Financial market development and monetary policy: the Peruvian experience[1]

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Abstract

In parallel with IT adoption and the use of the interest rate as operational target in Peru, the creation of a secondary market for central bank securities and government bonds has improved the depth and liquidity of the fixed income market and promoted the creation of a risk-free yield curve. Other factors contributing to this result are good macroeconomic fundamentals, the improvement in sovereign credit ratings, an external environment of low interest rates, and abundant global liquidity after the great financial crisis (GFC). In particular, the development of the sovereign bonds market has improved the pass-through of the reference interest rate to other domestic-currency market rates.

In Peru, financial intermediation is mostly through banking, with corporates as the main participants in the capital markets. Therefore, while the bond market is not yet fully developed, monetary policy transmission is as effective as in other countries in the region. This structure of the Peruvian financial system also contributes to the effectiveness of unconventional monetary policies, since the macroprudential instruments used (ie reserve requirements) act through their impact on banking.

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[1] Central Reserve Bank of Peru.

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Introduction

The Central Reserve Bank of Peru (BCRP) adopted an inflation targeting (IT) regime in 2002. In addition to the interest rate, the BCRP uses other instruments such as reserve requirements (RRs) and foreign exchange (FX) intervention to preserve macro-financial stability; ie together with monetary policy to control inflation, the BCRP uses countercyclical RR adjustments to moderate the financial cycle and FX intervention to reduce excessive exchange rate volatility with potentially negative effects on the economy.

The operational tool of monetary policy is the short-term interest rate; ie the overnight interbank rate for uncollateralised loans. This policy framework operates through an interest rate corridor, with the interest rate on liquidity injection standing facilities as a ceiling and the interest rate on overnight deposits with the BCRP as a floor. Changes in the interbank interest rate pass through to other market rates, mainly short-term and lower-risk rates such as corporate rates, over a horizon of up to one year. Additionally, since Peru is a partially dollarised economy, the BCRP can influence the cost of dollar financing by adjusting RRs on FX deposits or their remuneration.

IT adoption and the use of an interest rate operating target has significantly reduced interbank interest rate volatility; and the impact of changes in this interest rate on other interest rates has become stronger and more predictable. Additionally, IT was adopted while financial markets were still shallow, particularly the fixed income market. One of the factors behind sluggish financial market development was the absence of a risk-free yield curve that could serve as a benchmark for the issuance of private sector securities.

However, in parallel with IT adoption, progress has been made in creating a fixed income market in domestic currency, which has enhanced market liquidity and depth. This has also contributed to improving the pass-through of the monetary policy interest rate to other interest rates.

Development of the fixed income market (2001–19)

BCRP Securities (CDBCRPs) and the formation of the CDBCRP yield curve

In 1992, the BCRP began to issue its own securities (*Certificado de Deposito BCRP*–CDBCRP) as a sterilisation instrument, due to a lack of government securities to carry out open market operations at that time. Other BCRP sterilisation instruments include RRs, public sector deposits with the BCRP, and time deposits of less than one month.[2] The BCRP can inject liquidity to the market through repo operations, which use mainly CDBCRPs and BTPs as collateral.

In addition to regular CDBCRPs, the BCRP has exceptionally used two additional types of security: restricted-negotiation CDBCRPs (CDBCRP-NRs), with participation in the primary issuance confined to certain market participants (mainly residents) to

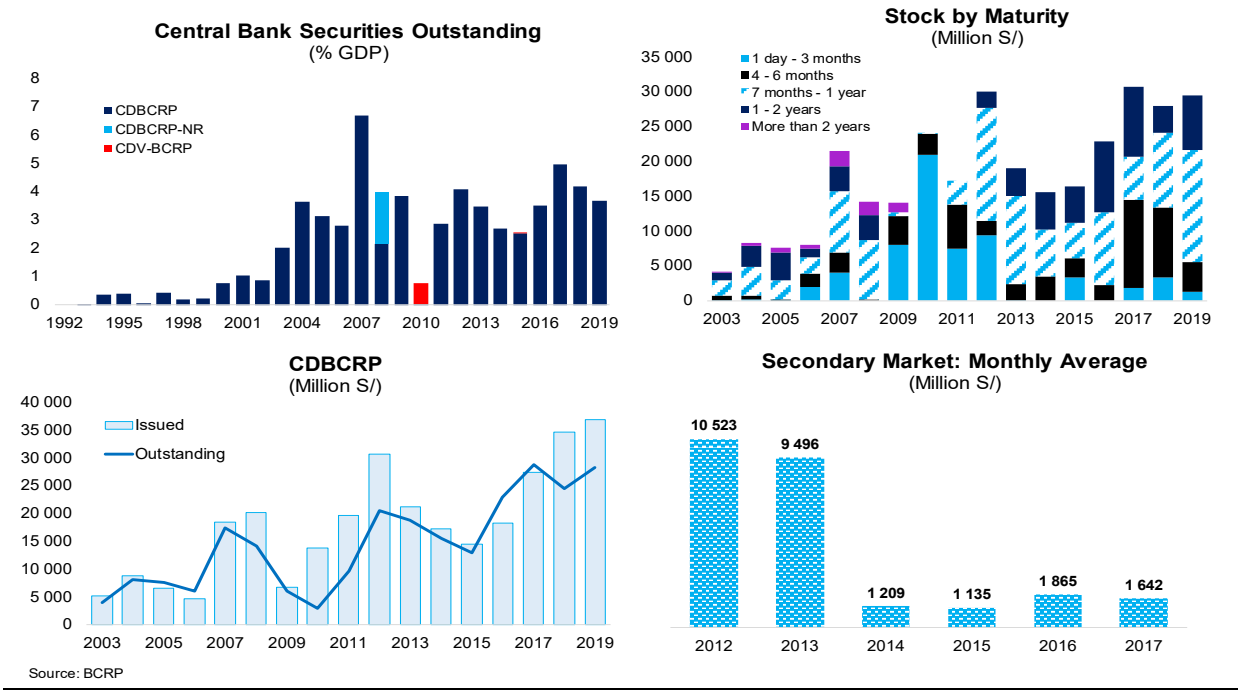
[2] CDBCRPs with maturities of less than one month were replaced in 2008 by term deposits.

