

Why is Dollar Debt Cheaper? Evidence from Peru
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U.S. Dollar Facts

- **Dollar Debt Dominance:** Why is there so much dollar-denominated debt, issued by both U.S. and non-U.S. entities?
 - ▶ Bruno and Shin (2014); Maggiori, Neiman, and Schreger (2017)

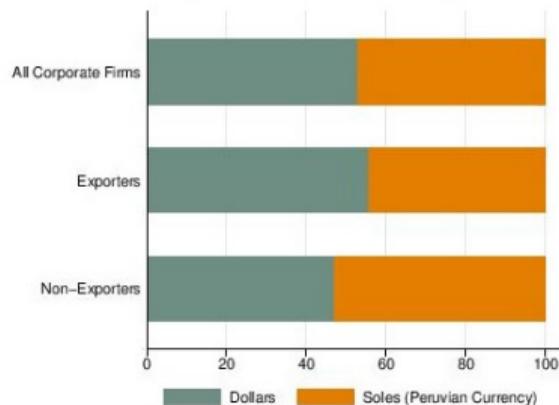
- **Dollar Convenience Yield:** Why is dollar debt cheap?
 - ▶ Krishnamurthy and Vissing-Jorgensen (2012); Ivashina, Scharfstein, and Stein (2015); Jiang, Krishnamurthy, and Lustig (2018); Liao (2019)

This paper brings direct evidence from Peru, and relates this phenomenon to deposit dollarization + bank regulation.

Fact 1. Dollar debt is prevalent

Figure 3: Dollarization of Loans by Exporting Status and Economic Sectors, 2018

Panel A: Exporters and non-exporters



- Both exporters and non-exporters take out dollar loan in Peru.

Fact 2. Dollar debt is cheap

$$r_l = \beta_1 I_l(\text{Dollar Loan}) + \beta_2 \text{Loan Controls} + \beta_3 \text{Firm Controls} + \beta_4 D_{Jt} + \beta_5 D_{Lt} + \varepsilon_l \quad (1)$$

- Novel loan-level data from Peru bank regulator. Fixed rate loan in dollar or in soles.
- Firm control includes credit rating, bank relationships, FX exposure and export status.
- Industry and lender fixed effects. Explore cross-loan variation in the same banks, similar firms.
- Also check the subsample with variation in the same banks and the same firms.

Fact 2. Dollar debt is cheap

	(1)	(2)	(3)	(4)	(5)
I(Dollar Loan)	<u>-2.202***</u> (-10.50)	-2.072*** (-14.20)	-2.205*** (-10.42)	-2.161*** (-13.85)	-1.878*** (-13.34)
Ln(Loan Size)	-0.101*** (-6.13)	-0.265*** (-5.81)	-0.102*** (-6.23)	-0.263*** (-5.78)	-0.256*** (-5.65)
Ln(Loan Term)	0.166*** (7.48)	0.216*** (4.57)	0.160*** (7.31)	0.215*** (4.52)	0.224*** (4.91)
Ln(Collateral)	0.00834 (1.31)	0.0248*** (5.01)	0.00748 (1.16)	0.0254*** (5.35)	0.0237*** (4.89)
Ln(Previous Loan Balance)	-0.104* (-2.56)	-0.465*** (-13.88)	-0.107** (-2.60)	-0.466*** (-13.39)	-0.459*** (-13.92)
Ln(Firm Age)	0.0699 (0.35)	-0.661*** (-13.85)	0.124 (0.58)	-0.654*** (-13.89)	-0.650*** (-13.34)
I(Small Corporate Firm)	0.104 (1.54)	0.359*** (3.50)	0.0812 (1.02)	0.352** (3.12)	0.315** (3.18)
Ln(Bank Internal Credit Rating)	1.376*** (7.34)	2.189*** (7.29)	1.323*** (7.83)	2.174*** (7.31)	2.264*** (7.49)
Ln(Number of Bank Relationships)	-0.0478 (-0.87)	0.0827 (1.36)	-0.0476 (-0.86)	0.0716 (1.11)	0.120 (1.90)
<u>Dollar Loan × Exposed to FX</u>				0.209* (2.26)	
Exposed to FX				0.0717 (0.67)	
Dollar Loan × Exporter					-0.326** (-2.74)
Exporter					-0.270*** (-3.57)
Fixed Effects:					
Firm	Yes	No	Yes	No	No
Industry-Quarter	No	Yes	Yes	Yes	Yes
Bank-Quarter	Yes	Yes	Yes	Yes	Yes
Observations	87,426	87,773	87,402	87,773	87,773
R-squared	0.797	0.476	0.800	0.477	0.480

Fact 2. Dollar debt is cheap

2% convenience yield on dollar loan. How to interpret this magnitude?

