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February 2016

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URUGUAY

SELECTED ISSUES

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Approved By
Western Hemisphere Department

Prepared By Dyna Heng, Frederic Lambert, and Diva Singh (all WHD)

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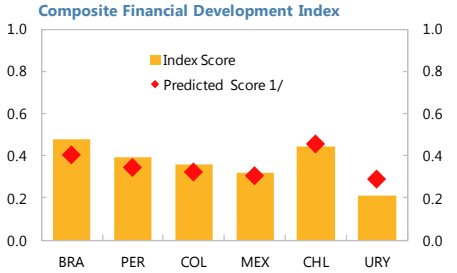
FIRMS' ACCESS TO CREDIT AND GROWTH[1]

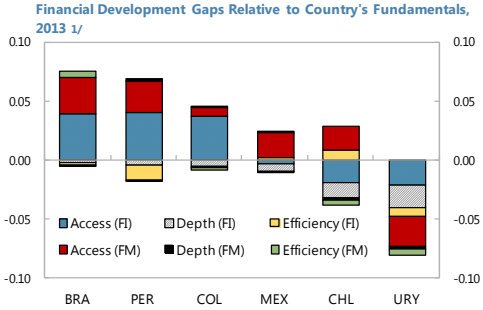
A. Background

1. Access to finance is a key component of financial development, which in turn has been linked to higher economic growth and resilience (Sahay and others, 2015). Developing a country's financial system can expand options for financing, vehicles for saving, improve resource allocation and risk management, and facilitate diversification. Economic stability and resilience can also be enhanced, to the degree that a well developed and liquid financial system can help absorb shocks. Recent empirical analysis has moved away from traditional narrow measures of financial development to develop a broad-based index that encompasses financial access (ability to access financial services), depth (size and liquidity of markets), and efficiency (intermediation costs), spanning both financial institutions and markets (Heng and others, 2015). A country's score on the index enables a useful comparison against benchmarks, as well as against its own fundamentals. In addition, the exercise offers valuable insights into the specific subcomponents where a country may be lagging.

2. A broad-based index of financial development indicates that Uruguay lags behind regional peers, and also relative to what could be expected given its own macroeconomic fundamentals. Uruguay's score of 0.2 in the composite financial development index (based on 2013 data) is equivalent to half the LA5 average, and below the individual scores of all LA5 countries (as reported in Heng and others, 2015). Furthermore, a regression analysis suggests that Uruguay scores worse on the index than would be predicted by its own economic fundamentals (including income per capita, government size, trade openness, inflation, educational attainment, and others). A decomposition of the results shows that this "underdevelopment" relative to fundamentals mostly reflects low access to finance in Uruguay (both through financial institutions and through markets) and low financial institution depth (measured through variables such as private sector credit). All other LA5 countries have index scores better than or equivalent to what their fundamentals would predict. Uruguay's negative financial development "gap" presents a real opportunity to



Source: IMF staff calculations.
1/ Score predicted by country's own economic fundamentals.



Source: IMF staff calculations (April 2015 REO).
Note: FI= financial institutions; FM= financial markets.
1/ Gap decomposition is calculated using the aggregated regression specification on the individual components.

[1] Prepared by Frederic Lambert and Diva Singh (WHD). We are grateful to the authors of Dabla-Norris and others (2015) for sharing the code to solve and calibrate their model.

develop its financial system to a level that would be well-supported by its current level of socioeconomic development.

3. This paper examines the dimensions in which Uruguay's financial development is lagging, and the benefits that might accrue if obstacles to development in these areas were removed. The analysis focuses on the frictions affecting firms' access to credit, corporate credit deepening, and the efficiency of financial intermediation in Uruguay, and quantifies the potential economic benefits of relaxing these constraints, with implications for firms and households alike. The next section lays out the basic premises of the model, together with some facts to illustrate different elementsof it. The following section presents the results of the calibration and comparative statics exercise. The last section concludes with a discussion of measures that have been taken by the Uruguayan authorities recently, which may alleviate some of the constraints emphasized in the model.

B. The Model

4. This paper uses a slightly modified version of the model developed by Dabla-Norris, Townsend and Unsal (2015) to assess the impact of financial deepening on growth.[2] The model focuses on bank credit to firms. It is a general equilibrium model with agents that are heterogeneous in wealth and talent. Agents live for two periods. In the first period, they decide on their occupation (worker or entrepreneur), credit market participation and investment. In the second period, they realize income as wage or business profit, depending on their occupation, and consume or leave a bequest to their offspring. Each offspring inherits wealth equal to the bequest and talent from her parents with some probability.

5. Given their wealth and talent, agents choose to become entrepreneurs or workers. Entrepreneurs have access to a production technology that uses capital and labor as inputs, the productivity of which depends on the agent's talent, and which fails with some probability p. They may borrow against collateral from financial institutions to expand their firm's scale after paying a fixed credit participation cost ψ. The amount of collateral required for borrowing is determined by a parameter λ. The collateral is remunerated at the deposit rate. In case of default, banks verify the state of the borrowers at some cost χ, and recover the net value of the firm (a function of the recovery rate η) or the full face value of the loan, whichever is smaller.

6. The version of the model used in this paper relaxes the assumption of perfect competition in the financial sector by introducing an intermediation margin, τ, in the banks' profit function.[3] Previous studies on Uruguay's banking sector have indeed documented a high degree of concentration in the sector, and lack of perfectly competitive market dynamics (see the following

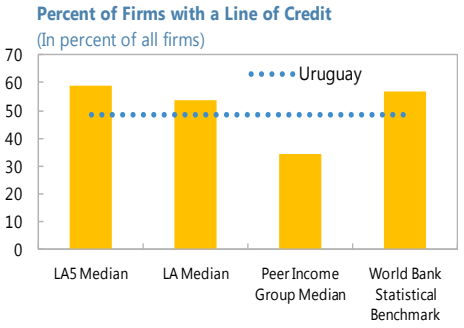
[2] Similar exercises were done for Colombia and Paraguay. See the 2014 Selected Issues Papers for both countries.

[3] This modification is suggested in the original paper by Dabla-Norris and others (2015).

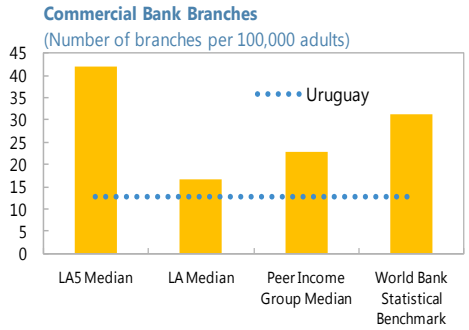
paper on "Bank lending and competition in the banking sector"). The intermediation margin increases the interest rate at which entrepreneurs can borrow and directly contributes to the spread between the lending and deposit rates.

7. The model captures the three dimensions of financial development: access, depth, and efficiency.

- The participation cost ψ determines entrepreneurs' access to credit. Such access is lower in Uruguay than in other LA5 countries.[4] Less than 50 percent of firms in Uruguay in 2013 had a line of credit with a financial institution, compared to the LA5 median of 60 percent. Several factors can account for a high credit participation cost for firms, such as the distance to a bank branch. In Uruguay for example, the number of bank branches per 100,000 adults is still far below the median for LA5 countries and countries in Uruguay's income peer group, suggesting that physical distance from a bank may indeed be a relevant constraint.

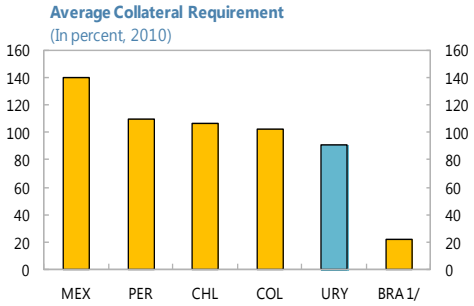


Source: World Bank, *FinStats*; and Fund staff calculations.



Source: World Bank, *FinStats*; and Fund staff calculations.

- Credit market depth is determined by the collateral requirement parameter λ. This parameter multiplies the wealth of the borrower posted as collateral to determine the maximum loan amount (λ=1 implies no borrowing) and captures the financial friction resulting from limited commitment. In 2010, over 50 percent of loans in Uruguay required collateral, at an average rate equivalent to 165 percent of loan value.[5] Although this yields an effective average collateral rate of 91 percent, below other LA5 countries (with the exception of Brazil), small and medium-sized firms may not be able to post such a high level of collateral. Furthermore, given the high level of financial dollarization in Uruguay, the majority of bank credit to firms is denominated in U.S. dollars; banks may therefore require higher collateral than average when lending to firms with domestic currency revenue streams.

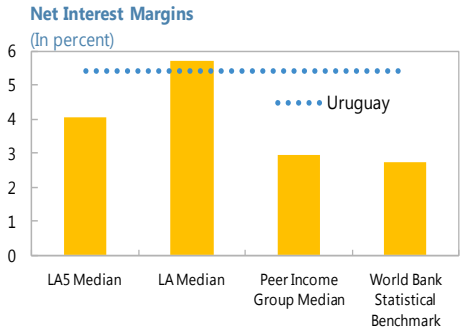


Source: World Bank Group, *Enterprise Surveys*.
1/ Latest available data is 2009.

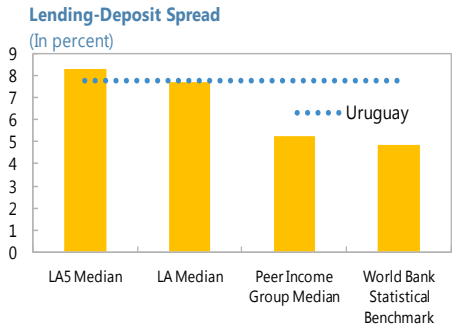
[4] In the charts, the LA5 aggregate includes Brazil, Mexico, Colombia, Peru and Chile. The LA grouping includes the LA5, plus Argentina, Bolivia, Paraguay and Venezuela. Uruguay's peer income group includes 21 countries across the globe with GDP per capita similar to Uruguay. The World Bank statistical benchmark uses a series of socioeconomic indicators to estimate a country's predicted outcome for a variable based on fundamentals.

