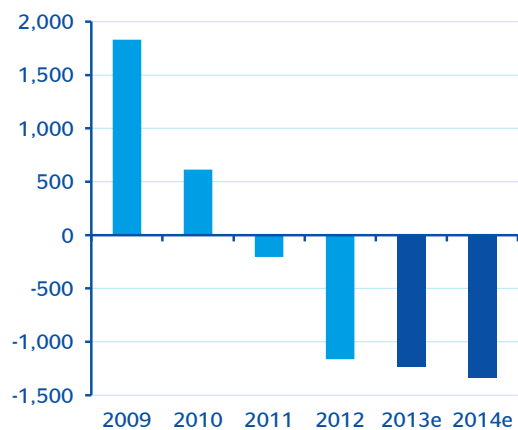
Total costs of sterilization are increasing, but they are not an immediate concern...

In order to absorb the excess of liquidity triggered by purchases of foreign currency, the Central Bank of Peru issues instruments of monetary sterilization (CDBCRP). For these, it has to pay an interest rate which exceeds the yield obtained by foreign currency investments in highly-rated and highly-liquid assets. As IR has increased in Peru, the total costs of sterilization has risen, and further pressure has been put by international interest rates at lows, which translates into low financial income stemming out of reserve holdings investments.

In this context, the Central Bank recorded losses close to USD 440 million last year (Chart 9), consuming 40% of the Central Bank's capital. Assuming that the Central Bank keeps accumulating reserves at the same pace, we estimate that losses will be slightly higher this year and will exceed USD 500 million next year (Chart 11), due to higher financial costs of sterilization (derived from a higher stock of CDBCRP, or public sector and financial intermediaries' deposits), attenuated by higher income from investing reserves. If this is the case, the Treasury will be obligated to recapitalize the institution by issuing bonds after 2014, when the capital reserves¹ accumulated in the profit years will get exhausted. It is worth mentioning that, according to the Central Bank Act, the redemption of these bonds of recapitalization will be made with the proceeds of future utilities. Thus, it does not represent an immediate pressure on fiscal accounts, which are otherwise solvent, as the public sectors has been running surpluses in the last two years and is expected to keep on that track this and the next year.

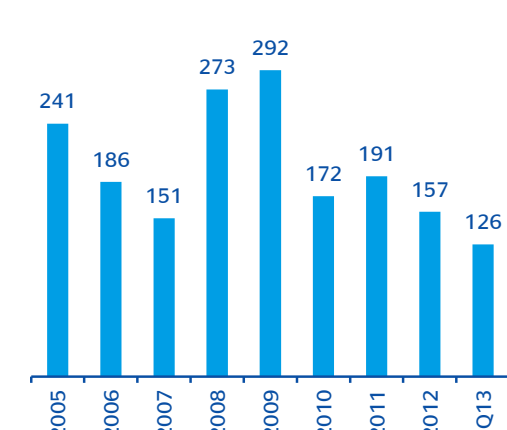
1: To calculate Central Bank's losses, we estimated the sterilization stocks (CDBCRP, public sector deposits and financial intermediaries' deposits in local currency) for an assumed pace of foreign exchange purchases by the Central Bank, net of the projected expansion of the monetary base. The marginal increase of the financial costs implied by these sterilization stocks is counterbalance against the increase of financial income from higher reserve holdings and the result is applied to losses in 2012.

Chart 11
Central Bank profits (S/. million)



Source: BCRP and BBVA Research

Chart 12
Sovereign spread on external debt (bps)



Source: BCRP and BBVA Research

These estimations take into account that the government has recently executed alternative measures to reduce the costs of sterilization, in order to reduce the pressure on Central Bank accounts. Thus, in February, the government issued bonds by S/. 1.9 billion (USD 730 million) in order to prepay loans denominated in USD dollars. This operation does not build additional reserves, but at performing some of the sterilization work instead of the Central Bank, it reduces the costs of intervening in the foreign exchange market. It also reduces the proportion of public debt denominated in dollars and also lowers interest payments, which is an additional benefit of the operation.

