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The use of reserve requirements as a policy instrument in Latin America[1]

In recent years, some central banks in Latin America and other emerging market regions have used reserve requirements to pursue monetary or financial stability goals. In the past decade, they have raised reserve requirements in the expansion phase of the cycle to tighten monetary conditions without attracting capital inflows. After the bankruptcy of Lehman Brothers, they lowered them sharply, helping to restore market functioning. In some cases, the use of reserve requirements can complement the policy rate in the conduct of monetary policy. However, there are trade-offs in the use of this instrument.

JEL classification: E51, E52, E43.

This article explores the use of reserve requirements in three inflation targeting Latin American countries (Brazil, Colombia and Peru) in recent years. For a variety of reasons, reserve requirements have fallen out of favour with most policymakers in the past quarter of a century.[2] As a result, reserve requirements fell in many economies between 1990 and 2006. This is illustrated in a scatter diagram of reserve requirements (Graph 1) which shows much lower reserve requirements in 2006 (most points in the graph were well below the diagonal line) and rates that were particularly low – close to zero – in many advanced economies. This trend notwithstanding, monetary authorities in several emerging market economies (EMEs) in Latin America and other regions[3] have continued to use reserve requirements as a supplement to (and in some cases a substitute for) the policy rate in pursuing monetary or financial stability aims.

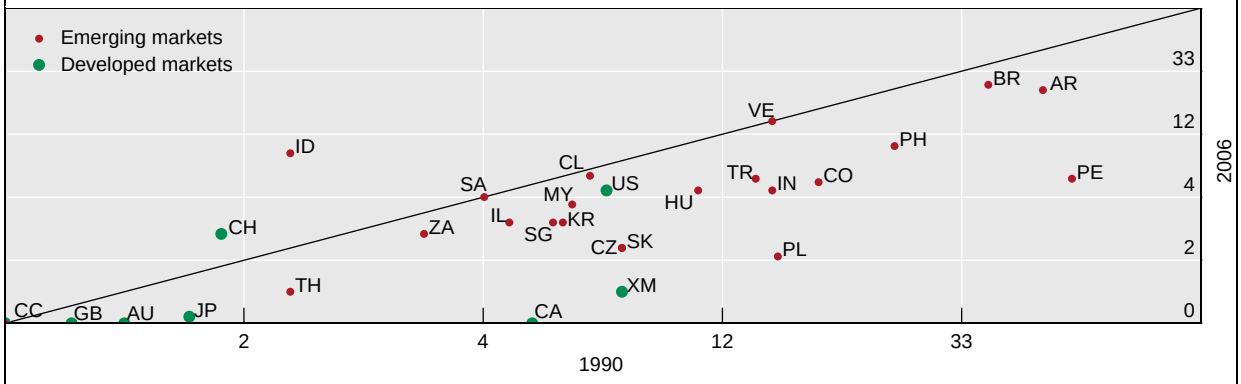
[1] The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS. We would like to thank Claudio Borio, Stephen Cecchetti, Corrinne Ho and Christian Upper for helpful comments. We also thank – without implicating – officials from the central banks of Brazil, Colombia and Peru for useful information or comments that have been used in the preparation of this paper. Alan Villegas provided excellent research assistance.

[2] Central banks have shifted the focus of their operating procedures from controlling reserves or monetary aggregates to short-term interest rates. They have also become more aware of the potential costs imposed by reserve requirements on financial intermediation. Lastly, financial innovations have reduced the effectiveness of this policy tool.

[3] For discussions on the use of reserve requirements in Asian economies, see Borio and Shim (2007) and Ho (2008).

Reserve requirement ratios[1]

2006 and 1990, in per cent, logarithmic scale



AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CC = Denmark, Hong Kong SAR, Mexico, New Zealand, Norway and Sweden; CH = Switzerland; CL = Chile; CO = Colombia; CZ = Czech Republic; GB = United Kingdom; HU = Hungary; ID = Indonesia; IL = Israel; IN = India; JP = Japan; KR = Korea; MY = Malaysia; PE = Peru; PH = Philippines; PL = Poland; SA = Saudi Arabia; SG = Singapore; SK = Slovakia; TH = Thailand; TR = Turkey; US = United States; VE = Venezuela; XM = euro area; ZA = South Africa.

[1] Midpoint in range for Argentina, Brazil, Canada, Chile, Indonesia, Israel, Japan, Korea, Poland, Saudi Arabia, South Africa, Switzerland and the United States. Average of midpoints for the euro area, 1990.

Sources: Forssbæck and Oxelheim (2007); Kemal (1994); Kneeshaw and Van den Bergh (1989); Mohanty and Turner (2008); O'Brien (2007); Schwartz (1998); Van 't dack (1999); national data; BIS calculations. Graph 1

The article is structured as follows. We begin with a short discussion of the policy dilemmas faced by the three countries, before looking at the rationale for the use of reserve requirements and assessing their effectiveness as a policy instrument. This experience suggests that the use of reserve requirements can help to offset tighter financing conditions for banks during periods of financial stress and to smooth credit growth in less developed financial markets. Lastly, we describe some of the costs associated with the use of reserve requirements.