[5] This average may underestimate the effectively required levels of collateral as the data do not account for loan requests that were rejected because firms did not have the required collateral.

- Finally, efficiency is a function of the intermediation margin τ and the monitoring cost χ. The intermediation margin captures the imperfectly competitive nature of the banking sector whereas the monitoring cost is motivated by information asymmetries between banks and borrowers. Bank monitoring prevents highly-leveraged entrepreneurs from falsely reporting a production failure in order to reduce their loan repayment. Both parameters increase intermediation costs. Those can be measured in the data through interest rate spreads and net interest margins (NIMs).[6] Average interest rate spreads in 2013 were around 8 percent, and banks' NIMs averaged 5½ percent, indicating low efficiency in the Uruguayan banking sector. High information costs (due, for example, to the lack of a credit bureau in Uruguay) and high operating costs (that have led to a consolidation of the banking sector from 22 banks in 2001 to 15 in 2005, down further to 11 in 2015) are likely factors that have contributed to the high spreads. In addition, high concentration and limited competition in Uruguay's banking sector (the largest bank has a 40 percent share of total banking assets and the largest three banks collectively hold 70 percent of assets) also contribute to this margin.



Source: World Bank, *FinStats*; and Fund staff calculations.



Source: World Bank, *FinStats*; and Fund staff calculations.

8. In the model, financial deepening, in the form of a reduction in financial frictions, leads to higher access of firms to credit and higher growth. In equilibrium, only talented agents with a certain level of wealth or collateral choose to become entrepreneurs while untalented or poor agents choose to be workers. A reduction in the credit participation cost and the collateral requirement allows more talented agents to become entrepreneurs and to obtain credit with a positive effect on growth. Similarly, a drop in the intermediation margin and the monitoring cost limits the resources wasted due to frictions and leads to higher growth.

C. Calibration and Comparative Statics

9. The model is calibrated to match the data in 2006 and 2010, which corresponds to the year of the latest World Bank Enterprise Survey. The gross savings rate from the World Bank Development Indicators is used to calibrate the bequest rate ω. λ is set to match the average effective value of collateral from the World Bank 2006 and 2010 Enterprise Surveys. The participation cost ψ, the monitoring cost χ, the probability of failure p, and the recovery rate η are jointly

[6] Interest rate spreads are measured as the difference between average lending and deposit rates. The net interest margin is estimated as the ratio of net interest income to total interest-earning assets.

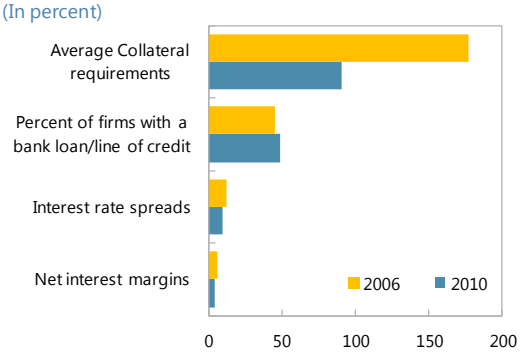
calibrated to match the percentage of firms with credit, the non-performing loan ratio, the interest rate spread, and the employment distribution. The intermediation margin τ is calibrated directly from the net interest margin, computed from FSI data. The other parameters are calibrated using the same standard values from the literature as in Dabla-Norris and others (2015).

Target Moments and Calibration

Target Moments	Source	Data	Model	Parameter		Data	Model	Parameter	
Savings (% of GDP)	WDI	16.5	16.5	ω	0.165	17.0	17.0	ω	0.170
Collateral (% of loan)	Enterprise Survey	177.2	177.2	λ	1.5643	91.0	91.0	λ	2.0989
Firms with credit (%)	Enterprise Survey	45.0	41.7			48.6	48.9		
NPL ratio (%)	FinStats	3.7	3.7	ψ	0.0350	2.4	2.0	ψ	0.0546
Top 5% empl. Share	Enterprise Survey	51.9	51.9	χ	0.3800	52.8	52.8	χ	0.3900
Top 10% empl. Share	Enterprise Survey	63.4	63.7	η	0.3620	64.8	65.3	η	0.5350
Top 20% empl. Share	Enterprise Survey	76.2	75.3	τ	0.0548	78.5	77.6	τ	0.0489
Top 40% empl. Share	Enterprise Survey	88.9	86.2	p	0.16	91.3	88.6	p	0.16
Interest rate spread	BCU	12.56	11.62			9.63	10.42		
Net interest margin	FinStats	5.48	5.48			4.89	4.89		

10. The data indicate that frictions related to access, depth and efficiency improved in Uruguay between 2006 and 2010. The share of firms with a credit line increased from 45 percent in 2006 to 49 percent in 2010. Furthermore, the average collateral rate fell from 226 percent to 165 percent between 2006 and 2010, while the proportion of loans requiring collateral dropped from 78 percent to 55 percent, yielding a significantly lower effective average collateral rate in 2010. Nevertheless, market depth measured through the ratio of private sector credit to GDP remained nearly unchanged at around 19 percent in both 2006 and 2010. Finally, intermediation costs, by way of interest rate spreads and NIMs, did show a small decline between 2006 and 2010, albeit still remaining at high levels.

Financial Constraints in Uruguay
(In percent)



Sources: Banco Central del Uruguay; World Bank, *FinStats* and *Enterprise Surveys*; and IMF staff calculations.

11. The overall reduction in financial frictions between 2006 and 2010 contributed to a 9.9 percent increase in GDP in the model. Total factor productivity (TFP) is 5 percent higher under the 2010 calibration than under the 2006 one.[7] This result is mostly due to the greater access of firms to credit as the percentage of firms with a credit line in the data went up by about 4 points.

[7] GDP is calculated as the sum of all individuals' income; TFP is measured as the average of entrepreneurs' talents weighted by their respective output.

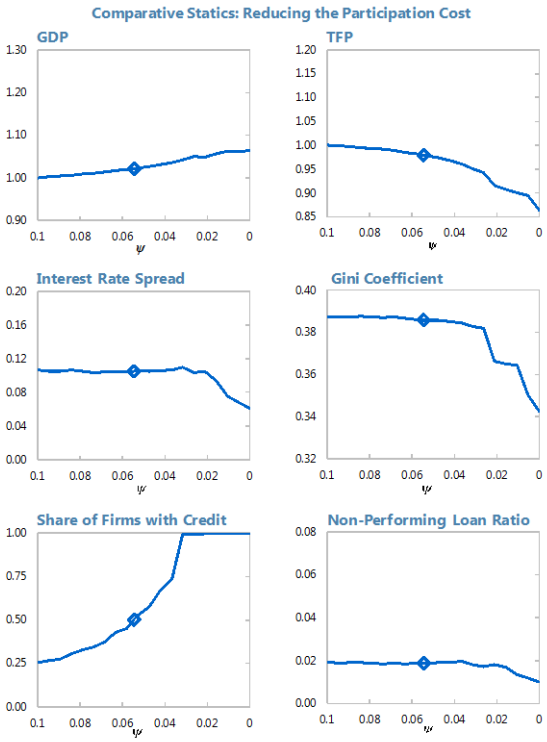
12. The benefits that could be derived from further financial deepening are potentially large. Those are analyzed with a comparative statics exercise in which the model is solved for various values of the financial friction parameters.

- **Reducing the participation cost**. Reducing the participation cost ψ has a positive effect on GDP for two reasons. First, it allows more entrepreneurs to borrow, leading to an increase in investment. Second, fewer resources are wasted in the form of sunk costs, so more capital is available for investment. TFP however decreases as less talented agents can now decide to become entrepreneurs. This also explains the decrease in the Gini coefficients, which measures income inequality in the model.[8] Interest spreads decrease for low values of ψ as entrepreneurs become richer (their borrowing cost decrease) and tend to deleverage, so default (and the non-performing loan ratio) decreases.

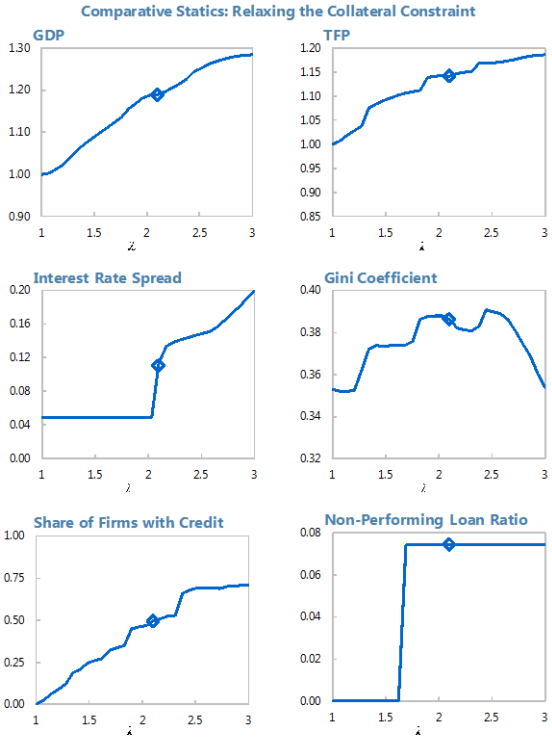
- **Relaxing the collateral constraint**. The effect of a relaxation of the collateral constraint is analyzed by increasing the λ parameter from 1 to 3 (λ=3 corresponds to a minimum collateral requirement of 50 percent). The effect on GDP is larger than in the case of a reduction in the participation cost. The effect on TFP is also positive as the increase in λ relaxes the borrowing constraint of talented entrepreneurs who want to invest more and operate firms at a larger scale than less talented entrepreneurs. The interest spread increases as leverage increases, and so does the share of non-performing loans (there is no default when the collateral constraint is tight and entrepreneurs' leverage is very low).