reduce capital flow-related speculation (which distorted the CDBCRP yield curve in 2008); and variable-rate CDBCRPs (CDVBCRPs), which are floating-rate securities (re-adjustable in line with the monetary policy rate) used to reduce investor interest rate risk in a context of expected monetary policy tightening in 2010.[3]

The CDBCRP primary market has grown in line with greater demand from local banks and domestic investors for high-quality liquid securities. The monthly average amount placed prior to the GFC fell from around PEN 1,548 million in 2007 to PEN 572 million in 2009.

Frequent issuance of CDBCRPs with maturities of up to 18 months (with selective issuances of two and three years between 2003 and 2007) has facilitated the creation of a short-term yield curve that serves as a benchmark for local issuances of domestic-currency securities. Since January 2014, the BCRP has made weekly issuances of CDBCRP of six, 12 and 18 months maturity to foster secondary market liquidity.

Peruvian central bank securities — Graph 1



Source: BCRP

The Market Makers Program and the formation of a sovereign bond yield curve

In 2003, the Ministry of Economy and Finance (MEF) established a Market Makers Program (PCM) to develop a public debt market in domestic currency, thereby encouraging the development of a domestic capital market. The PCM comprised (i) the issuance of domestic-currency sovereign bonds (BTPs) at a fixed rate and at an inflation-adjusted (constant purchasing power, VAC) rate; and (ii) active BTP trading

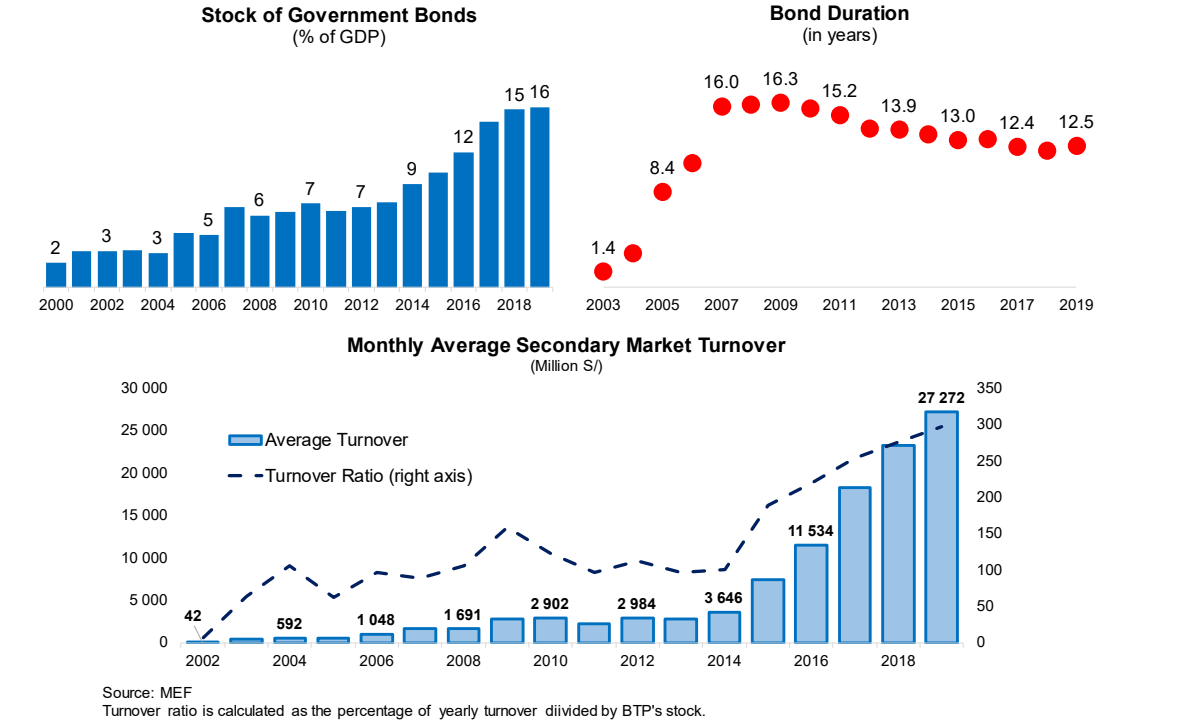
[3] In addition, the BCRP also issues securities that can be redeemed in US dollars (CDLDBCRP) and others that are indexed to the exchange rate (CDRBCRP) as indirect instruments for FX intervention. The former is analogous to a temporary sterilised FX purchase and the latter to a temporary sterilised FX sale. For more details, see Tapia and Torres (2017).

