

# Financial Dollarization<sup>1</sup>

presented at conference to celebrate 25<sup>th</sup> anniversary  
of the Armenian Dram<sup>2</sup>

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based on Northwestern PhD dissertation by Husnu Dalgic

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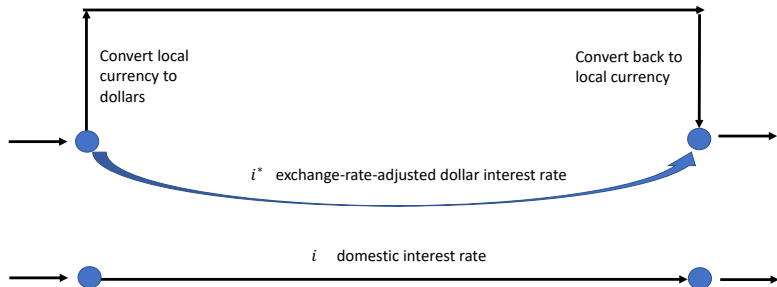
<sup>1</sup>We are grateful to Lusine Torosyan for superb research assistance.

<sup>2</sup>These slides slightly adjusted to respond to clarifying questions from Deputy Governor Nerses Yeritsyan and Former Governor of the Czech National Bank, Miroslav Singer.

# Outline

- Some facts about dollarization.
- Where do the facts take us?
  - ▶ ... to a simple insurance story which ties the cross-country observations together (Dalgic's thesis).
- But, isn't dollarization *dangerous*?
  - ▶ Conventional wisdom: 'yes'.
  - ▶ Evidence for conventional wisdom surprisingly weak.
- Some policy implications.

Figure: Local Currency and Dollar Deposits

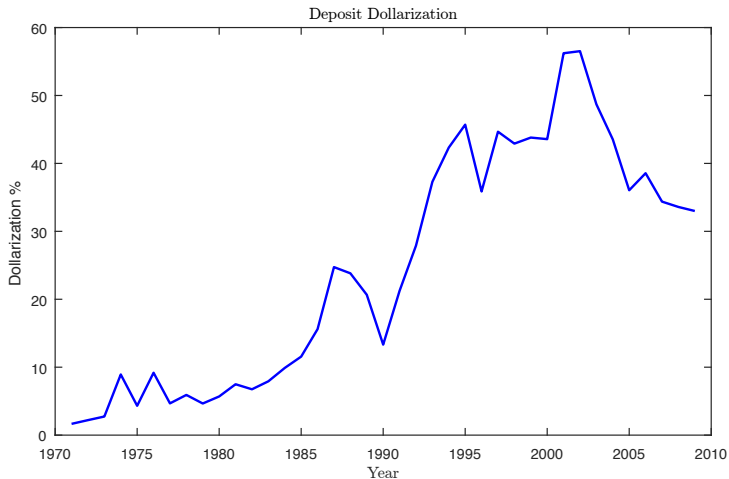


# Deposit Dollarization

- Measure of deposit dollarization for a particular country:

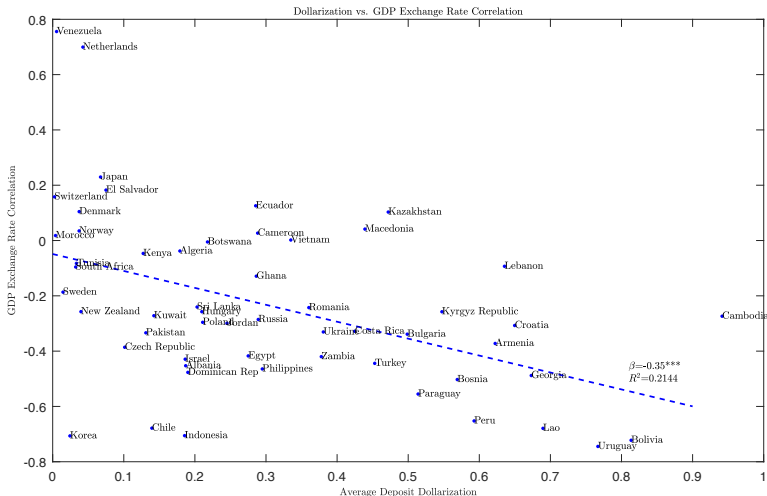
$$\frac{\text{value of dollar deposits}}{\text{total deposits}}$$