- **Increasing intermediation efficiency**. Intermediation efficiency may increase as a result of a reduction in the monitoring cost χ, or in the intermediation margin τ. The response of GDP is positive in both cases, but small. The effect on TFP is close to zero. While lower intermediation costs facilitate the allocation of capital to efficient entrepreneurs and therefore positively affect TFP, they also allow less talented entrepreneurs to borrow more, with an adverse effect on TFP. Both effects offset each other. The interest rate spread follows an inverted V-curve when monitoring costs are reduced. This is because of two opposite effects. First, the decline in the net borrowing rate induces entrepreneurs to leverage more, which increases default and interest rate spreads. Second, the decline in the borrowing rate directly reduces the spread, which is a function of the intermediation cost. Only the second effect is present when the intermediation margin is reduced, so the spread continuously drops along with the τ parameter.

[8] The model's conclusions about the effect of financial deepening on income inequality in general need to be interpreted cautiously, as all workers earn the same wage and financial deepening in the model is only about firms' access to credit, not about the ability of individuals to insure against idiosyncratic shocks. Changes in the Gini coefficient essentially capture the changes in the proportion of entrepreneurs and the distribution of their profits relative to workers' (lower) wage income.



Note: Diamonds indicate current values in the 2010 model calibration.



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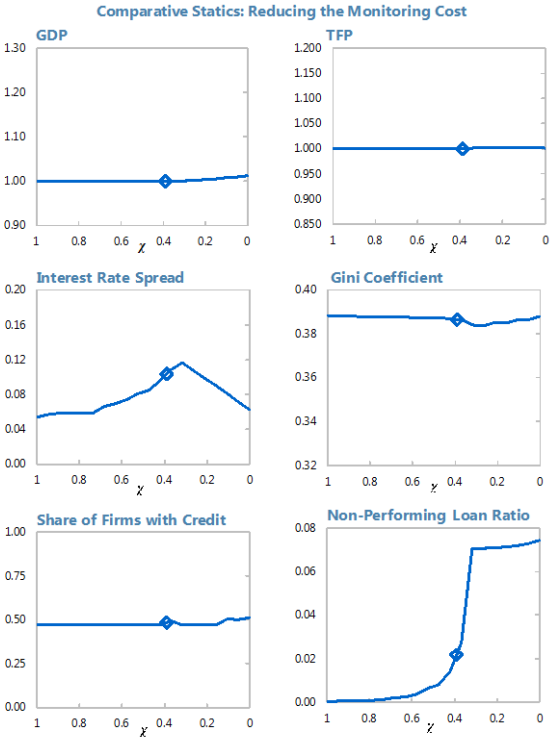

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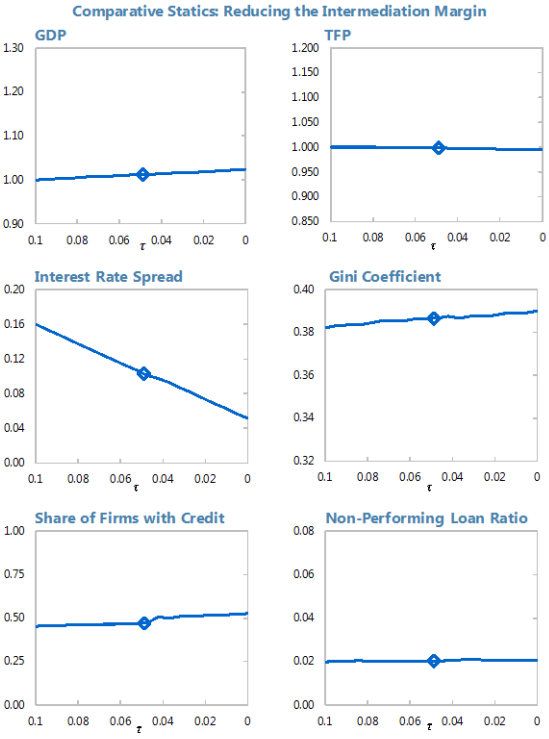

Note: Diamonds indicate current values in the 2010 model calibration.

13. Overall, reducing the collateral requirements yields the largest gains in terms of growth. GDP increases by 8 percent when the minimum effective collateral requirement is reduced to 50 percent.[9] The transition between the two steady-states (not analyzed) may however take several years. Reducing access costs yields the biggest reduction in inequality by allowing all entrepreneurs to get credit. The reduction in inefficiencies also enhances growth, but to a smaller extent. The effect is not negligible though and reaches 1.2 percent when relaxing each of the two frictions.

Estimated Maximum Effect of Different Policy Interventions (in percent)

Parameter affected	GDP	TFP	Gini	Firms' Access to Credit
Access cost: ψ	4.2	-11.8	-11.3	98.8
Collateral: λ	8.0	3.9	-8.4	43.3
Monitoring cost: χ	1.2	0.2	0.4	5.6
Intermediation margin: τ	1.2	-0.3	0.9	11.6

Source: Staff estimates.

D. Innovations Through the 2014 Financial Inclusion Law

14. Certain measures included in the 2014 Financial Inclusion Law are expected to address some of the above discussed frictions, with a positive effect on growth and inequality. In particular:

- The creation of free bank accounts offering basic banking services for small and medium enterprises should reduce credit access costs and increase credit participation.

- The new "payroll loans" should foster credit depth and efficiency. The loan installments are directly debited from workers' wages, which should reduce monitoring costs. The loans do not require collateral, which supports credit market depth. Finally, interest rates on these loans are capped, which would force a reduction in intermediation margins and push for greater efficiency.

- The enhanced credit registry at the BCU should also help reduce monitoring costs.

- Finally, the new payroll service licenses for nonbanks would introduce more competition in the financial system, with potential efficiency gains.

[9] In the model all loans require collateral which is not the case in reality. In practice, the effective collateral rate can decrease because of a reduction either in the proportion of loans requiring collateral or in the collateral-to-loan ratio for loans requiring collaterals. Note that high effective collateral rates may reflect high prudential standards or banks' high risk aversion resulting in cautious lending behaviors, which would ultimately reduce financial stability risks. These risks are not covered in the above analysis which only provides an assessment of the potential impact of a relaxation of collateral constraints in the model.

15. The challenge is to implement these measures in a way that maximizes their effectiveness. This may require communication campaigns targeting the youth, elderly and low-income segments of the population, to ensure the widest reach, particularly outside Montevideo. Moreover, some measures will need to be accompanied by a vigilant monitoring of the new actors in the financial system to avoid the build-up of risks outside traditional banks.

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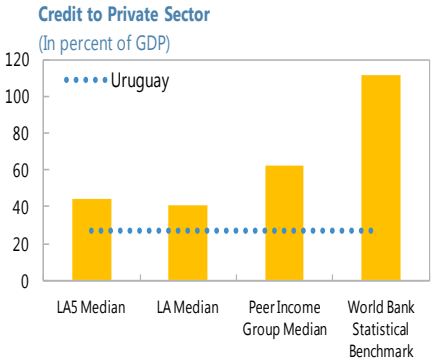
BANK LENDING AND COMPETITION IN THE BANKING SECTOR[1]

The previous paper showed the benefits of relaxing financial frictions in terms of growth and reduction of inequality. This paper aims at investigating the sources of those financial constraints in more detail, especially the intermediation costs and low depth of the credit market. To do so, the first section documents some stylized facts about bank lending in Uruguay. The analysis then relates these findings to the competitive structure of the Uruguayan banking system (second section), and presents the results of a structural model of supply and demand for credit in Uruguay (third section). The fourth and last section concludes.

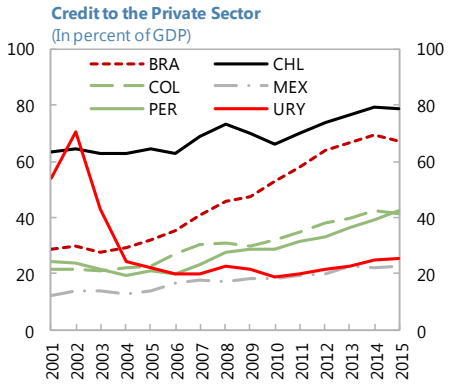
A. Stylized Facts

1. Credit to the private sector in Uruguay is low relative to regional and income group peers, as well as other benchmarks, suggesting a significant scope for financial deepening. At just 25 percent of GDP in 2014, Uruguay's private credit intermediation ratio is among the lowest in the Latin American region, and falls well short of other countries at the same income level as well as a statistical benchmark estimated by the World Bank based on fundamentals.



Source: World Bank, *FinStats*; and Fund staff calculations.

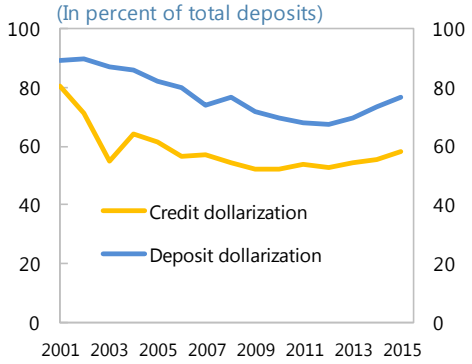
2. The legacy of Uruguay's 2002 crisis may help explain certain financial system dynamics that have contributed to low credit. Private sector credit peaked just before the crisis and then collapsed and has yet to recover. The massive deposit runs during the crisis, together with the failure of certain large foreign banks, and weak prudential regulations at that time, have certainly played a role in shaping the current policy and supervisory framework. But the crisis may have also had a direct and lingering impact on lender behavior in Uruguay, particularly through its impact on the structure of the banking system.