in the secondary market, which allow the formation of the yield curve in domestic currency, thereby increasing the share of domestic currency public debt.

Prior to the PCM, in 2002 public debt (49% of GDP) consisted mainly of external debt (78% of total) from multilateral agency loans and the debt renegotiation with the Paris Club. Under the PCM, the BTP stock increased from 2% of GDP in 2002 to 16% of GDP in 2019. Thus, 68% of the public debt is currently denominated in domestic currency and the average BTP maturity of nominal bonds has increased from 1.4 years in 2003 to 12.5 years in 2019. While, in 2004, there were only BTPs with maturities up to six years, since 2010 there have been 30-year BTPs (and 40-year BTPs since 2014). Additionally, BTP turnover in the secondary market is around three times the BTP stock (0.1 times in 2002).

Sovereign bonds

Graph 2



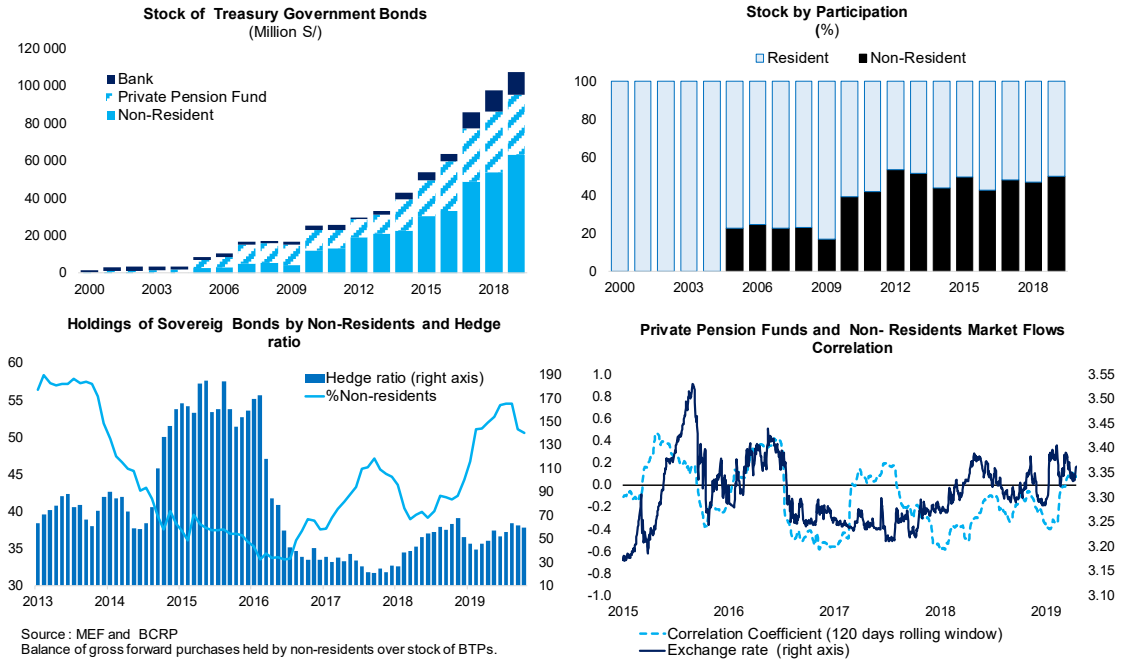
Source: MEF
Turnover ratio is calculated as the percentage of yearly turnover diivided by BTP's stock.

The main BTP market participants are non-resident investors, pension funds and domestic banks. The participation of non-resident investors varies over time and is associated with the commodity price and capital flow cycle. Moreover, non-resident investors hedge their BTP position partially with non-derivative forwards, which has also contributed to the development of the FX derivatives market.