# Dollarization Still Important



Note: (i) sharp rise in deposit dollarization sometimes thought to represent defensive measures against unpredictable governments; (ii) with period of stability after 2000, some believed deposit dollarization would disappear, but it remains robust.

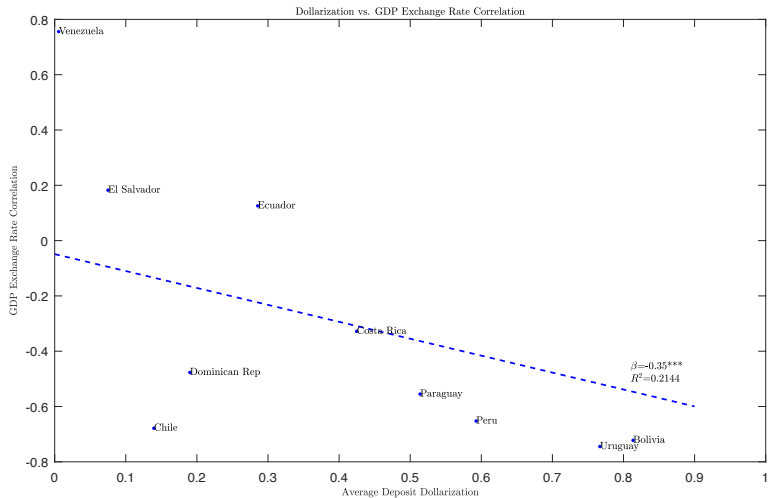
# Fact: Deposit Dollarization Highest In Countries Where Exchange Rates Depreciate Most in Recession



## Are Different Regions Consistent with The Big Picture in Previous Figure?

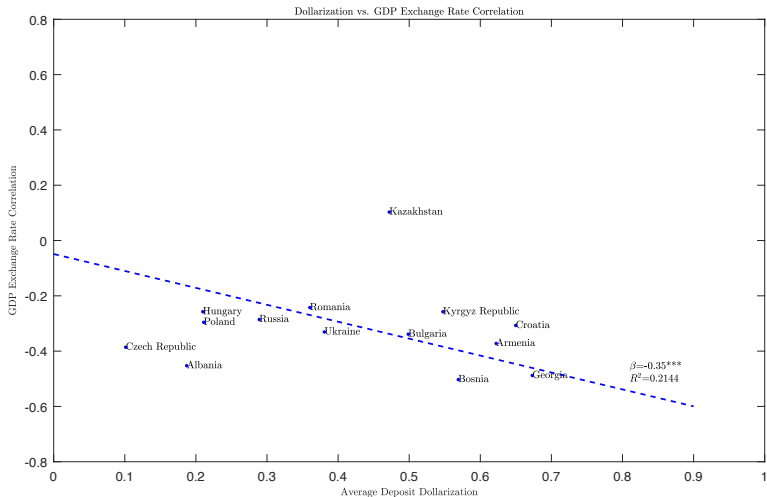
- Of course, data on individual regions is noisy.
  - ▶ That's why we work with *all* the countries!
- Still, we want to make sure we aren't mixing apples and oranges.
- Below, we examine:
  - ▶ Latin America.
  - ▶ Eastern European and transition economies.
  - ▶ Asia.