Policy dilemmas

Dilemmas from capital inflows and overheating ...

Prior to the Lehman Brothers bankruptcy in September 2008, Brazil, Colombia and Peru faced a combination of high capital inflows and economic overheating. Headline inflation was above or close to the upper target bound, reflecting pressures on productive capacity and the effects of a commodity price boom. Also, credit was growing at annual real rates of more than 20% (Graph 2, centre panel). Policymakers faced a dilemma: if they raised interest rates to control headline inflation and credit growth, they risked attracting even more capital inflows. As a source of cheap financing, such inflows could be expansionary even if they generated appreciation pressure. Furthermore, they might stimulate credit growth and push up asset prices, with adverse implications for financial stability.[4]

[4] Policymakers have addressed this dilemma in various ways. Some central banks have raised interest rates by less than they otherwise might have done. Outside the region, some have responded by lowering interest rates (eg the Czech National Bank in 2002 and the Central Bank of the Republic of Turkey in 2011 – which also simultaneously increased reserve requirements).

... followed by a fall in inflows and persistent inflation ...

Events after the Lehman bankruptcy led to yet another dilemma. Gross capital inflows to EMEs contracted sharply and financing conditions tightened, in both foreign exchange and domestic markets.[5] Inflation remained high, though, so that policymakers needed to stabilise financial markets and counter the sharp contraction in external demand while also ensuring that inflation expectations remained stable.

... were addressed by adjusting reserve requirements and the policy rate

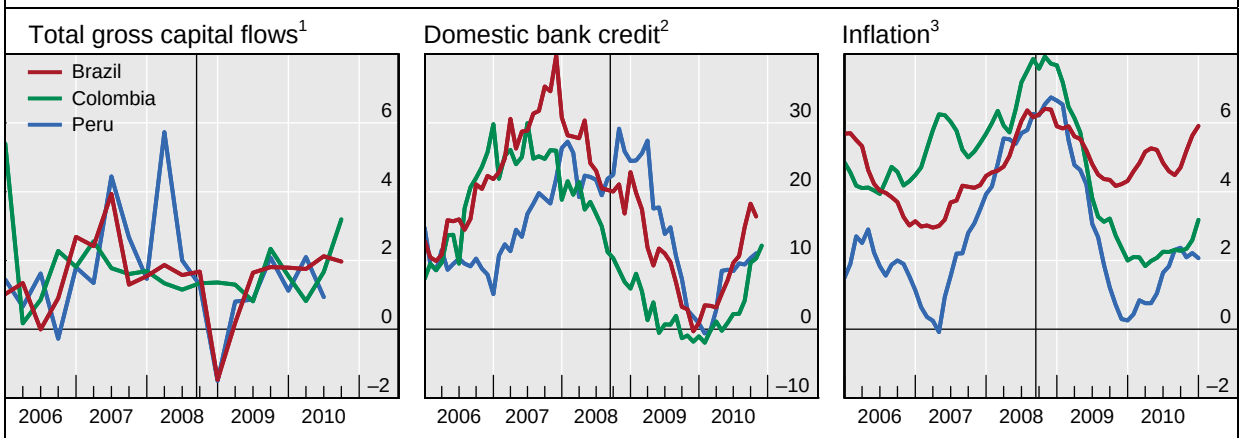
In general, policymakers in the three countries addressed these dilemmas by adjusting reserve requirements as well as the policy rate (see box on page 56 for a discussion of how reserve requirements were implemented in these countries). They raised reserve requirements in the expansion phase of the cycle and lowered them after the Lehman bankruptcy. For example, in the second quarter of 2007 when credit growth was still strong and inflation was picking up (Graph 2, centre and right-hand panels), Colombia's Bank of the Republic imposed a marginal reserve requirement of 27% on savings and current accounts and increased average reserve requirements on savings accounts (Graph 3, centre panel).[6] Over this period, policy rates rose from 8.25% to 9%. In June 2008, when credit growth was slowing (Graph 2, centre panel), the Colombian central bank reduced the effective reserve requirement by setting marginal reserve requirements to zero while simultaneously increasing average reserve requirements. Only half a year later, on 19 December, did it lower the policy rate.

Central banks raised reserve requirements during expansion phase ...

Similarly, the Central Reserve Bank of Peru increased average and marginal reserve requirements[7] between the first and second quarters of 2008,

Capital flows, domestic bank credit and inflation

In per cent



The vertical line marks the date of the Lehman Brothers bankruptcy on 15 September 2008.

[1] As a percentage of GDP. [2] Annual changes in real domestic bank credit to the private sector. [3] Annual changes in consumer price index.

Sources: IMF; national data. Graph 2

[5] As shown in Graph 2, however, the capital inflow reversal was much more muted in Colombia.

[6] During the same period, it also reduced the average reserve requirement on current accounts to 4.7%; however, the overall effect was to increase the effective reserve requirement.

[7] In both domestic and foreign currency.