In recent years, FX market flows originated by the participation of non-residents in the BTP market have been offset by transactions conducted by pension funds to hedge their foreign investments. In particular, there is a predominantly negative correlation between the flows created by these operations since end-2016; eg in 2018 non-resident investors required USD 3 billion, while pension funds supplied USD 2 billion. Between January and December 2019, non-resident investors required USD 0.5 billion, while pension funds supplied USD 0.6 billion.

Non-resident investors

Graph 3

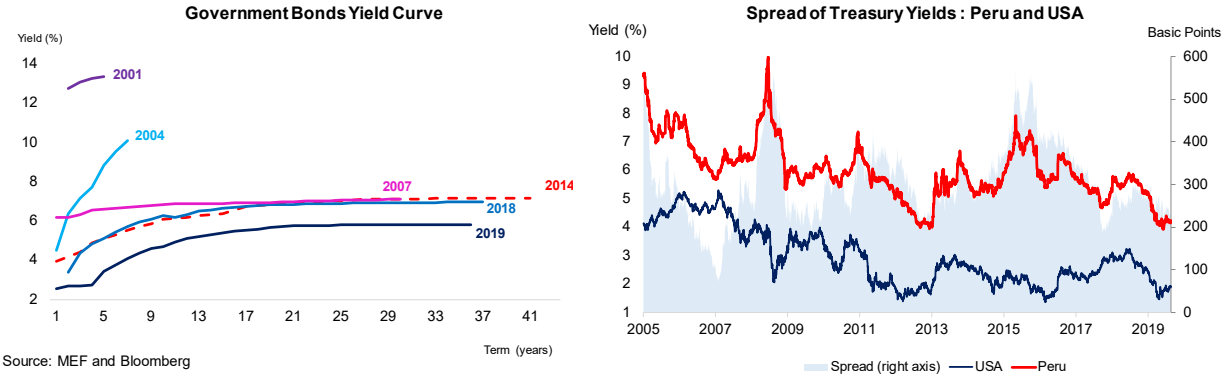


Source : MEF and BCRP
Balance of gross forward purchases held by non-residents over stock of BTPs.

The greater depth and liquidity of the BTP market has allowed financing at lower interest rates and the development and expansion of the domestic-currency risk-free yield curve, with maturities of up to 40 years. Thus, at end-2019, the 10-year yield rate in domestic currency is one of the lowest in the region (with the lowest spread relative to the US Treasury Bill rate since 2007).

Peruvian local currency government yield curve

Graph 4

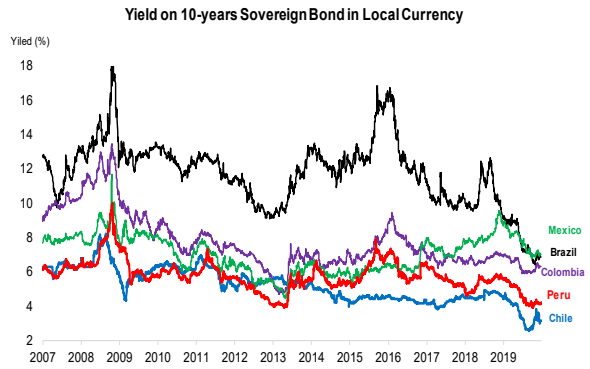


Source: MEF and Bloomberg

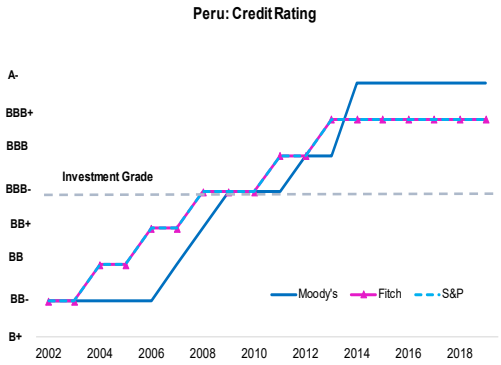
There are domestic factors behind the development of Peru's BTP market, such as the creation of a risk-free domestic currency yield curve (a composite of CDBCRP yields for short-term rates and BTP yields for long-term rates), good macroeconomic fundamentals, and the improvement in credit ratings (investment grade from 2008 and currently up to A– with stable outlook). Additionally, external factors include the low-interest environment in the advanced economies and ample global liquidity.

Spread Treasury yield and credit rating

Graph 5



Source: Bloomerg and MEF



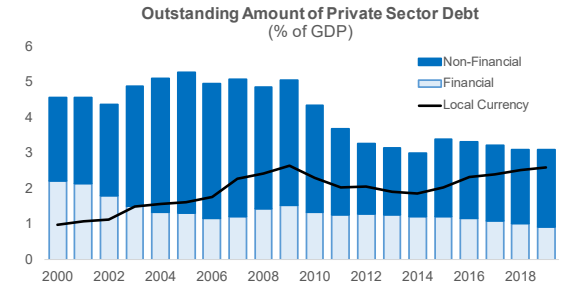
Source: S&P, Moody´s, Fitch Ratings.