# Latin America Fits the Picture

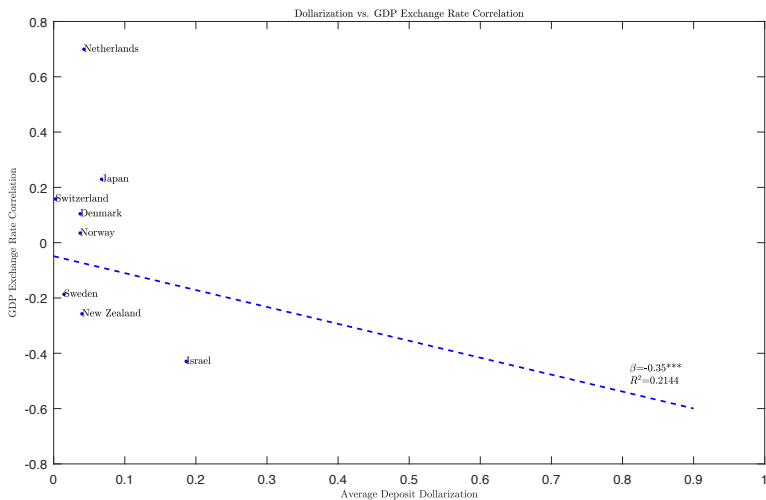




# East European and Post-Soviet economies consistent with overall picture

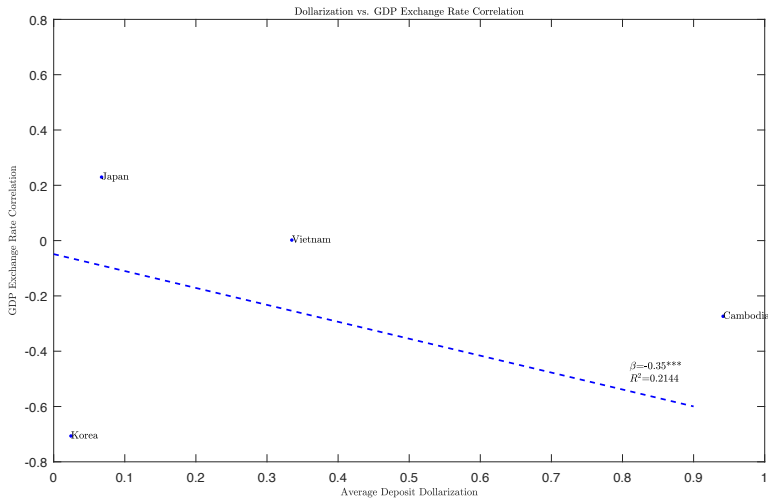


# Advanced Countries



Assuming convexity as deposit cod

# Asia consistent with overall picture



## Two Implications of Insurance and Bank Regulations

- Insurance provided by dollar deposits:
  - ▶  $i^*$  jumps in a recession, exactly when households short on money.
- Regulators don't like banks to have currency mismatch (for good reason, see below).
- Insurance and regulation lead to two testable predictions: *Price* and *Credit*.
  - ▶ *Price Predictions*: if deposit dollarization is high -
    - ★ Shortage of local currency in banking system  $\rightarrow i$  high.
    - ★ Relative abundance of dollar deposits  $\rightarrow i^*$  low.
    - ★ Interest rate spread,  $i - i^*$ , high.