Sources: IMF, *World Economic Outlook;* International Financial Statistics; and Fund staff calculations.

[1] Prepared by Frederic Lambert and Diva Singh (WHD).

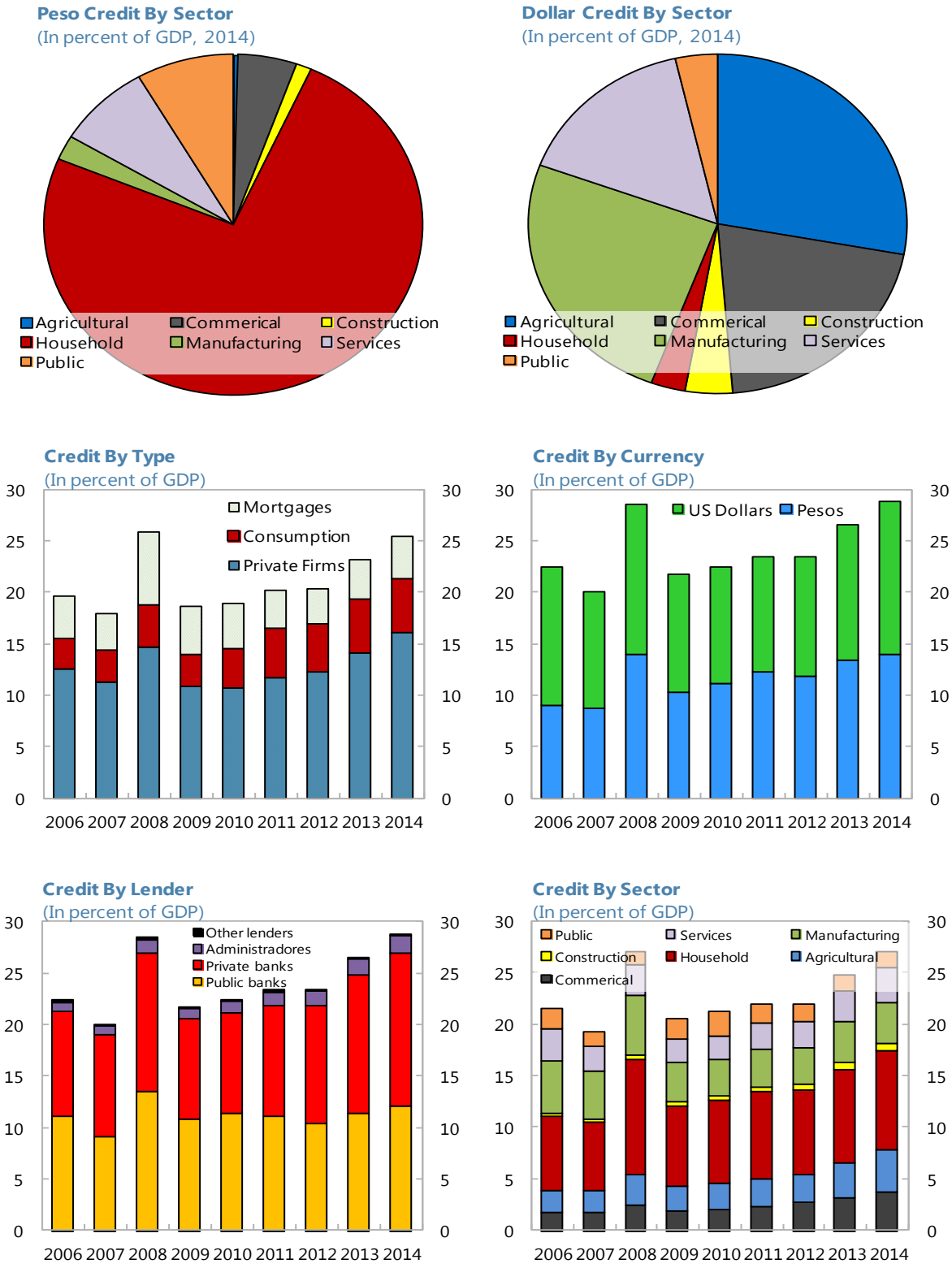
3. Furthermore, the high degree of financial dollarization in Uruguay may affect the supply and demand side dynamics in the credit market. As of mid-2015, approximately 80 percent of total deposits and 60 percent of total loans in Uruguay were denominated in U.S. dollars. The country's history of high inflation and currency devaluations has led people to have a preference for holding their savings in U.S. dollars. Since the bulk of banks' liabilities are in dollars, they limit their peso lending (the majority of which is to households) to avoid currency mismatches on their balance sheets. Dollar credit (mostly to firms) is also restrained, by high reserve requirements on foreign currency deposits that lead to higher lending rates and a preference for liquidity on the supply side (banks prefer investing in liquid dollar-denominated securities rather than lending domestically), and the existence of (potentially less costly) alternatives to bank lending, such as direct lending, bond markets and FDI, on the demand side.



Sources: Banco Central del Uruguay; and Fund staff calculations.

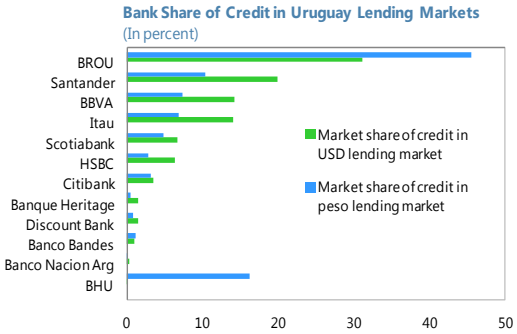
4. The Uruguayan credit market is highly segmented (Figure 1). In 2014, 60 percent of total credit went to firms, 35 percent to households, and 5 percent to the public sector. Of the credit extended to firms, 87 percent was denominated in U.S. dollars, whereas for households, only 4 percent of credit was U.S. dollar denominated, and 35 percent in the case of the public sector. Consequently, 55 percent of total credit in 2014 was U.S. dollar denominated. Looking at the sectoral composition of credit by currency, half of U.S. dollar credit in 2014 went to the agricultural and manufacturing sectors, with another one-fifth conferred to the commercial sector. On the peso side, three-quarters of credit went to the household sector, with consumer loans accounting for almost half, and mortgages accounting for about 40 percent; the remainder comprised loans extended by *Administradoras de Creditos*, non-deposit taking lenders, specializing in loans to lower income households.

Figure 1. Uruguay: Segmentation of the Credit Market



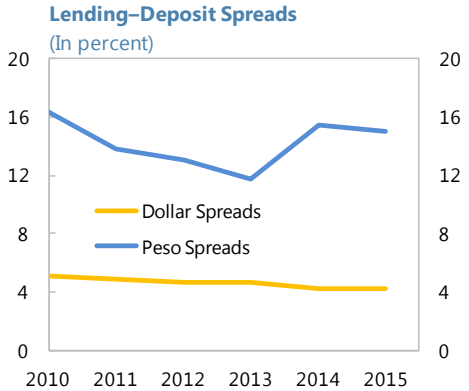
Sources: Banco Central del Uruguay and Fund staff calculations.

5. The segmentation permeates the banking sector, which exhibits a high degree of concentration, particularly with regard to the peso deposit and credit markets. There are two public banks in Uruguay and ten (soon to be nine) private banks.[2] The large public bank, Banco de la Republica Oriental de Uruguay (BROU), holds 40 percent of total banking assets, and the top four banks hold three-quarters of total assets. There is a high degree of heterogeneity and segmentation between BROU and the private banks. BROU enjoys a monopoly on public accounts by law, and until recently held most public employees' checking accounts. The bank has a 48 percent market share in the peso deposit market. Before the 2014 Financial Inclusion Law, BROU was also the only bank to provide payroll loans, which contributed to a 46 percent market share for BROU in the high spread peso lending market.[3] The foreign banks, on the other hand, have highly dollarized deposit bases and mostly engage in U.S. dollar lending to commercial and higher income segments, with a higher degree of competition and more compressed spreads than seen in the peso market. Indeed, the Herfindahl-Hirschman index (HHI) for the peso credit market yields a concentration level of 0.26, while the U.S. dollar credit market is slightly less concentrated at 0.19.[4]



Sources: Banco Central del Uruguay and Fund staff calculations.

6. Partly owing to the high degree of concentration, bank credit in Uruguay is expensive. In 2014, the spread between average lending and deposit rates in pesos was 15¼ percent, at least 7 percentage points higher than the median spread in the LA5. On the other hand, the spread between average lending and deposit rates in the U.S. dollar market was only 4¼ percent. The high average lending rates in the peso market could be a factor that crowds out some households and firms from the market. The next section further investigates the link between concentration in the banking sector and credit provision.



Sources: Banco Central del Uruguay; and Fund staff calculations.

[2] In December 2014, Scotiabank signed an agreement to buy Discount Bank Latin America (owned by Israel's Discount Bank), Uruguay's ninth largest bank, for US$65 million. The deal is expected to be completed in 2015.

[3] Payroll loans are uncollateralized loans whose installments are directly debited from workers' pay.

[4] From a scale of 0 to 1, 1 being a perfect monopoly.

B. The Effect of Banking Concentration on Lending

7. In theory, banking competition can have two opposite effects on bank lending (Claessens and Laeven, 2005). According to the market power hypothesis, competition reduces the cost of finance (by reducing banks' monopolistic profit margins) and increases the availability of credit. In the presence of information asymmetries and agency costs (i.e., costly monitoring of borrowers), competition may however reduce credit provision by making it more difficult for banks to internalize the returns from investing in lending.