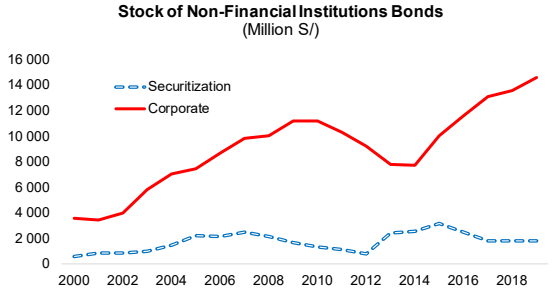
Development of the private sector market

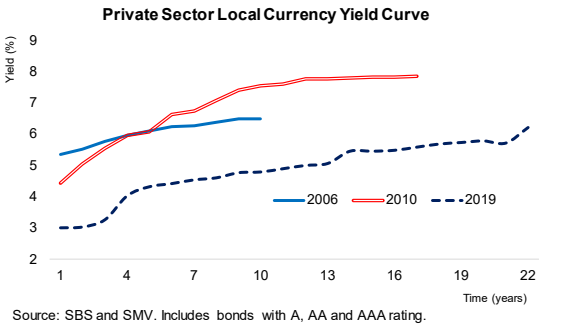
The private domestic market in domestic currency increased in size from 1% of GDP in 2000 to 3% of GDP in 2019. Maturities are up to 30 years (mainly between two and five years) in domestic currency. Financial institutions represent 67% of the total amount issued at end-2019. Issuances are mainly in domestic currency (83% of total in 2019). The high level of dollarisation in Peru explained the initial concentration of debt instruments in US dollars (from 78% in 2000 to 17% in 2019).

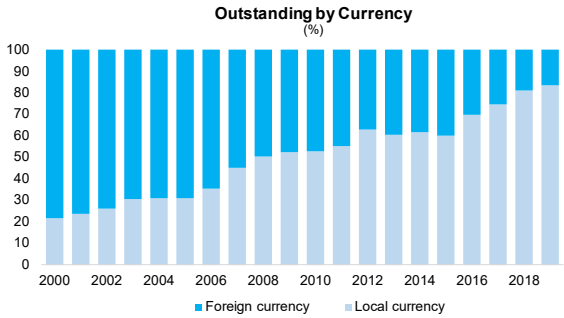
Domestic private bond market

Graph 6









Source: SBS and SMV. Includes bonds with A, AA and AAA rating.

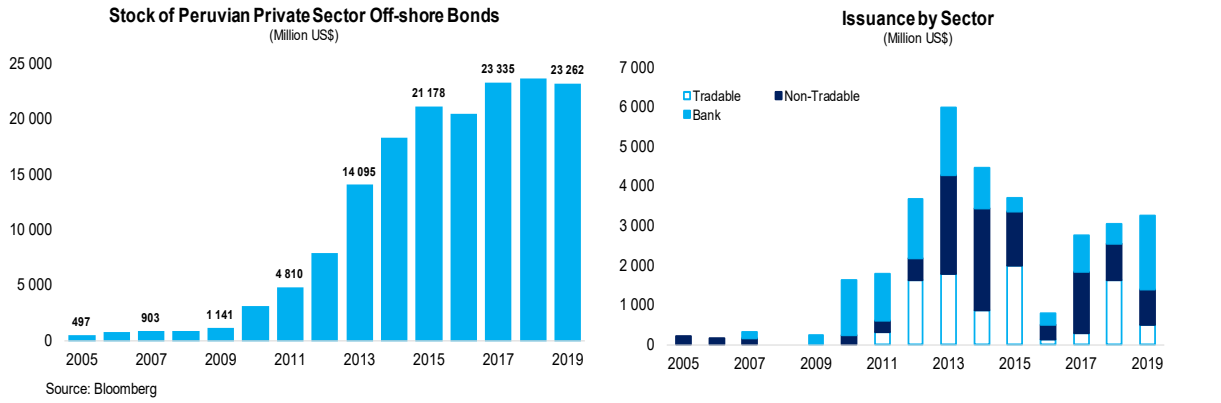
Development of the international bond market

At the same time, in recent years Peruvian firms have taken advantage of the strong demand for debt instruments from emerging market economies (EMEs) in amounts

greater than they could obtain in their local markets. Thus, the stock of outstanding international bonds increased from USD 1.1 billion in 2009 to USD 23.2 billion in 2019, with Peruvian banks as main participants in these overseas issuances.

Issuance of international securities is mainly in US dollars (93%), with a median maturity of 10 years (up to 61 years). The average spread of corporate issuances relative to the US Treasury Bill rate was around 165 basis points at end-2019.