Operating procedures for reserve requirements

Reserve requirements can have different effects on the banking system, depending on how they are structured. Table A presents the main features of reserve requirements for the three Latin American countries discussed in this paper and (for reference) Argentina and Chile. Mexico does not impose reserve requirements.[①]

All three countries fulfil their reserve requirements on an average basis (column 1) during the maintenance period (the period for which the corresponding required reserves must be held; see Borio (1997, p 47)). The maintenance period ranges from one week to one month (column 4). Brazil and Colombia have lagged reserve accounting frameworks, while Peru maintains a contemporaneous system. In lagged systems, the calculation period precedes the maintenance period. In semi- or half-lagged systems these periods partly overlap, and in contemporaneous frameworks the ends of both periods coincide. The advantage of lagged reserve accounting is that the amount of required reserves is known with certainty, whereas in contemporaneous frameworks data collection lags create an incentive for banks to over-provision in order to meet reserve requirements.

Required reserves tend to be lower today than in early 2007, reflecting sharp reductions in response to the crisis. Also, they vary greatly across countries, ranging from as low as zero (in Colombia, for certificates of deposit with maturity longer than 18 months) to 43% (in Brazil, for demand deposits).[②] In many cases, reserve requirements are remunerated at below-market rates, which partly reduce their distortionary tax effect but also lessen the impact of changes in the reserve requirement rate on the banking system. It also means that the central bank assumes some cost when raising reserve requirements. Colombia does not remunerate reserves from July 2009, Brazil remunerates only required reserves, and Peru remunerates excess reserves.

Certain other characteristics can also influence the effectiveness of reserve requirements as a policy instrument. For example, changes in reserve requirements will have a smaller impact if the amount of deposits subject to reserve requirements relative to domestic bank credit is small. In Brazil, Colombia and Peru, these ratios were, respectively, 0.6, 1.1 and 1.1 in October 2010. Also, the impact will vary over time if the changes are made through the level or through the marginal reserve requirement. When the reserve requirement level is changed, the effect is almost immediate. In contrast, a change in the marginal reserve requirement has a small effect at the beginning that increases over time. As shown in Graph 3 in the main text, Colombia and Peru adjusted both marginal and average reserve requirements, while Brazil only adjusted average reserve requirements.

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① Ho (2008, Table 2) describes the main features of reserve requirements in a sample of Asian and other economies. ② Peru also has reserve requirements in foreign currency, although these are outside the scope of this article. In Peru, a dollarised economy where around 50% of credit is in US dollars, reserve requirements in foreign currency are set at a high level to reduce the risks of sudden reversals in the flows of foreign currency deposits or foreign credit lines (Quizpe and Rossini (2010)).

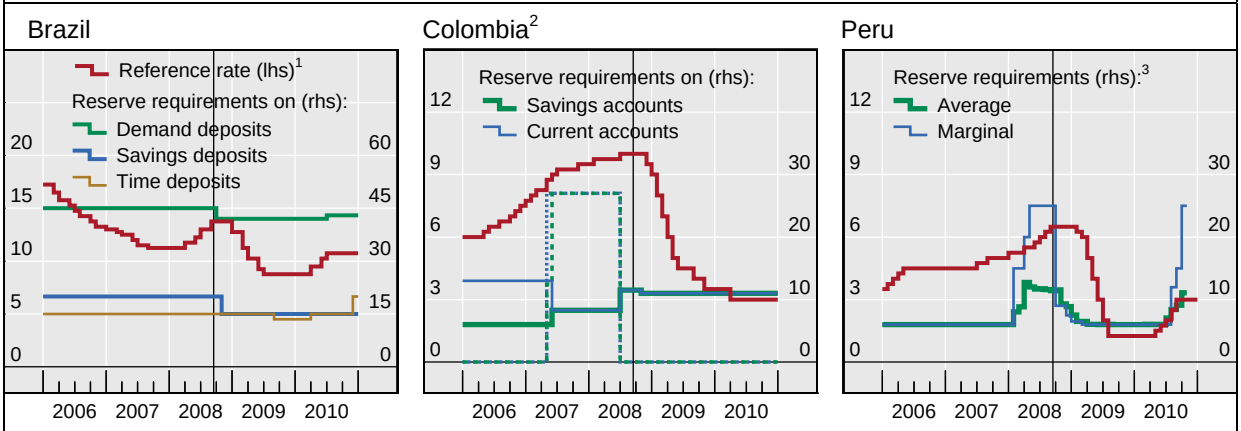
Main features and key ratios (as of December 2010)

	Averaging	Accounting	Main-tenance period	Requirements on:				Remuner-ation
				domestic currency	foreign currency	domestic currency	foreign currency	
				(as of March 2007)		(as of December 2010)		
Brazil	Yes	Half-lagged, lagged[1]	1–2 weeks[2]	4–45%		10–43%		Yes[3, 4]
Colombia	Yes	Lagged	2 weeks	0–13%		0–11%		No[5]
Peru	Yes	Contem-poraneous	1 month	6%	30%	9–25%	9–55%	Yes[6, 7]
Memo:								
Argentina	*Yes*	*Contem-poraneous*	*1 month*	*0–35%*	*0–40%*	*0–19%*	*0–20%*	*Yes*[3, 6]
Chile	*Yes*	*Lagged*	*1 month*	*0–9%*	*0–9%*	*0–9%*	*0–9%*	*Yes*[6, 8]