8. In practice, we find a significant negative relationship across countries between the degree of concentration of the banking sector and the ratio of private sector credit to GDP (Table 1). In order to gauge the relationship between private sector credit and banking sector concentration, a model is estimated for a panel of 137 countries over the period 1986–2011. The ratio of top 5 banks' assets to total banking sector assets for each country is used as a proxy for banking sector concentration. In addition, the model controls for the level of economic development (proxied by the log of GDP per capita in PPP dollars), the quality of the legal and institutional framework (measured by the KKM Governance Index Rule of Law indicator),[5] and the level of government borrowing (using the log of public debt-to-GDP). Each specification regresses the change in private credit to GDP on bank concentration, the control variables, and country fixed effects. The results show a statistically significant negative relationship between banking concentration and private credit growth, with a 1 percentage point increase in top 5 bank assets as a ratio of total bank assets associated with a drop in private credit-to-GDP of between 1 and 5 percent. These results are in line with other empirical studies that found a negative relationship between banking sector concentration and credit provision.[6]

[5] Kaufmann, Kraay, and Mastruzzi (2004), included in the World Bank Worldwide Governance Indicators.

[6] Jimenez, Lopez and Saurina (2013), Fisman and Raturi (2004).

Table 1. Credit to the private sector and bank concentration

	Log of private credit/GDP		
	OLS (1) 1/	OLS (2) 1/	FE 2/
Log of GDP per capita (PPP)	0.20***	0.18***	0.67***
	0.06	*0.06*	*0.12*
Bank concentration 3/	-0.01***	-0.01***	-0.05***
	0.00	*0.00*	*0.00*
KKM Rule of Law 4/	0.54***	0.56***	0.43***
	0.06	*0.07*	*0.10*
Log of Government debt/GDP	0.12**	0.15**	0.03
	0.06	*0.06*	*0.05*
LA6 dummy 5/	-0.18***		
	0.63		
Non-LA6 dummy 5/	0.01***	0.01***	
	0.61	*0.62*	
Brazil dummy 5/		0.04***	-0.02***
		0.64	*1.12*
Chile dummy 5/		0.26***	0.02***
		0.58	*1.13*
Colombia dummy 5/		0.15***	0.10***
		0.66	*1.07*
Mexico dummy 5/		-0.58***	-0.82***
		0.67	*1.13*
Peru dummy 5/		0.03***	0.05***
		0.65	*1.05*
Uruguay dummy 5/		-0.73***	-0.70***
		0.61	*1.13*
Observations	1,271	1,271	1,271
R-squared	0.824	0.836	0.975

Source: IMF staff estimates.
Notes: Time dummies have been incorporated in all specifications but are not shown in table.
1/ The OLS regressions are ordinary least squares regressions with standard errors adjusted for clustering at the country level for a panel of 137 countries from 1986-2011. Selected country and/or regional dummies are included.
2/ The FE regression estimates country fixed effects for **all** countries in the sample, but only the LA6 results are reported in this table.
3/ Top 5 banks assets as a share of total banking assets.
4/ KKM Governance Index Rule of Law indicator.
5/ Demeaned estimates: fixed effect estimates minus a sample average of fixed effects.
Robust standard errors are in italics. *** p<0.01, ** p<0.05, * p<0.1

C. A Supply or Demand Story?

9. The cross-country analysis of the previous section can be deepened for Uruguay by distinguishing between bank credit in pesos and in U.S. dollars. This section looks for structural supply-side influences on credit growth by estimating a two-equation structural model of bank credit, separately for credit in peso and credit in dollar.

10. The model consists of a supply and a demand equation. Both the supply and demand of bank loans are a function of the lending rate and other variables.[7] Banks will supply more loans if the interest rate is higher and borrowers will demand fewer loans if the rate is higher, so that supply (demand) depends positively (negatively) on the lending rate. The lending interest rate adjusts to "clear the market," that is, to equate demand and supply. The main challenge for the estimation is to find variables that allow for the identification of the two curves (the so-called "shifters"). These shifters need to move either supply or demand without affecting the other. Nominal credit supply is thus assumed to negatively depend on the interest rate paid by banks on deposits (a measure of bank funding cost), on the loans-to-deposits ratio (a measure of the availability of funds to lend) and on the ratio of overdue loans over total loans (a measure of credit risk for banks). Nominal credit demand is expected to depend positively on business confidence (a proxy for future economic conditions and investment profitability) and negatively on unemployment.

11. The estimation of the model addresses the endogeneity of the lending rate by using a two-stage-least-square procedure. The exogenous variables in the system are used as instruments for the lending rate.[8] The sample period covers January 2002–August 2015. The results of the estimation are presented below.

[7] The analysis uses changes in loan stocks or net transaction flows as a proxy for new loans, although repayments of previously granted loans should not in theory be deducted from new loans. A detailed description of the model can be found in Chapter 2 of the October 2013 *Global Financial Stability Report*.

[8] Other endogeneity issues complicate the proper identification of the model. Most variables in the analysis are at some level more or less jointly determined. For instance, changes in business confidence may be affected by current changes in bank lending standards and credit provision. Similarly, changes in the ratio of non-performing loans will depend on the volume of new loans during the period. To alleviate the resulting endogeneity, some of the regressors are lagged by one period.

Structural Determinants of the Supply and Demand of Bank Lending in Domestic and Foreign Currencies

	Expected Signs	Bank Credit in Domestic Currency	Bank Credit in Foreign Currency
Supply Equation			
Lending Rate	+	11082.237	4139.303
Constant	+/-	2370.824***	-131.179
Supply Shifters			
Deposit Rate	-	-13678.986	-5584.435
Lagged Loan-to-Deposit Ratio	-	-1800.356	5.067
Lagged Overdue Loans/Total Loans Ratio	-	-5538.635**	-699.909
Demand Equation			
Lending rate	-	-1844.774**	-3281.465***
Constant	+/-	1582.279***	236.612***
Demand Shifters			
Business Confidence Indicator	+	-1225.944	-103.145*
Change in Unemployment	-	-1030.293***	-18.096
Number of Observations		163	163

Source: IMF staff estimates.

Note: *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. The dependent variable is the change in the stock of bank loans in domestic or foreign currency, adjusted for loan reclassifications. The lending and deposit rates, the loan-to-deposit ratio, and the ratio of overdue loans to total loans are specific to the currency in which loans are extended.

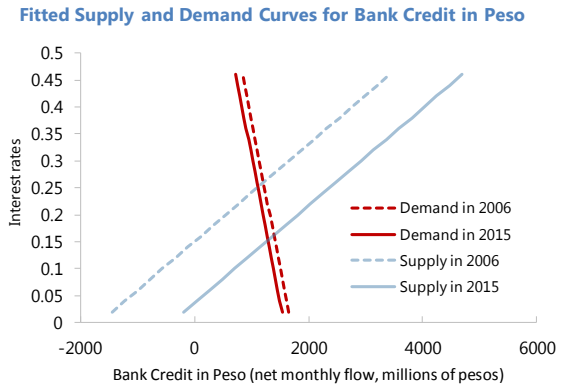
12. The estimation allows the identification of the supply and demand of credit in peso. Both the supply and demand equations include statistically significant "shifters" that affect one but not the other. The supply curve is identified by the ratio of overdue loans to total loans while the change in unemployment is a significant demand-shifter. On the supply side, the loan-to deposit ratio came out as significant at the 10 percent level in one specification but the result was not robust to specification changes (results not reported).

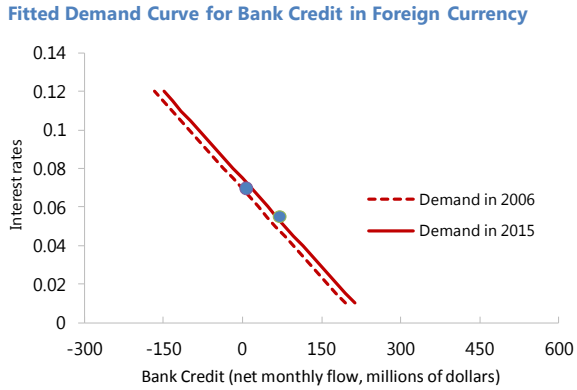
13. The supply curve for bank credit in U.S. dollars is not identified. This (non-)result is robust across many specifications including with alternative supply shifters.[9] This can be related to the features of the credit market in dollar: Banks collect a lot of deposits in dollar, so dollar funding is not a constraint. Besides, as documented before, the market for credit in U.S. dollar is much more competitive than the peso market, so any increase in the demand for dollar loans can be accommodated without much change in the lending rate.

[9] Among the other possible shifters is the yield on U.S. Treasury securities, as banks can arbitrage between domestic lending in dollar and investment of the collected dollar deposits in dollar-denominated securities abroad. The results were not significant.

14. The negative sign on business confidence in the demand equation for bank lending in dollar may be explained by the reduction of outside financing options for firms in bad times. This negative sign is a priori counterintuitive. A possible explanation is that in good times, when business confidence is high, firms have more financing options, in the form of higher self-generated cash flows or easier access to capital markets, and less need for bank credit to finance investment.

15. The plots of the estimated demand and supply curves as a function of the lending rate in the two markets show how the curves shifted over the last ten years. The curves are constructed using the estimated coefficients reported in the table above and the means of the explanatory variables over the two years.[10] Because of the way the curves are constructed, the shifts represent changes in the explanatory variables and not changes in the relationships between the variables. The light-shade of blue indicates that the slope is not statistically significant. The credit supply curve in U.S. dollar is not drawn as it is not identified.





Sources: Staff estimates.