# Fact: Country Interest Rate Spread, $i - i^*$ , High When Dollarized Deposits High

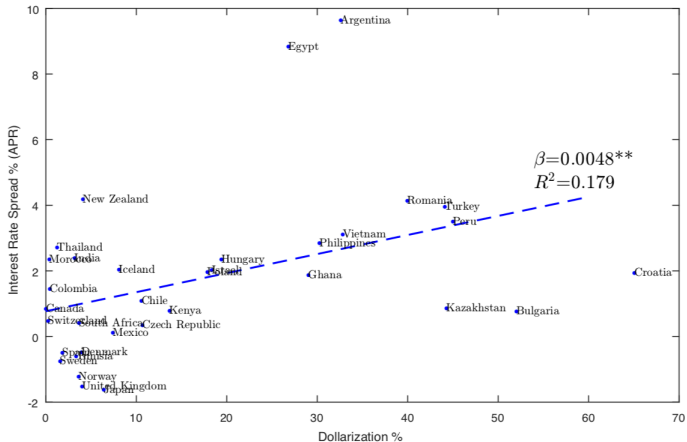
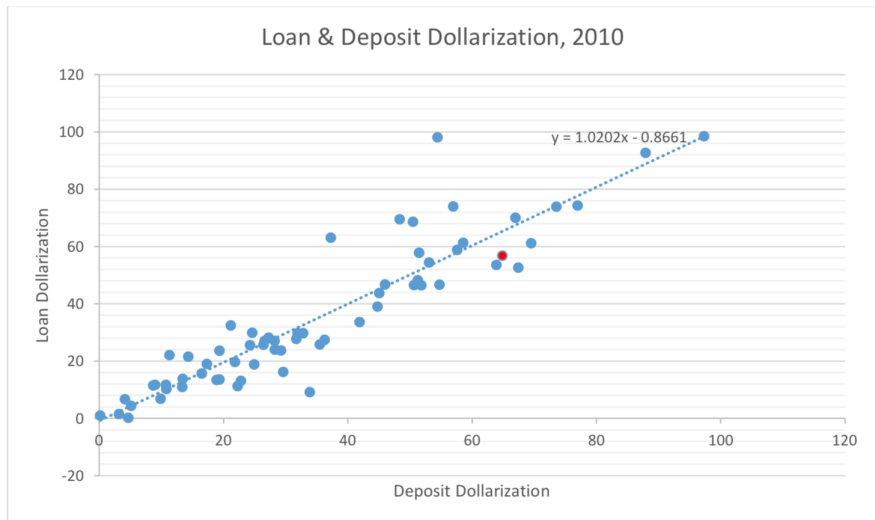


Figure 7: Average Interest Rate Spread and Average Deposit Dollarization

## Second Implication of Insurance and Bank Regulations

- *Credit prediction:*
  - ▶ In countries where deposit dollarization is high, credit dollarization must be high too.

# Fact: Higher Dollar Deposits Go With Higher Dollar Credit



## Where Do the Facts Lead Us?

- When there is a recession, then  $i^*$  jumps:
  - ▶ Households that own firms transfer money to ordinary households.
- Deposit and Credit Dollarization looks like an insurance arrangement:
  - ▶ ordinary households, by putting dollar deposits in banks, in effect receive business cycle insurance from the households that own firms.
- Dollarization of financial markets looks like many other markets (e.g., commodity futures) in which risk is reallocated among people.

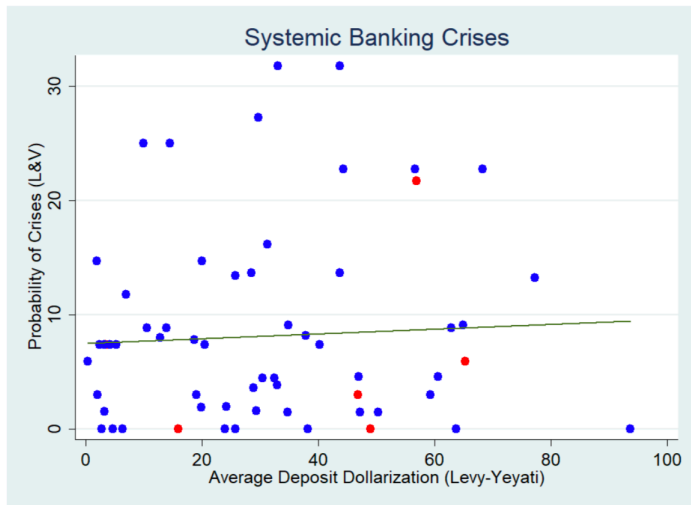


# Is Dollarization Dangerous?

- For example, when a depreciation occurs in a recession (i.e.,  $i^*$  is high), then firms owe banks a lot of money just when they don't have very much.
- This could lead to a lot of firm bankruptcies and destabilize the financial system.
- Let's look at the facts....