Private international bond market — Graph 7



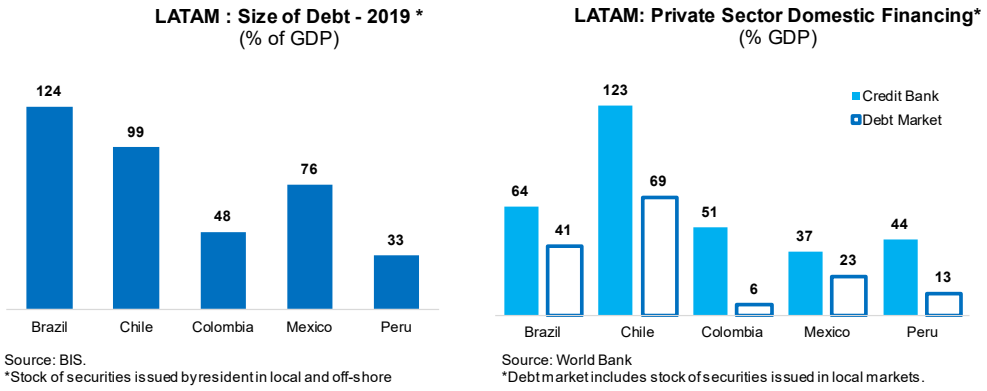
Implications of fixed income market development for monetary policy

The lower degree of financial market development in EMEs, as compared with the advanced economies, limits the transfer of risk between economic agents, the effectiveness of monetary policy, the financing options of the private sector, and the capacity of the economy to absorb capital flows.[4]

In Peru, as in most Latin American EMEs, the development of financial markets (mainly for fixed income government instruments) has been considerable. According to the IMF's Financial Development Index, Peru has improved in terms of access, depth, and efficiency in the financial market (although it remains well below developed countries).

[4] Stone et al (2008).

Stage of financial market development Graph 8



Source: BIS.
*Stock of securities issued by resident in local and off-shore

Source: World Bank
*Debt market includes stock of securities issued in local markets.

In particular, Peru's debt market as a percentage of GDP is relatively small (33%) compared with those of other countries in the region. Additionally, in Peru banks predominate in private firm financing (44% of GDP) over the bond market (13% of GDP, below the regional average of 30%).

However, although Peru's fixed income market is still small, the increase in the liquidity and depth of this market in recent years has had a positive effect on the transmission of monetary policy to other interest rates. In particular, the pass-through of the interbank interest rate to the average lending rate and the stock of CDBCRP is almost complete after one year in the most recent period, while it was around 0.4–0.7 in 1995–2004.

Peru one-year interest rate pass-through* Table 1

Interest Rate	Sub-samples	
	1995-2004	2005-2019
Average lending rate	0.4	1.0
Average deposit rate	0.3	0.7
Stock of CDBCRP	0.7	1.1

*The Interest Rate Pass-Through is defined as the cumulative response of the variable divided by the interest rate orthogonal shock in a FAVAR context. Median values are computed using a Bootstrap simulation with 2 000 draws.

In the recent monetary policy easing cycle, the BCRP reduced the reference rate from 4.25% in April 2017 to 2.75% in March 2018; and extended monetary stimulus by further reducing the reference rate to 2.25% in November 2019. During this period, all the relevant lending interest rates showed a downward trend, in line with the easing of monetary conditions in domestic currency.

Interest rates in domestic currency

Table 2

	Dec. 16	Dec. 17	Dic. 18	Mar. 19	Jun. 19	Oct. 19	Nov. 19	Dec. 19	Average 2010-2019	Accumulated Change Dec. 19 (Basic Points)		
										Month	Dec. 18	Dec. 17
Money Market												
Policy Rate	4.25	3.25	2.75	2.75	2.75	2.50	2.25	2.25	**3.7**	0	-50	-100
Interbank Rate	4.39	3.26	2.76	2.75	2.77	2.51	2.25	2.25	**3.7**	0	-51	-101
Corporate Prime												
1 Month			4.3	3.7	3.8	3.2	2.9	3.0		14	-124	
3 Month	5.4	3.6	4.5	4.0	4.0	3.5	3.2	3.3	**4.5**	4	-126	-37
6 Month			4.8	4.3	4.3	3.7	3.4	3.5		2	-130	
12 Month			4.9	4.7	4.6	4.0	3.7	3.7		1	-123	
Credit												
Corporate	5.9	4.0	4.9	4.7	4.5	3.6	3.9	3.9	**5.4**	-2	-98	-11
Large Companies	7.1	6.2	6.4	6.5	6.3	6.1	5.9	5.9	**7.0**	-2	-52	-33
Medium-sized Companies	10.4	9.7	9.8	10.3	9.9	9.9	9.7	9.6	**10.4**	-13	-27	-11
Small businesses	21.7	19.8	18.5	18.5	18.8	18.3	18.3	18.1	**21.2**	-15	-39	-165
Consumer	46.8	48.6	44.9	40.8	41.1	39.5	39.6	40.3	**41.8**	73	-460	-822
Mortgage	8.5	7.7	7.6	7.9	7.7	7.1	7.1	7.0	**8.7**	-6	-56	-61

Source: BCRP and SBS

Similarly, the results from an estimated factor-augmented vector autoregressive (FAVAR) model, which allows factors outside monetary policy to be controlled for, show a significant impact on the pass-through of the interbank interest rate to financial system interest rates one year later (Perez (2020)).