[1] For demand deposits, half-lagged; for time deposits, savings accounts and "additional requirements", lagged. [2] For demand deposits, two weeks; for time deposits, savings accounts and "additional requirements", one week. [3] Only non-excess reserves. [4] Only for time deposits (invested 40% in federal securities) and for "additional requirements" (all invested in federal securities). [5] Remuneration was eliminated on 24 July 2009. [6] Below-market. [7] Only excess reserves. [8] Only domestic currency time deposits. Table A

Reserve requirements and reference rates

In per cent



The vertical line marks the date of the Lehman Brothers bankruptcy on 15 September 2008.

[1] For Brazil, SELIC target rate; for Colombia, minimum expansion rate; for Peru, reference rate. [2] The dashed lines represent marginal reserve requirements on savings accounts (green) and current accounts (blue). [3] For domestic currency.

Sources: Bloomberg; CEIC; national data. Graph 3

and raised policy rates from 5% up to 6.5% in September 2008. Over this period, gross capital inflows in Peru were both higher and much more volatile than in Colombia (or Brazil), while domestic credit growth and inflation had yet to peak. The Peruvian central bank then reduced reserve requirements starting in October 2008 and continuing up to the first quarter of 2009 (Graph 3, right-hand panel). As in Colombia, there was also a lag before the policy rate was lowered; the first cut occurred on 2 February 2009.

... and lowered them ahead of the policy rate during the downturn

In contrast, the Brazilian central bank did not increase reserve requirements during the expansion phase of the cycle although it raised the policy rate. However, in the last quarter of 2008 it reduced its reserve requirements on demand and savings deposits (Graph 3, left-hand panel). In December 2008, Brazilian authorities also granted to large and liquid banks reductions on their reserve requirements if they extended financing to small and illiquid banks. Once again, the policy rate cuts followed later, starting on 21 January 2009.[8]

Why use reserve requirements?

At least three explanations may be offered for the recent reliance on reserve requirements in the Latin American economies in our sample: (i) raising reserve requirements is less likely to attract capital inflows than is an increase in policy rates; (ii) reserve requirements may strengthen the effectiveness of interest rate policy; and (iii) reserve requirements can be used to meet financial stability objectives, or support the use of macroprudential tools.

[8] The effect of reserve requirements depends on differences in the way they are imposed. See box for a comparison of operating procedures in Latin American countries.

Less likely to attract capital inflows

Raising reserve requirements is less likely to attract capital inflows

As reserve requirements resemble a tax on financial intermediation, raising them tends to reduce bank profits, other things being equal. Banks can partly compensate by increasing their net interest margins through adjustments in deposit or lending rates. Higher reserve requirements can tighten domestic financing conditions without attracting more capital inflows if they induce banks to raise lending rates while keeping deposit rates stable or lowering them (the latter are more relevant for foreign investors).[9] In contrast, a policy rate rise would increase both deposit and lending rates, which could have a contractionary effect on economic activity while also attracting more capital inflows.[10] We discuss the effects of reserve requirements on deposit and lending rates below.

Strengthening the effectiveness of monetary policy

Reserve requirements may be particularly effective ...

Reserve requirements may serve to complement monetary policy when it would be too costly to rely solely on open market operations to achieve an interest rate target or when a change in the interest rate would not be sufficient to maintain price (or financial) stability.[11] For example, a central bank seeking to mop up excess liquidity may find it cheaper to do so by raising reserve requirements (which are not fully remunerated at market rates) than through open market operations. However, as noted below, the cost is then assumed by the banking system. As another example, during periods of rising inflation or rapid credit growth, even very sharp increases in interest rates over a short period of time may fail to constrain bank lending behaviour. In such cases, raising reserve requirements may be more effective, since they directly affect the supply of credit. This is especially true when financial markets are less developed and the pass-through from the policy rate to market rates and the impact of the latter on credit (the credit channel) are smaller. This seems to be the case in a number of EMEs (Moreno (2008)).[12]

... during periods of financial stress ...

Reserve requirements may be particularly useful during periods of financial stress. During such periods, higher risk aversion blocks the transmission channel of the policy rate, reducing its signalling power and impairing the functioning of the money market (Quizpe and Rossini (2010)). In this case, lowering reserve requirements can directly offset credit supply

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[9] This holds true when competition in the lending market is greater than in the deposit market. Vargas et al (2010, p 135) note that deposit rates will fall when reserve requirements are raised if central bank credit is a close substitute for deposits as a source of funds for the banks.

[10] As confirmed empirically by Herrmann and Mihaljek (2010), capital flows respond to relative return differentials and expected income growth. Herrmann and Mihaljek also found that interest rate differentials are particularly significant drivers of capital flows in Asia and Latin America, but not in central and eastern Europe.