- Typical measures of convenience yield, such as TED spread, are around 20 to 50 bps.

But

- Jiang et al. (2018): Under an exchange rate model, the average convenience yield of dollar safe asset over foreign safe asset needs to be about 2% to rationalize the observed exchange rate dynamics.
- Kojien and Yogo (2020): Under an international demand system, the average convenience yield is 2.15% on US long-term debt.

Comment 1. Adjustment for currency risk premium

$$r_{adjusted} = r_{dollar} + E_t(s_{t+1}) - s_t$$

- $E_t(s_{t+1})$ comes from exchange rate forecast by Focus Economics.
- Consider a M-M world: 2% is the currency risk premium of soles, $r_{soles} = r_{dollar} + 2\%$ and $E_t(\Delta s_{t+1}) = 0$. Firms are indifferent between dollar loan and sol loan.
- To test against this null, I recommend adjusting interest rate by forward premium. Compare yield of soles loan with synthetic soles yield of dollar loan:

$$r_{synthetic} = r_{dollar} + f_t - s_t$$

- If still find a significant coefficient, then the dollar financing is cheaper after the FX risk is adjusted.

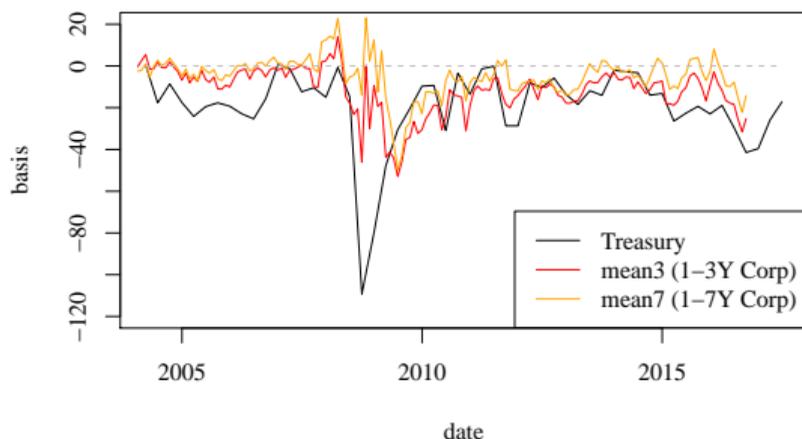
Fact 3. UIP-to-loan transmission

$$r_{\ell}^{synthetic} = \beta_1 I_{\ell}(DollarLoan) + \beta_2 I_{\ell}(DollarLoan) \times MacroUIPDev_{t,t+n} + \beta_3 MacroUIPDev_{t,t+n} + \beta_4 D_{Lt} + \beta_5 D_{Jt} + Controls + \epsilon_t. \quad (5)$$

- $r_{\ell}^{synthetic}$ refers to the expected FX movement-adjusted interest rate.
- $\beta_1 = -2$, $\beta_2 = 0.05$: weak pass-through.
- When the (counter-cyclical) currency risk premium of soles increases, the loan rate in soles does not respond relative to the the loan rate in dollar.

Comment 2. How about Macro CIP-to-loan transmission

$$\begin{aligned} \text{basis} &= r_{\text{dollar}} - r_{FX} + f_t - s_t \\ \text{loan basis} &= \alpha + \beta \cdot \text{macro basis} + \varepsilon \end{aligned}$$