FAVAR one year interest rate pass-through[1]

Table 3

(Median value and 20 percent of high probability interval)

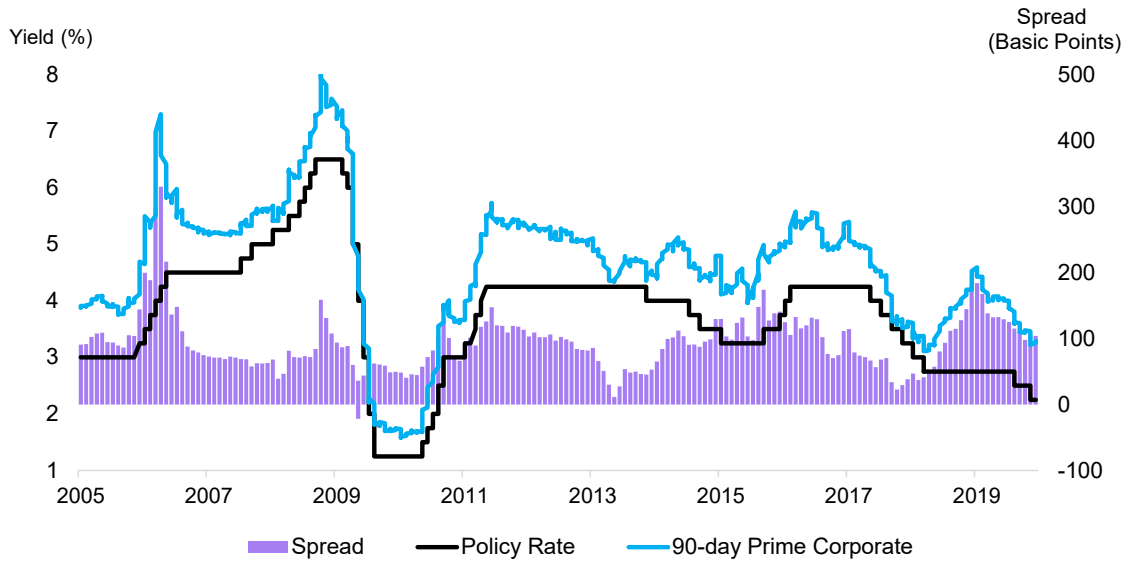
CDBCRP 3 month	(0.7-0.8-0.9)	Small Businesses	(0.2-0.6-1)
CDBCRP 6 month	(0.7-0.8-0.9)	Mortgage	(0.5-0.6-0.8)
CDBCRP 12 month	(0.5-0.7-0.8)	FTAMN	(0.5-1-1.5)
CDBCRP 18 month	(0.6-0.8-0.9)	90-day Prime Corporate	(0.6-0.8-1)
Treasury Bond 1 year	(0.8-1-1.3)	Deposit < 1 year	(0.4-0.5-0.5)
Treasury Bond 2 year	(0.5-0.7-1)	FTIPMN	(0.8-0.9-0.9)
Corporate	(0.6-0.7-0.8)	Deposit 1 month	(0.9-1-1.1)
Large Companies	(0.6-0.7-0.7)	Deposit 2 month	(0.7-0.8-0.9)
Medium- sized companies	(0.5-0.6-0.8)	Deposit 3 month	(0.6-0.8-0.9)

[1] Orthogonal shock in a FAVAR model for Peruvian economy. Factors estimated by principal components. Monthly data from September 2010 to October 2019. Median values are computed using a Bootstrap simulation with 2000 draws.

Recently, new factors have started to affect the formation of the yield curve. In particular, implementation of the Liquidity Coverage Ratio (LCR) by the Superintendence of Banking and Insurance (SBS) has created a greater demand for high-quality liquid assets, such as CDBCRP, and for sources of stable funding, such as Treasury and pension fund deposits. This in turn generated downward pressure on CDBCRP rates and upward pressure on deposit rates at end-2018 and early 2019, respectively. This distortion was reflected in an increase in the spread of the prime corporate rate relative to the reference rate. BCRP monetary operations normalised

conditions in the money market by increasing the supply of high-quality assets through greater CDBCRP issuances (offset by longer-term repo operations).