[11] See Mesquita and Toros (2010), Vargas et al (2010) and Quizpe and Rossini (2010) on the rationale for the use of reserve requirements in Brazil, Colombia and Peru, respectively.

[12] The reasons include less bank competition, less credible monetary policy regimes and more government intervention in the financial system. The credit supply effects of reserve requirements are also more important in less developed financial markets because borrowers cannot easily switch to (wholesale) borrowing from financial markets.

disruptions, providing liquidity relief to banks and thus helping restore the operation of the monetary transmission mechanism.[13] This effect may be larger than the effect of a change in the policy rate when financial markets – including the price discovery mechanism – are impaired. When policy rates are close to zero, lowering the policy rate may be ineffective unless the central bank supplies credit directly. Lowering reserve requirements may then provide an alternative policy instrument, because the effect does not depend on the market's response to policy rate reductions, but directly affects bank profit margins.

... when policymakers are reluctant to change the policy rate

Moreover, the use of reserve requirements as an additional policy instrument could help resolve conflicting objectives. For instance, policymakers may be reluctant to lower the policy rate in response to an economic slowdown if inflation is still relatively high. They may instead prefer to lower reserve requirements to ease monetary conditions, if they believe that inflation expectations will be less affected by changes in reserve requirements than by changes in the policy rate. As noted earlier, this is broadly in line with how policymakers responded in the aftermath of the Lehman bankruptcy – reserve requirements were lowered first, followed by interest rates.

Reserve requirements and financial stability

Reserve requirements can restrain credit growth …

Reserve requirements could have two implications for financial stability. First, raising reserve requirements could prevent financial imbalances by restraining credit growth (and, by extension, asset price increases) in the upswing of the business cycle. Second, lowering reserve requirements during a downturn can deploy the cushion of reserves built up during the expansion. In this manner, reserve requirements can potentially act countercyclically, smoothing out liquidity fluctuations in the financial system over time.

... and are an instrument typically available to central banks

There may also be institutional advantages to using reserve requirements as an instrument for financial stability, including: (i) they are available to most central banks – indeed, they may be the only instrument (other than the policy rate) that central banks can use when banking supervision and regulation are housed in a different institution; (ii) they provide liquidity using the banking system's own balance sheet, so that the central bank does not directly incur any costs or risks, although the extent to which it is desirable to transfer such costs to the banking system may vary;[14] and (iii) unlike the rediscount window, the use of reserve requirements does not depend on banks owning low-risk assets as collateral.

[13] Montoro and Tovar (2010) show that if banks face financing constraints that reduce their ability to supply credit during periods of financial stress, lowering reserve requirements can provide liquidity to the banking system that helps restore the proper functioning of the interbank market.

[14] In contrast, the central bank can assume significant risks when using unconventional monetary policy measures such as buying a wider range of assets including illiquid ones. Losses could then threaten its independence.

How effective are reserve requirements?

The effectiveness of reserve requirements may be assessed through their effects on market rates and on domestic credit to the private sector.

Reserve requirements helped stabilise interbank markets ...

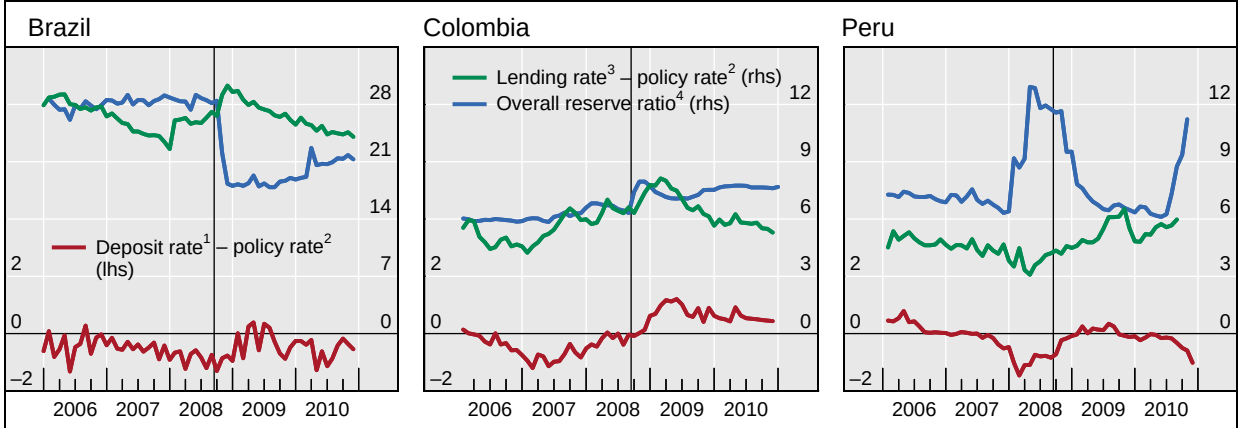
Turning first to the effects on market rates, there is some evidence that adjustments in reserve requirements helped policymakers stabilise the interbank market and meet their policy rate targets. For example, in 2007–08 in Peru, interbank lending rates fell for a time by up to 475 basis points below the policy rate before reserve requirements were increased, reflecting excess liquidity. The rise in reserve requirements reversed this condition, helping restore monetary control.