... and they are not relevant for optimality

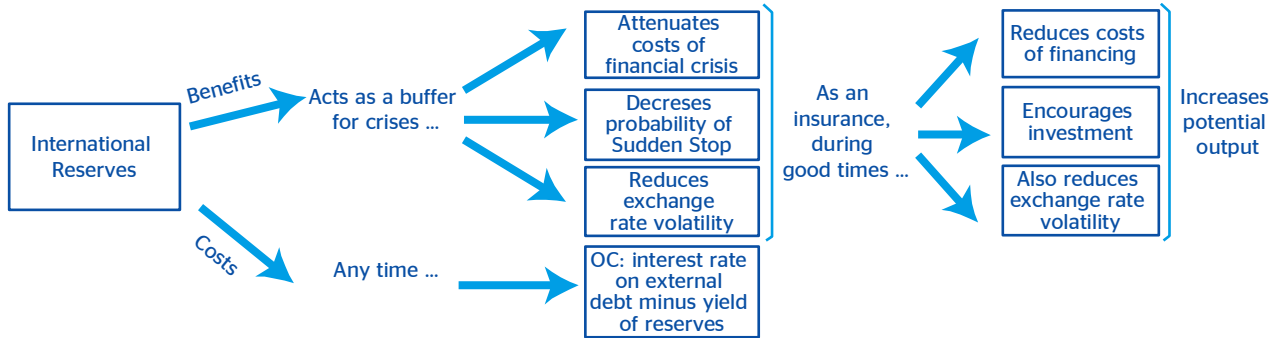
Although it is important to manage the costs of sterilization, the relevant concept for reserve accumulation is social marginal cost (SMC). Thus, even though total costs of sterilization has increased rapidly (almost exclusively because of a volume effect), that is not necessarily the case for SMC. As stated before, SMC is frequently defined as the difference between the interest rate paid on external public debt and the yield of reserve assets. In that case, an instrument that can be used as a proxy of SMC is the sovereign spread, which has been falling in recent years and currently it stands at record low levels (Chart 12). Even though not reported by Calvo, Izquierdo and Loo-Kung (2012), this is probably another factor why optimal reserves are currently elevated for Peru.

Future research should take note that optimal reserve approach is still incomplete ...

We consider that current formulations of optimal reserve models are still incomplete, because they do not usually take into account the benefits of reserves in tranquil times (Chart 13). Following this line, we consider that the main structural factor that is not regularly accounted for in models is the role of reserves as insurance for long-term capital (debt and investment) and the effect of the latter over potential output and growth.

Chart 13

Benefits and costs of reserve accumulation: proposed approach



Source: BBVA Research

Another factor not considered regularly is that IR are frequently accumulated as a by-product of other policies, such as interventions aimed at reducing exchange rate volatility, which could have some additional benefits on its own. Thus, in the current context, foreign exchange purchases attenuate the pace of appreciation of domestic currency. The benefit of this measure being that it partially avoids the harmful effects that can generate massive capital inflows. Then, it counteracts the domestic distortions that can arise as a consequence of ultra expansionary monetary policies and the lack of will of some industrialized economies to perform internal structural adjustments.

An additional aspect of reserve management that could be introduced in future research is the asymmetry of potential costs that arises from holding less than optimal reserves compared to excess reserve holdings. In the first case, the possibility of falling short of reserves could be infringe serious damage to the financial system and also be a source of great concern during crises. In the latter case, excessive reserves would only represent a payment that is afforded during good times. This asymmetry is probable a source of risk aversion on part of some Central Banks.

Considering these additional advantages of reserves accumulation we conclude that the optimal reserves level in Peru may be higher than the current estimations. Given this, and the current gap in relation to estimated optimal reserves, we expect that the Central Bank will continue accumulating IR in the medium term.

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