16. The absence of a significant relationship between credit supply in peso and the lending rate can be interpreted as the result of the quasi-monopolistic nature of the market, in which BROU controls nearly half of the market. In a monopolistic market, there is indeed no supply curve as the monopoly as the monopoly adjusts the quantities depending on its costs to maximize its profits. The story for bank lending in dollar is different. The dollar lending market is demand-determined, as supply can accommodate whatever level of demand, while the lending interest rate is determined by the international interest rate in U.S. dollar plus a risk premium.

[10] The slopes of both curves are assumed to have remained the same between 2006 and 2015 (i.e., the elasticity of supply and demand to interest rates has not changed over time).

D. Policy Conclusions

17. The above analysis suggests that policies can increase bank lending by addressing supply-side constraints, in particular in the peso market. In particular, the 2014 Financial Inclusion Law can help stimulate credit in pesos through two channels:

- First, the law helps to increase the peso funding of private banks (one of the supply shifters in the above credit model) and may thus facilitate more peso lending. The increase in peso funding for private banks may come from the generalization of payroll deposit accounts and also from the new limitations on cash transactions, which should support the use of bank accounts and electronic means of payments.

- Second, by instituting the right of employees to choose the bank where they want to have their salaries deposited (a selection that was previously made by employers), the law will likely increase competition, which in turn should lead to efficiency gains and a reduction in spreads. Both would have a positive effect on the depth of the credit market as seen in the previous paper.

18. The government could further encourage competition in the peso market by expanding opportunities for private banks to compete for public accounts. More competition in the provision of banking services to the public sector could allow for better borrowing terms and a reduction in financial costs for the government.

19. Higher competition in the peso lending market would enhance the credit channel of monetary policy. The lack of a significant relationship between bank lending in pesos and the lending rate limits the effectiveness of monetary policy, since changes in the policy rate have little effect on banks' lending behavior and therefore on economic activity and inflation. Increased competition in the peso credit market could help foster a stronger link between lending rates and bank lending, and thereby make monetary policy more effective.

References

Claessens, Stijn and Luc Laeven. 2005. "Financial Dependence, Banking Sector Competition, and Economic Growth," *Journal of the European Economic Association*, 3(1), pages 179–207.

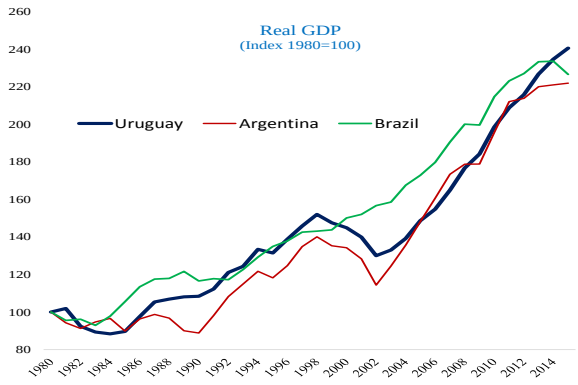
IMF. 2013. "Assessing Policies to Revive Credit Markets." *Global Financial Stability Report*, Chapter 2, October.

URUGUAY: BOOSTING GROWTH THROUGH DIVERSIFICATION[1]

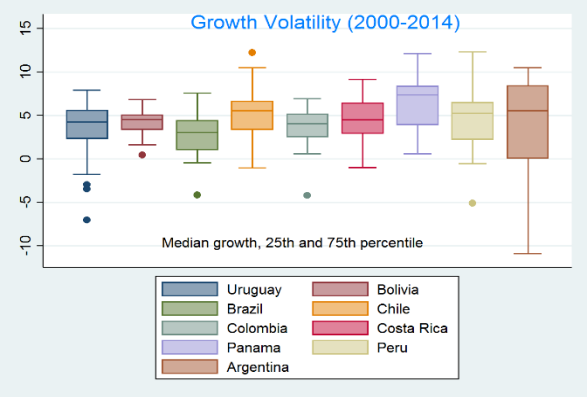
A. Background

1. Uruguay has achieved high growth rates and made significant progress in its integration in the global economy over the past decade. The country has achieved an average growth of 4.8 percent between 2003–2015 on the back of good macroeconomic management and favorable external environment. Income per capita has almost doubled in real terms during the period, becoming among the highest in the region.[2] Poverty and unemployment have declined drastically.

2. As a small open economy largely based on exports and tourism, Uruguay is exposed to volatility of commodity prices and the broader external economic environment. Two important features of Uruguay's economy stand out: strong linkages with neighboring economies and relatively high growth volatility. Uruguay's economy has been closely linked to Brazil's and Argentina's economies over the past three decades (chart). Like other countries in the region, Uruguay has also experienced high growth volatility due to commodity cycles and regional linkages.[3]



Source: Staff calculation



Source: Staff calculation

3. Against this background, Uruguay has recognized the need to diversify its sources of growth. The diversification is even more important when global commodity markets appear to be in

[1] Prepared by Dyna Heng.

[2] Income per capita has tripled in nominal terms during the period.

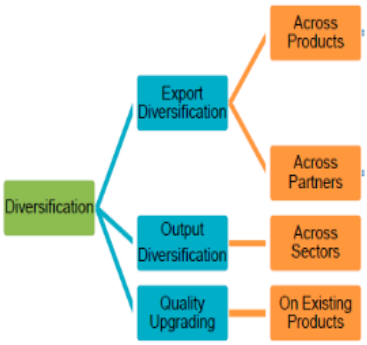
[3] For macroeconomic volatility in Latin America, see, for instance, Singh (2006) and Gruss Bertrand (2014).

a secular downturn in the coming years amid subdued outlook of its neighbors and the region. Going forward, given the limited scope for achieving significant economies of scale, Uruguay has to rely on the export of goods and services with higher levels of value-added to a diversified export market for further growth.

4. This chapter reviews Uruguay's progress on diversification and the challenges it needs to address to achieve a higher and more stable growth. It first examines Uruguay's trade pattern, diversification of value content of its product so far, and the growth linkage between Uruguay and its neighbors. The paper then discusses policy options to promote further diversification.

B. Diversification and Growth: What to Diversify?

5. Diversification is important for economic growth and stability. Diversification has several dimensions: export diversification, output diversification, and quality upgrading (chart). A related strand of the literature looks at economic complexity—exports of goods intensive in skill and technology (See, for example, Hidalgo and Hausman 2009, Rodrigues and Ke 2014). Cross-country experience suggests that diversification into new products and trading partners as well as increases in the quality of existing products has been conducive to faster economic growths (IMF 2014, Henn et al. 2013). Similarly, limited economic diversification has also been linked to longstanding difficulties in achieving resilient growth (Mejia 2011).



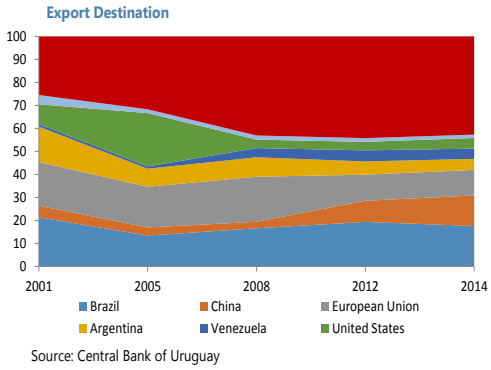
6. Diversification is also associated with lower output volatility and greater macroeconomic stability. A more balanced product mix of export basket can help stabilize export earnings, reduce output volatility, and enhance a country's resilience to external shocks, thereby mitigating vulnerabilities caused by globalization and trade openness (Koren and Tenreyo 2007, and Haddad et al. 2013). Diversification across partners also helps reduce volatility of GDP per capita (Jansen et al. 2009; Frashbaf, 2012).

7. As a small open economy without significant economies of scale, Uruguay could gain more from quality upgrading (higher value-added) and export market diversification than from further sectoral diversification. Given its size, the country cannot opt to diversity its economy to the same extent as larger countries such as China, Korea, or Brazil. Rather, the diversification should be grounded in its comparative advantages, harnessing knowledge spillover to increase competitiveness in higher levels of productivity and value addition.

C. Uruguay's Progress in Diversification[4]

Export diversification across partners and products

8. Uruguay has made progress in diversifying its export markets. According to trade statistics, Uruguay is exporting to around 150 countries around the world.[5] Between 2004 and 2015, export to China increased from 3.5 percent to 13.3 percent respectively. At the same time, export to "other countries" excluding China, EU, and its neighbors increased from 31.7 percent of total export to 42.7 percent. The weight of exports to the European Union and North America has decreased as a percentage of total exports. Exports to Brazil have remained significant, staying around 20 percent.



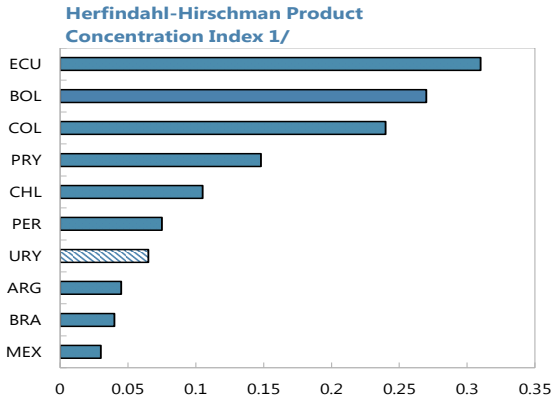
Source: Central Bank of Uruguay

9. Uruguay has also made progress in diversifying its export products. Based on the Product Concentration Index, Uruguay is more diversified than many other countries in the region (chart).[6] Exports of commodities have increased significantly, both in values and as a share of total exports, over the past decade, driven by export of animal products (mainly beef) and vegetable products (largely soy beans). Export of Wood (pulp) also increased (chart).