... influencing bank rates in ways that moderated capital flows

In some cases, adjustments in reserve requirements may also have helped stabilise capital flows, because of the impact on bank rates. Graph 4 shows movements in reserve requirements and in deposit and lending rates (relative to the policy rate) in recent years. In Peru, the spread between the deposit rate and the policy rate[15] did not just remain stable, but fell around the time when reserve requirements increased in 2008, and rose around the time when reserve requirements declined (following the Lehman bankruptcy as identified by the vertical line in Graph 4). In Brazil, deposit rates increased relative to the policy rate following a sharp decline in the reserve requirement in the aftermath of the Lehman Brothers bankruptcy. Broadly in line with the findings of Vargas et al (2010), the effects are not as clear in the case of Colombia, but this may reflect the fact that reserve requirements there changed less than in the other two countries and because we are not controlling for other factors.

Reserve requirements and interest rate spreads

In per cent



The vertical line marks the date of the Lehman Brothers bankruptcy on 15 September 2008.

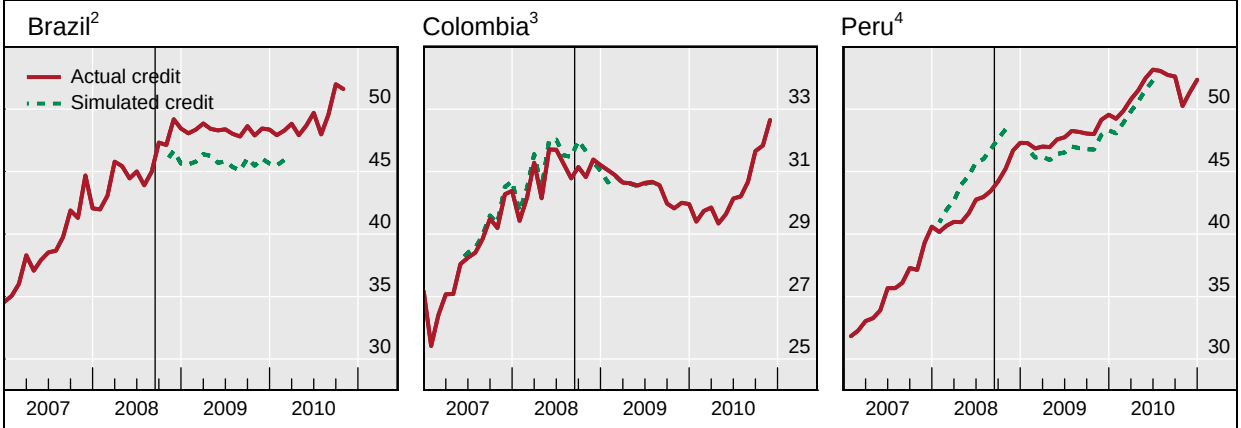
[1] For Brazil, one-month deposit certificate rate; for Colombia, 90-day deposit certificate rate; for Peru, national currency time deposit rate. [2] For Brazil, SELIC target rate; for Colombia, minimum expansion rate; for Peru, reference rate. [3] For Brazil and Colombia, loan interest rate; for Peru, national currency commercial rate. [4] Effective reserve requirement ratio for domestic currency.

Sources: IMF; national data. Graph 4

[15] We discuss adjustment relative to the policy rate to give a sense of how much deposit or lending rates changed, abstracting from policy rate changes. However, for the experiment to be clean, we would need policy rates to be stable, as the spread between these rates is not normally constant.

Counterfactual effects of reserve requirements on credit

As a percentage of GDP[1]



The vertical line marks the date of the Lehman Brothers bankruptcy on 15 September 2008.

[1] Four-quarter moving average. [2] Domestic bank credit to the private sector corresponding to national currency. Credit between October 2008 and February 2010 is simulated with counterfactual effective reserve requirement rates corresponding to the average of the last two years. [3] Domestic bank credit to the private sector is simulated with counterfactual effective remuneration-adjusted reserve requirement rates (between May 2007 and October 2008, the average of the last two years, 4.7%; between November 2008 and July 2009, the pre-change rate, 7.3%). [4] Domestic bank credit to the private sector comprises national and foreign currencies. Credit is simulated with counterfactual effective pre-change reserve requirement rates (between January and October 2008, 6% and 28.8% for national and foreign currencies, respectively; between January 2009 and June 2010, 11.5% and 33.2%, respectively). The average exchange rate for the March 2008–March 2010 period was used.

Source: IMF: national data. Graph 5

An event analysis provides additional perspective. Following the Lehman bankruptcy, Brazil, Peru and Colombia reduced their effective reserve requirements ratios[16] by a respective 10, 5 and 1 percentage points. Other things being equal, this would tend to increase the profitability of banks and allow them to reduce their net intermediation margins by raising deposit rates and/or lowering loan rates. However, while deposit rates increased relative to policy rates, lending rates rose by even more. As a result, until the first half of 2009, the spread between lending and deposit rates remained at least as high as before the Lehman bankruptcy. It increased in Brazil (by 300 basis points) but was unchanged in Peru. Other shocks appear to have masked the effects of lower reserve requirements; in particular, a very sharp rise in risk aversion may have reduced bank credit supply. This effect is illustrated by the case of Colombia, where the change in reserve requirements was relatively small and the spread rose by 200 basis points.