# Probability of a Banking Crisis and Deposit Dollarization

Figure 63. Average Deposit Dollarization (Levy-Yeyati) and Probability of Crises (L&V, systemic banking crises)



# Probability of a Sudden Stop and Deposit Dollarization

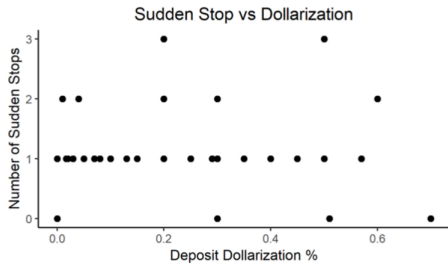


Figure 1: Frequency of Sudden Stops and Dollarization

Note: Each point corresponds to a country. There are 34 countries in the data and 43 observed sudden stops between 1990-2014. In case of more than one sudden stop, I took the average deposit dollarization. I did not observe any country where deposit dollarization changed significantly over the years.

# Pain Experienced In a Sudden Stop and Deposit Dollarization

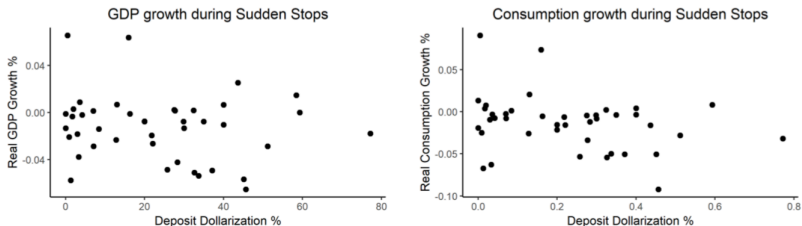
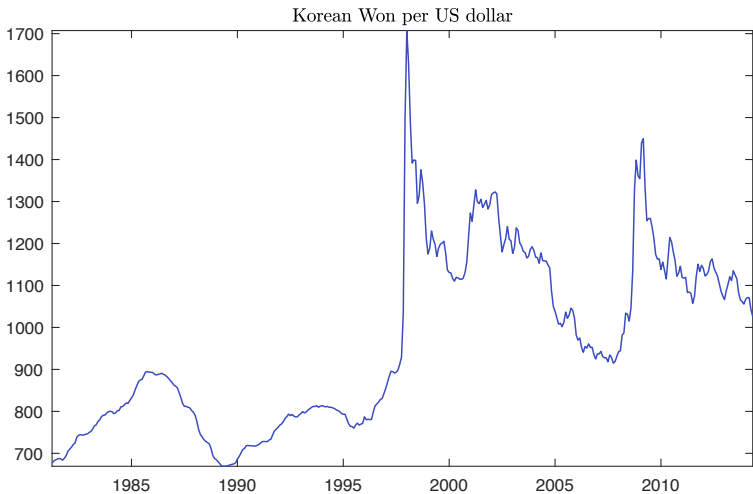


Figure 3: Severity of Sudden Stops and Dollarization

Note: Each point corresponds to an individual sudden stop. There are 34 countries in the data and 43 observed sudden stops between 1990-2014. I took log difference between average annual GDP (Consumption) one year before and after the observed sudden stop. From that number, I subtracted decade average growth to remove trend.