Spread 90-days corporate prime and monetary policy rate — Graph 10



Source: BCRP

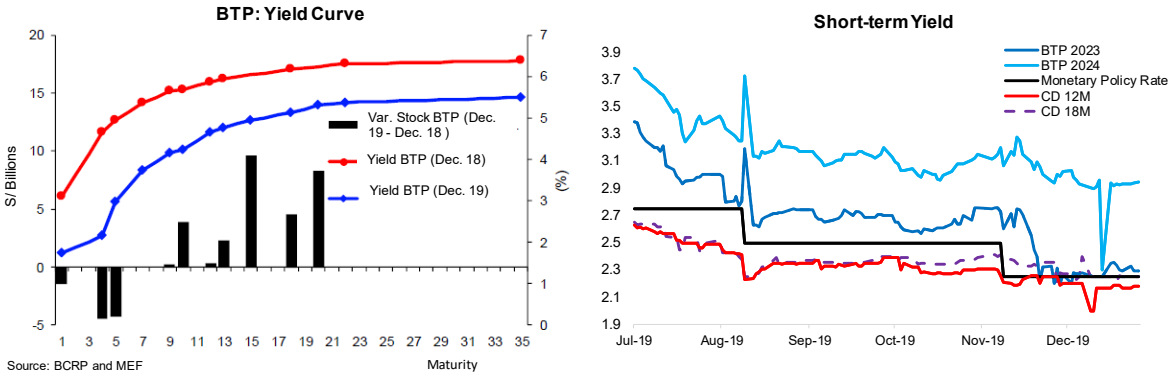
Effect of Liquidity Coverage Ratio on domestic rates — Table 4

	Policy Rate	Interbank	90-Day Active Prime Corporate	90-Day Passive Prime Corporate
Dec. 15	3.75	3.76	5.01	4.30
Dec. 16	4.25	4.39	5.37	4.92
Dec. 17	3.25	3.26	3.63	3.39
Mar. 18	2.75	2.81	3.11	2.73
Jun. 18	2.75	2.77	3.56	3.14
Sep. 18	2.75	2.75	3.90	3.23
Dec. 18	2.75	2.76	4.52	4.01
Mar. 19	2.75	2.75	3.98	3.51
Accumulated Variation (Basic Points)				
2018	-50	-50	89 ↑	62 ↑
Mar.19 - Dec.18	0	0	-54 ↓	-50 ↓

Source: BCRP

At the same time, recent government debt management operations consisting of debt repurchase and exchange operations (from 2018 operations for around PEN 17.5 billion total in six operations) have increased the average public debt maturity from 11.6 to 12.3 years, thereby reducing the size and liquidity of the short section of the yield curve (up to five years). This has generated distortions in the yield curve; eg in December 2019 the three-year BTP yield was below that of the 18-month CDBCRP. This originates in the lack of a benchmark for short-term private sector issuances.

OAD impact (November 2019) Graph 11



Concluding remarks

In parallel with IT adoption and the use of the interest rate as operational target in Peru, the creation of a secondary market for CDBCRPs and BTPs has improved the depth and liquidity of the fixed income market and promoted the creation of a risk-free yield curve for maturities of up to 40 years. This yield curve serves as benchmark for domestic private sector bond issuances. Other factors contributing to this result are good macroeconomic fundamentals, the improvement in sovereign credit ratings, an external environment of low interest rates, and abundant global liquidity after the GFC. In particular, BTP market development has improved the pass-through of the reference interest rate to other domestic currency market rates.

In Peru, financial intermediation is mostly through banking, with corporates as the main participants in the capital markets. Therefore, while the bond market is not yet fully developed, monetary policy transmission is as effective as in other countries in the region. This structure of the Peruvian financial system also contributes to the effectiveness of unconventional monetary policies, since the macroprudential instruments used (ie RRs) take effect through their impact on banking.

Some factors have recently affected the functioning of the money market. For example, the adoption of the LCR generated distortions in the formation of market rates at end-2018 and the beginning of 2019 (especially in the shape of an increase in the corporate preferential rate to 90 days, as compared with the reference rate). This was normalised through BCRP monetary operations, such as an increased supply of high-quality assets and the provision of longer-term liquidity.

Likewise, recent government debt management operations have increased the average duration of public debt, reducing the size and liquidity of issuances with maturities up to five years, which in turn has created distortions in the short stretch of the yield curve. The BCRP will carry out CDBCRP issuances with maturities of up to three years to complete this stretch of the yield curve.

References

Perez, F (2020): "The interest rate pass-through and monetary policy transmission in Peru". Mimeo, Central Reserve Bank of Peru.

Stone, M, S Shimizu and A Ferhani (2008): "Developing essential financial markets in smaller economies: stylized facts and policy options", IMF, *Occasional Papers*, no 265.

Tapia, M and G Torres (2017): "The versatility of BCRP Deposit Certificates", *Moneda*, no 172.