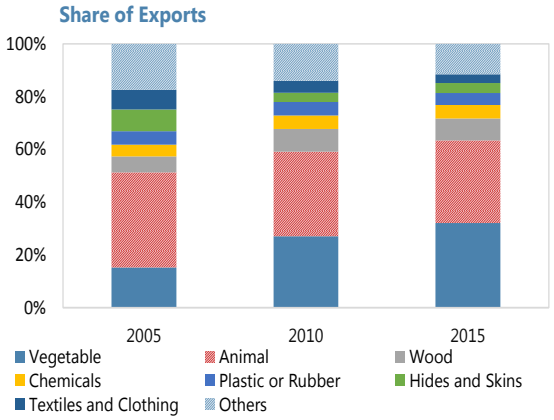
[4] Uruguay has also made progress in diversifying its sources of foreign direct investment. This chapter focuses on products and market diversification.

[5] World Integrated Trade Solution (WTIS). http://wits.worldbank.org

[6] The Index is a measure of the dispersion of trade value across an exporter's products. A county with a preponderance of trade value concentrated in a very few products will have an index value close to 1. Thus, it is an indicator of the exporter's vulnerability to trade shocks. See Reis and Farole (2012).

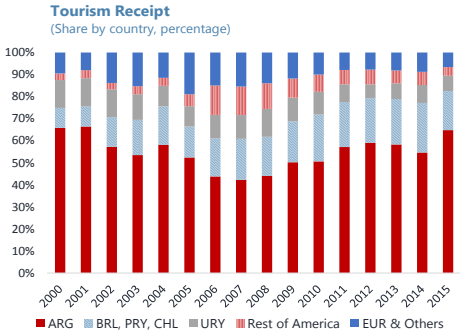


Source: World Integrated Trade Solution (WTIS).
1/ Measures dispersion of trade value across export products. More trade value concentration in exports has index closer to 1.



Source: World Integrated Trade Solution

10. Tourism, a major sector in Uruguay, remains largely dependent on its neighbors. Argentina has been the main source of tourism revenue, accounting for about 55 percent of tourism receipts. Brazil, Paraguay, and Chile combined are the second largest source of tourist inflows, contributing around 22 percent of tourism receipts.



Source: Central Bank of Uruguay

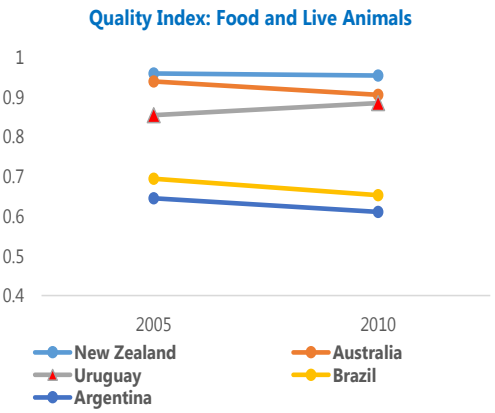
Quality upgrading of export products

11. Increasing commodity exports have been accompanied by increased quality in food and animal products. Based on the IMF Product Quality Upgrading Index, the quality of food and live animals has improved close to the level of quality of New Zealand and Australia—its key competitors in international markets (chart).[7]

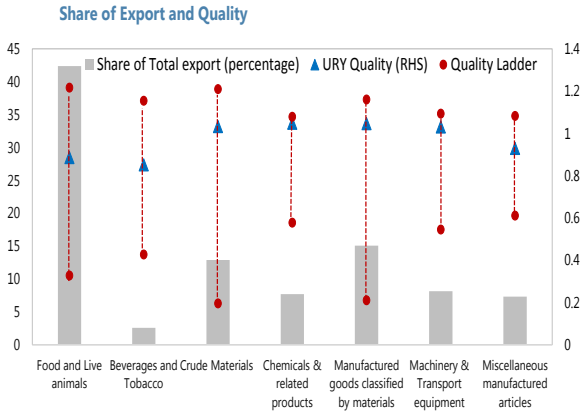
12. However, there is scope to upgrade further the quality of Uruguay' existing export basket. Uruguay's position on sectoral quality ladder points to the further potential for quality upgrading within existing products baskets, especially in Uruguay's main export- food and animal products (chart).[8]

[7] The index is calculated as the unit value adjusted for differences in production costs. IMF (2014) explains how quality is measured. The dataset is are available at www.imf.org/external/np/res/dfidimf/diversification.htm.

[8] Quality ladders reflect the extent of heterogeneity in quality across different varieties of a given product. The length of a quality ladder indicates the potential for quality upgrading for each products (IMF 2014).



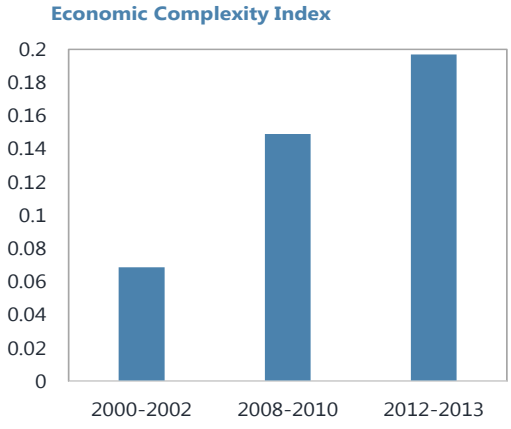
Source: IMF Quality Upgrade Index



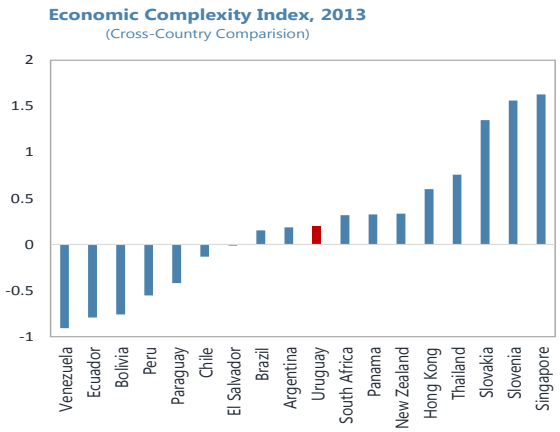
Source: IMF Quality Upgrade Index

Economic complexity

13. Uruguay has also increased its economy complexity as reflected in the Economic complexity index (chart). The index reflects not only the breadth of a country's exports, but also how knowledge intensive they are.[9] Uruguay stands out as being more complex than many countries in the region (chart). However, Uruguay's position on the global ranking of economic complexity index suggests that there is still untapped potential for further economic progress (chart).



Source: Atlas of Economic Complexity



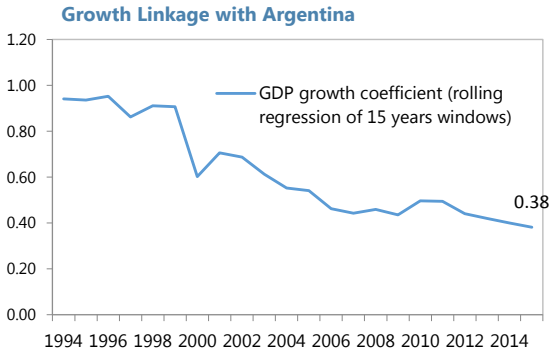
Source: Atlas of Economic Complexity

[9] The Economic Complexity Index is based on two key dimensions: diversity and ubiquity. See Hidalgo and Hausmann (2009) and Hausmann and others (2014) for details on definition and measurement. The Economic Complexity Index is available at http://atlas.media.mit.edu/en/rankings/country/.

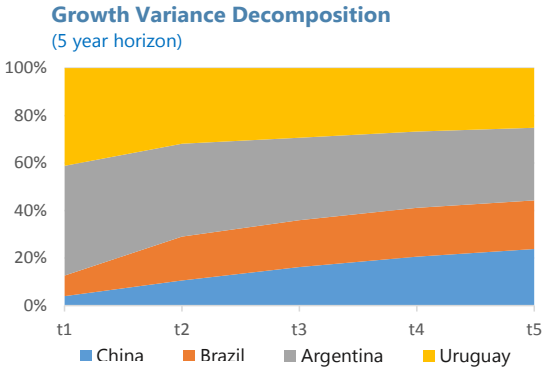
D. Regional Growth Linkage: Has Uruguay Decoupled?

14. While the growth linkages with Argentina has been diminishing in recent years, it remains an important source of tourism and FDI.

- Estimates based on rolling regressions show a diminishing sensitivity of Uruguay's growth to growth in Argentina (chart). This could be explained by the Brazil's increasing share in tourism and investment and the fact that emerging market economies outside Latin America, such as China, are becoming a more important source of demand for Uruguay's exports. Nevertheless, historical evidence suggests that one percentage point growth reduction in Argentina could still reduce Uruguay's growth by almost 0.4 percentage point.



Source: staff calculation



Source: staff calculation

- Brazil and China are found to have increasing effect on the variation in Uruguay' growth. A VAR analysis based on data for 1980 through 2014 suggests that in this period Argentina's growth explained about 50 percent of the variation in Uruguay's GDP Growth (chart). [10]

E. Enhancing Diversification

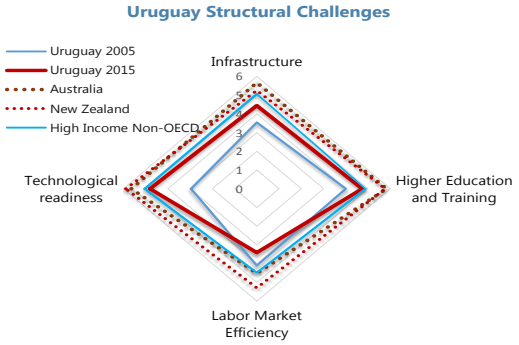
15. Key reforms could support further diversification in export markets and higher value-added content. The literature suggests reforms for improving infrastructure and trade networks, investing in human capital, and reducing barriers to entry for new products (See, for example, Daude, Nagengast, and Perea 2014).