## How Could Dollarization *Not* be Dangerous?

- Most people feel instinctively that dollarization *is* dangerous.
- Perhaps they think of 'over-borrowing', which is inevitably in dollars (because of Original Sin).
  - ▶ We agree that over-borrowing is possible (see below), and should be restricted.
  - ▶ But, over-borrowing has nothing to do with dollarization, *per se*.
- Perhaps they think dollarization will inevitably lead to currency mismatch in banks.
  - ▶ But, financial dollarization is compatible with (nearly) zero currency mismatch in banks.
    - ★ We agree that regulators should limit currency mismatch in banks because banks are too leveraged to safely handle currency fluctuations.
  - ▶ But, firms generally have lower leverage and mismatch need not be such a problem for them.
- Consider the sort of exchange rate depreciation that occurred in the Korean financial crisis....



*Note: in 1998 crisis, Won depreciated by a factor of 2. Later, depreciation partially offset.*

## Crisis When Currency Mismatch is Held by Firms

- Korean Won depreciated by a factor of 2.1 from 800 to 1,700 during Asian Financial Crisis.
- Suppose:
  - ▶ Leverage is 2 (this is the US and, arguably, Turkey (Dalgic, et al)).
  - ▶ Credit dollarization is 50%.

**Table:** Assets and Liabilities of a Firm (all numbers in Won)

Before Crisis		After Crisis	
Assets	Liabilities	Assets	Liabilities
200	50 local currency debt	200	50 local currency debt
	50 dollar debt		100 dollar debt
	100 equity		50 equity

- The firm can weather this storm.

## Crisis When Currency Mismatch is Held by Banks

- Banks have much higher leverage, maybe 10.
- Suppose bank has 50% dollar credit.

Table: Assets and Liabilities of a Bank (all numbers in Won)

Before Crisis		After Crisis	
Assets	Liabilities	Assets	Liabilities
200	90 local currency debt	200	90 local currency debt
	90 dollar debt		180 dollar debt
	20 equity		-70 equity

- This bank is now insolvent!



## Crisis: Message of Preceding Example

- The example is extreme.
  - ▶ In practice, firms borrow long-term and a crisis depreciation is partially reversed.
  - ▶ In the case of Korea: depreciation 110% from January 1997 to January 1998.
    - ★ Depreciation from January 1997 to January 1999 'only' 50%.
  - ▶ Dalgic, et al's 2017 study of Turkey suggests it is large firms and firms with exports that borrow the bulk of dollar credit.
    - ★ These firms are relatively resilient to exchange rate changes.
- Message:
  - ▶ Insist that banks have no currency mismatch.
  - ▶ Allow some mismatch in firms, which have lower leverage and can handle exchange rate shocks better.
  - ▶ In this case, dollarization may not be so dangerous.

## Did We Get the Causality Backwards?

- We have argued that exchange rate depreciations in recessions drive the demand for deposit dollarization.
  - ▶ That in turn (due to regulations) drives credit dollarization.
- But, is it possible that causality goes the other way around?
  - ▶ Could it be that deposit dollarization is the *cause* of recessions accompanied by currency depreciation?
  - ▶ That possibility seems inconsistent with the evidence that deposit dollarization is uncorrelated with:
    - ★ frequency of sudden stops and financial crisis.
    - ★ the severity of recessions that follow a sudden stop and/or financial crisis.
- So, we are (cautiously) comfortable with the causality assumptions implicit in our analysis.

# Conclusion

- Financial dollarization may have a constructive role to play.
  - ▶ Allows people with deep pockets (owners of firms) to provide business cycle insurance to 'normal' people.
- Still, macro-prudential regulations likely to be important.
  - ▶ Firms/households with high leverage should not be borrowing in foreign currency.
    - ★ Example: Polish and Hungarian households taking out mortgages in Swiss Francs.
  - ▶ Governments that have accumulated large amounts of foreign reserves may inadvertently signal borrowers that they can expect a bailout the event of a large depreciation.
    - ★ In this case, firms may not properly take into account the risks associated with dollar borrowing.
    - ★ This may lead to excess borrowing, putting the whole country at risk.
- Another consideration: with financial dollarization, central bank may lose its ability to stimulate the economy in case of a slowdown.