Some additional empirical evidence suggests that an increase in reserve requirements tends to raise lending rates and to reduce deposit rates, although precisely by how much varies across countries (Reinhart and Reinhart (1999)).[17]

[16] Measured by the ratio of reserve requirements held by banks over deposits, subject to reserve requirements. For Colombia, this is adjusted by the effect of the remuneration of reserve requirements (Vargas et al (2010)).

[17] For instance, in Brazil, higher unremunerated reserve requirements have been found to increase the mean of the lending rates (De Souza-Rodrigues and Takeda (2004)). There is also evidence that reserve requirements are important long-run determinants of lending rates in Colombia (Vargas et al (2010)). In contrast, they affect both lending and deposit rates in Peru in the short run, but not in the long run (Condor (2010)).

Reserve requirements can help smooth credit growth …

The resources released or retained through changes in reserve requirements may have helped smooth credit growth. This may explain why credit showed resilience in the three countries even during the most difficult part of the crisis in 2009. Graph 5 presents an illustrative exercise comparing the path of credit with the possible (counterfactual) path of credit if reserve requirements had not changed, assuming that all the resources released or withdrawn by the change in reserve requirements directly affected credit on a one-to-one basis, which can be seen as an upper bound estimate of the effects on credit.[18] For Peru, we estimate that the increase in reserve requirements in late 2007 and early 2008 (in response to rising inflation) may have reduced credit by around 4% of GDP. Similarly, the reduction in reserve requirements in response to the spread of the crisis was possibly around the same order of magnitude, ie about 3–4% of GDP in Brazil and Peru. As noted earlier, in the case of Colombia, the changes in reserve requirements were much smaller (between 2.6 and 1.2 percentage points in effective rates), as were the estimated effects on credit, which were between 2.8 and 0.4% of GDP for each episode.

Furthermore, in Brazil the above-mentioned reductions in reserve requirements conditional on lending to small and illiquid banks helped to restore financing to smaller Brazilian financial institutions that were vulnerable to the domestic liquidity squeeze (Mesquita and Toros (2010)).

Side effects of reserve requirements

... but also impose costs on the financial sector

Many central banks have reduced their reliance on reserve requirements as a policy instrument in recent decades because they impose significant costs. Reserve requirements compel banks to deposit a portion of their assets with the central bank, which generally offers a lower yield than other investments. Such requirements therefore act as a tax on the financial sector, putting depository institutions at a competitive disadvantage to other financial institutions.[19] One result is a larger spread between lending and deposit rates, which increases the cost of credit and tends to reduce the level of financial intermediation. In particular, reserve requirements create an incentive for borrowers to look for other sources of funding, for example from abroad or from the unregulated financial sector.

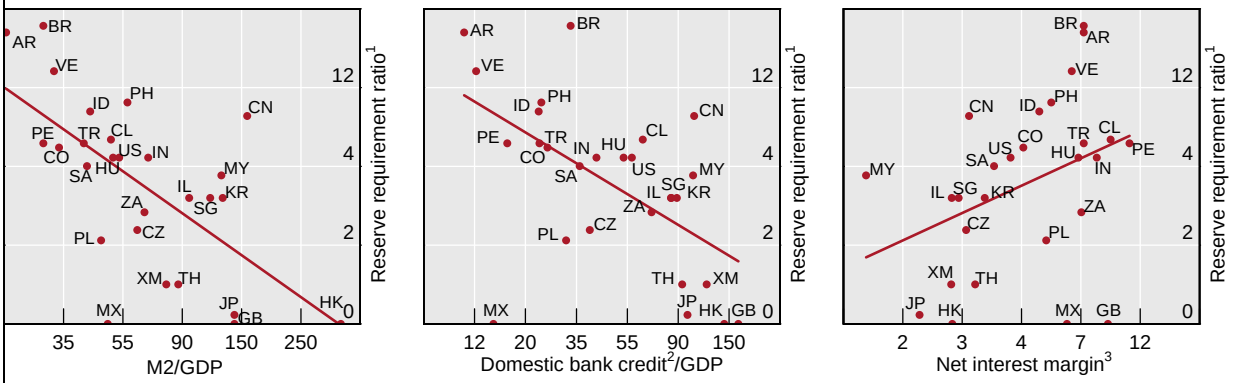
As illustrated in Graph 6, in a cross section of countries, financial intermediation (measured by the ratios of M2 to GDP and of domestic credit to GDP) indeed tends to be lower when the level of reserve requirements is higher, although the direction of causality needs to be investigated further. Also, the net interest margin tends to be larger when reserve requirements are higher.

[18] More precisely, simulated credit is then equal to actual credit less (plus) the resources released (withdrawn) by the decrease (increase) in reserve requirements.