16. A cross country comparison of the investment climate suggests several relevant areas, where Uruguay has lagged. These include improving secondary education, enhancing labor market efficiency, and upgrading infrastructure to meet rising demand of its growing economy (chart). In this context, the commitment of the government to boost infrastructure investments, revamp

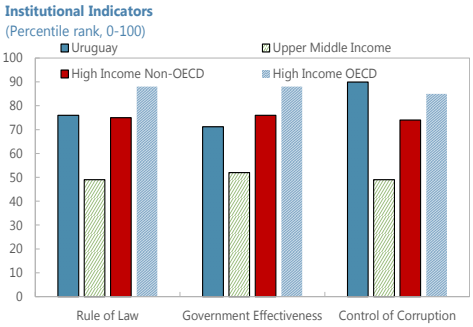
[10] VAR includes two lags of GDP growth (in log value) of China, Brazil, Argentina, and Uruguay.

secondary education and skill formation for the youth, and foster an innovation-friendly business environment should be noted.

17. Existing solid institutional foundations should provide a key opportunity to implement reforms for further diversification. These include political stability, institutional quality, and low corruption perception.



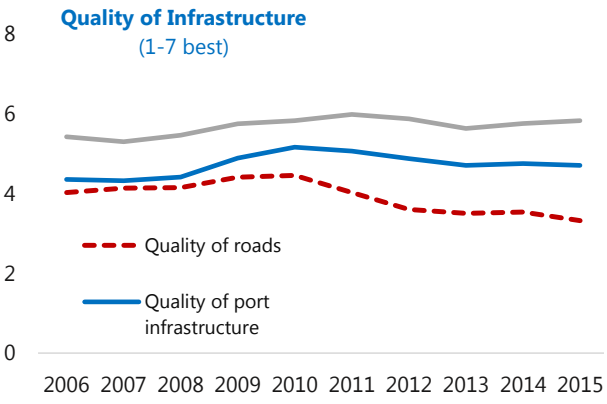
Source: Competitive Report, World Economic Forum



Source: World Bank, Governance Indicators.

Infrastructure

18. There is scope for upgrading transport and logistic infrastructure to help enhance diversification and trade activities. Strong economic growth in the last decade has placed greater stress on transport infrastructure. Quality of port and road infrastructure has not kept up with the rising demand. While the quality of ports, electricity supply are generally good, Uruguay ranks below its peers in terms of road and railroad infrastructure (chart).



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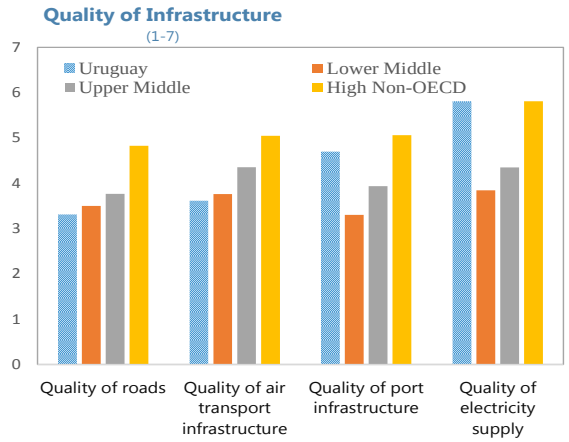
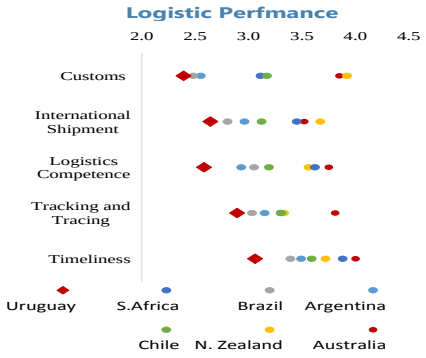


Source: Competitive Reports, World Economic Forum

19. Uruguay's logistic performance also offers scope for substantial improvement. Uruguay's logistic performance lags behind its peers in the region, in particular, regarding the efficiency of customs and border management clearance, the ease of arranging competitively priced shipments, the competence and quality of logistics services, the ability to track and trace consignments, and timeliness to match its competitors.[11] Improvements would help to create a seamless connection between farms, firms, and markets, and to attract foreign direct investment.



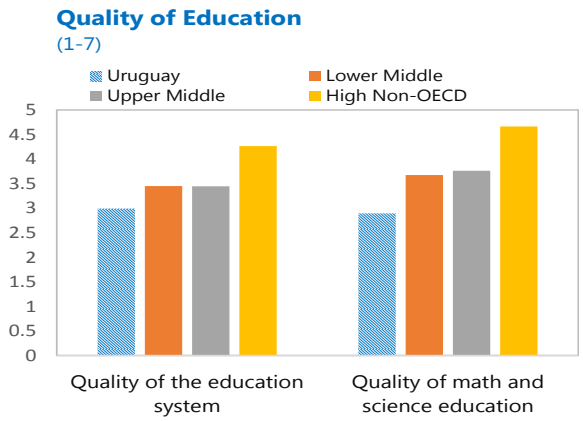
source: Logistic Perfomrance, World Bank

Education and skills

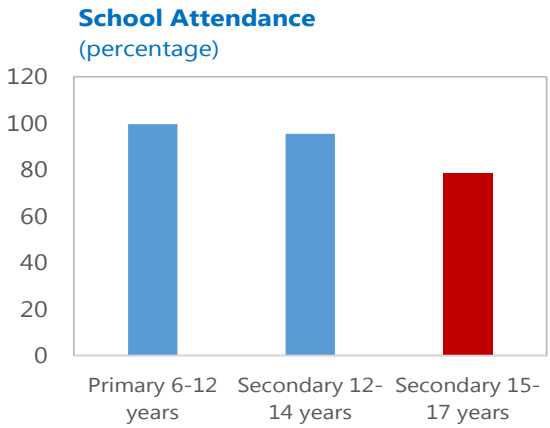
20. Improving education and upgrading skills will help diversification and innovations to enhance the value added content. Skilled work force his crucial for moving up the value chain and for capturing knowledge spillovers from foreign direct investment (IMF 2014; Daude, Nagengast, and Perea 2014). A better-educated workforce is also more likely to spawn successful entrepreneurs seeking to branch out into improving existing products, and to absorb and adopt new technologies.

21. Declined quality of secondary education is a major constrain to Uruguay's productivity growth and diversification effort, particularly in the context of an aging population. While Uruguay has strong performance in the provision of basic education and literacy skills, achievements at more advanced levels of education are weaker than peers at similar income level (chart). Dropout rates in secondary schools are high (chart). It will be key to improve the coverage and quality of secondary school as well as vocational training.

[11] See the Logistic Performance Index. http://lpi.worldbank.org/



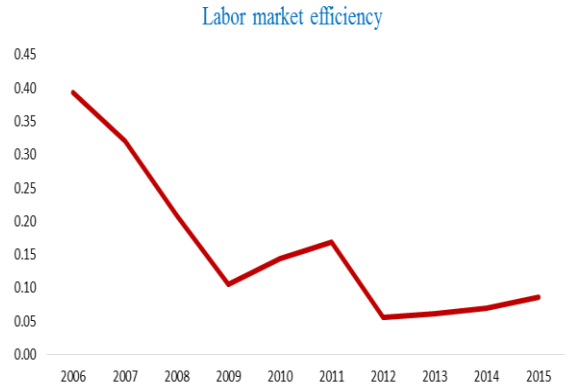
Source: Competitive Reports, World Economic Forum



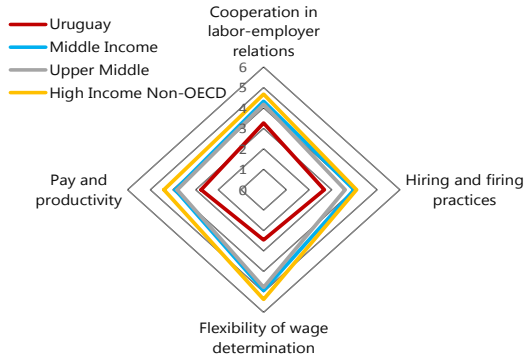
Source: Competitive Reports, World Economic Forum

Labor markets

22. Labor market efficiency could be enhanced as it has decreased over the past decade (chart).[12] The World Economic Forum Survey ranks labor market efficiency as the weakest aspect of doing business in Uruguay. Key elements such as cooperation in labor-employer relation, link between pay and productivity, and wage determination flexibility have lagged behind other countries of similar income level (chart). Hence, it would be useful to evaluate labor market regulations and the wage determination mechanism introduced in recent years and ensure that they strike a good balance between efficiency and appropriate protection for workers.



Source: Staff Calculation; Competitive Reports, World Economic Forum



Source: Competitive Reports, World Economic Forum

[12] The indicator is calculated as 1- (Uruguay's ranking/total number of countries). A high ranking value in the WEF survey sample countries means less competitiveness.

F. Conclusion

23. Structural reforms can help Uruguay achieve another phase of growth in the context of a less favorable external environment. Uruguay has achieved a decade of high growth, diversified its export markets, and has started upgrading the quality of its products and services. Further diversification in these two areas would help boost Uruguay's growth. Greater diversification of markets would also help reduce exposure to adverse external shocks, and thus lower growth volatility. To enhance the diversification, an upgrade of Uruguay's transport and logistics infrastructure, improvements in the quality and enrollment of secondary education, expansion of vocational training programs, and increase in labor market efficiency to better tie wages to productivity are key.

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