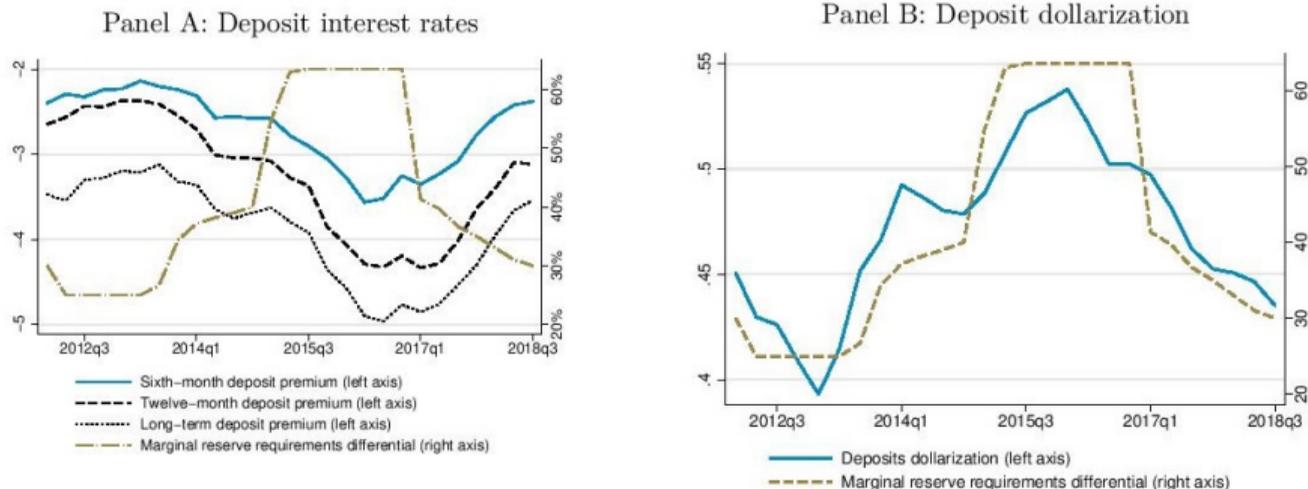


- Treasury basis from Jiang et al. (2018), Corporate basis from Liao (2019).
- Using the corporate loan data in developed countries. Pass-through coefficient = 0.35.

Fact 4. Pass-through mechanism

- Dollarization in deposits + regulatory constraints: Banks need to offload the currency risk exposure.
- Exploit variation in reserve requirements.
- Demand shock in dollar deposit due to expected FX movement? Cheaper dollar deposit rate, higher dollar deposit volume.

Figure 9: Marginal Reserve Requirements and Dollar Deposits, 2012 - 2018



Comment 3. Interpretation of this result

Table 8: Pass-through of the Marginal Reserve Requirements Cost

This table summarizes result of examining changes in dollar deposit rates and share of dollar deposits following two episodes of adjustments to marginal reserve requirement rate. Estimates are changes in the dependent variable; each estimate corresponds to a different regression. Benchmark quantities reflect calculations for perfectly inelastic demand for dollar savings. *** indicates that coefficient is statistically different from zero at 1% level.

	December 2014 and February 2015			December 2016		
	Reserve on dollar deposits increased from 50% to 70%			Reserve on dollar deposits decreased from 70% to 48%		
	(differential dollar reserve change 21.5%)			(differential dollar reserve change -21.5%)		
	Benchmark (model)	Estimate	Test	Benchmark (model)	Estimate	Test
Deposits ($\ln(r^d)$)	-0.287	-0.22*	Fail to reject	0.55	+0.37***	Reject
Loans ($\ln(r^l)$)		+0.15			-0.17**	
Share of dollar deposits	0	-1.19	Fail to reject	0	-0.30	Fail to Reject

- Paper: “*These results are consistent with the highly inelastic demand for dollar savings.*”
- What role does expected FX movement play?
- What can we learn from the adjustments on the loan rates?

Comment 4. Variations to exploit

2% spread in loan rate is from dollarization in deposits + regulatory constraints.

- Any way to separately identify the effects of the two factors?
 - ▶ For example, can we exploit potential heterogeneity in local vs. foreign banks?
- Keller (2019) exploits heterogeneity in the strictness of capital controls across Peruvian banks.

Conclusion

Compelling evidence for dollar debt dominance, which centers on dollarization in deposits + regulatory constraints.

- Intermediation of dollar risk: *“Banks nearly perfectly match their dollar assets and liabilities... To entice firms into holding mismatched balance sheets, banks pass-through their cheaper dollar financing to loans.”*
- Implication for bank profit/market power: *“We do not find evidence that banks require compensation for this exposure, the risk premium charged on loans to exposed firms is quite small.”*
- Firms bearing dollar risk: Does bankruptcy rate increase during global recessions?
 - ▶ Salomao and Varela (2020), Du and Schreger (2016).