[19] On the other hand, some central bank services, such as the discount window, are unavailable to institutions that are not subject to reserve requirements. In this light, the taxationary element of reserve requirements could be seen as a service charge.

Reserve requirements, M2, domestic bank credit and net interest margin

2006, in per cent, logarithmic scale



AR = Argentina; BR = Brazil; CL = Chile; CN = China; CO = Colombia; CZ = Czech Republic; GB = United Kingdom; HK = Hong Kong SAR; HU = Hungary; ID = Indonesia; IL = Israel; IN = India; JP = Japan; KR = Korea; MX = Mexico; MY = Malaysia; PE = Peru; PH = Philippines; PL = Poland; SA = Saudi Arabia; SG = Singapore; TH = Thailand; TR = Turkey; US = United States; VE = Venezuela; XM = euro area; ZA = South Africa.

[1] Midpoint in range for Argentina, Brazil, Chile, the euro area, Indonesia, Israel, Japan, Korea, Poland, Saudi Arabia and the United States. [2] Domestic bank credit to private sector. [3] Net interest revenue/average earning assets.

Sources: Mohanty and Turner (2008); IMF; Bankscope; national data; BIS calculations. Graph 6

In order to avoid these effects and promote financial development, many central banks have shifted towards market-based instruments for monetary control, such as open market operations using repos.

Concluding remarks

In Latin America, reserve requirements have been used to: (i) resolve policy dilemmas associated with capital inflows; (ii) enhance the effectiveness of monetary control or strengthen monetary policy transmission; (iii) restore the transmission mechanism of monetary policy during periods of stress, possibly serving as an alternative to quantitative easing or large-scale asset purchases; and (iv) counter financial imbalances associated with excessive credit growth.

The recent experience of three Latin American economies suggests that adjustments in reserve requirements may have helped to stabilise interbank rates and influence market rates in a way that moderated capital flows. They may also have helped to smooth credit growth during the expansionary and contractionary phases of the economic and financial cycle.

That said, there are trade-offs in the use of reserve requirements, which can give rise to distortions in the financial system that increase the cost of credit and reduce financial intermediation.

References

Borio, C (1997): "Monetary policy operating procedures in industrial countries", *BIS Working Papers*, no 40.

Borio, C and I Shim (2007): "What can (macro-) prudential policy do to support monetary policy?", *BIS Working Papers*, no 242.

Condor, R (2010): "La tasa de encaje como instrumento de política monetaria", Central Reserve Bank of Peru, mimeo.

De Souza-Rodrigues, E and T Takeda (2004): "Reserve requirements and bank interest rate distribution in Brazil", proceedings of the 32nd Brazilian Economics Meeting, www.anpec.org.br/encontro2004/artigos/A04A095.pdf.

Forssbæck, J and L Oxelheim (2007): "The transition to market-based monetary policy: what can China learn from the European experience?", *IFN Working Papers*, no 696.

Herrmann, S and D Mihaljek (2010): "The determinants of cross-border bank flows to emerging markets: new empirical evidence on the spread of financial crises", *BIS Working Papers*, no 315.

Ho, C (2008): "Implementing monetary policy in the 2000s: operating procedures in Asia and beyond", *BIS Working Papers*, no 253.

Jara, A, R Moreno and C Tovar (2009): "The global crisis and Latin America: financial impact and policy responses", *BIS Quarterly Review*, June, pp 53–68.

Kemal, D (1994): "Slovakia: restructuring for recovery", World Bank Country Study.

Kneeshaw, J and P Van den Bergh (1989): "Changes in central bank money market operating procedures in the 1980s", *BIS Economic Papers*, no 23.

Mesquita, M and M Toros (2010): "Brazil and the 2008 panic", *BIS Papers*, no 54, pp 113–20.

Mohanty, M S and P Turner (2008): "Monetary policy transmission in emerging market economies: what is new?", *BIS Papers*, no 35, pp 1–60.

Moreno, R (2008): "Monetary policy transmission and the long-term interest rate in emerging markets", *BIS Papers*, no 35, pp 61–80.

O'Brien, Y (2007): "Reserve requirement systems in OECD countries", *FEDS Paper* 2007-54, Board of Governors of the Federal Reserve System.

Quizpe, Z and R Rossini (2010): "Monetary policy during the global financial crisis of 2007–09: the case of Peru", *BIS Papers*, no 54, pp 299–316.

Reinhart, C and V Reinhart (1999): "On the use of reserve requirements in dealing with capital flow problems", *International Journal of Finance and Economics*, vol 4, no 1, pp 27–54.

Schwartz, M (1998): “Consideraciones sobre la instrumentación práctica de la política monetaria”, *Documento de investigación*, no 9804, Bank of Mexico.

Van ’t dack, J (1999): “Implementing monetary policy in emerging market economies: an overview of issues”, *BIS Policy Papers*, no 5, pp 3–72.

Vargas, H, Y Betancourt, N Rodríguez and C Varela (2010): “Effects of reserve requirements in an inflation targeting regime: the case of Colombia”, *BIS Papers*, no 54, pp 133–70.