Policy Spillovers in the Caucasus Region: The Role of Financial Dollarization

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Policy Spillovers and Dollarization

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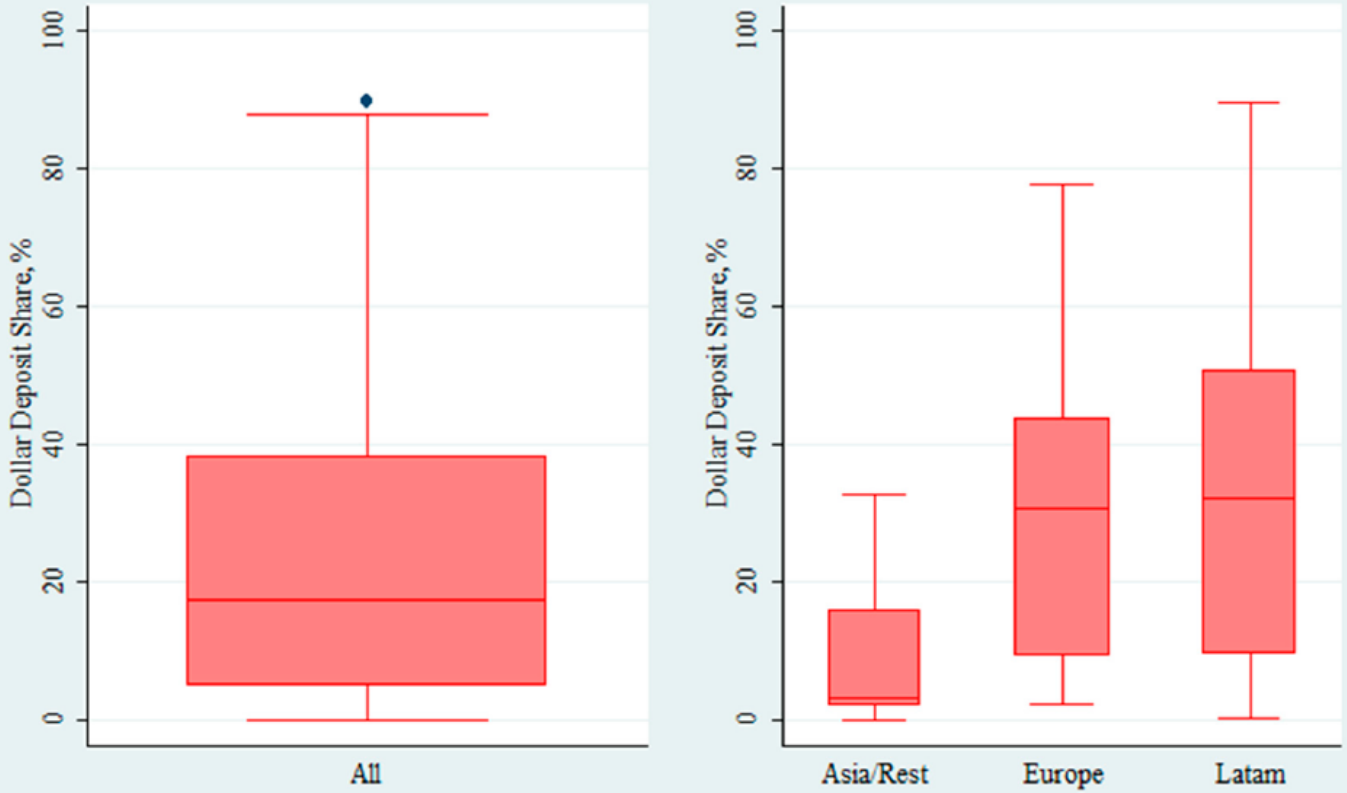
- This presentation, however, focuses exclusively on a single (special type of) channel that works **only if**
  1. financial system is (partly) dollarized.
  2. and foreign policies involve moving (real) exchange rate.

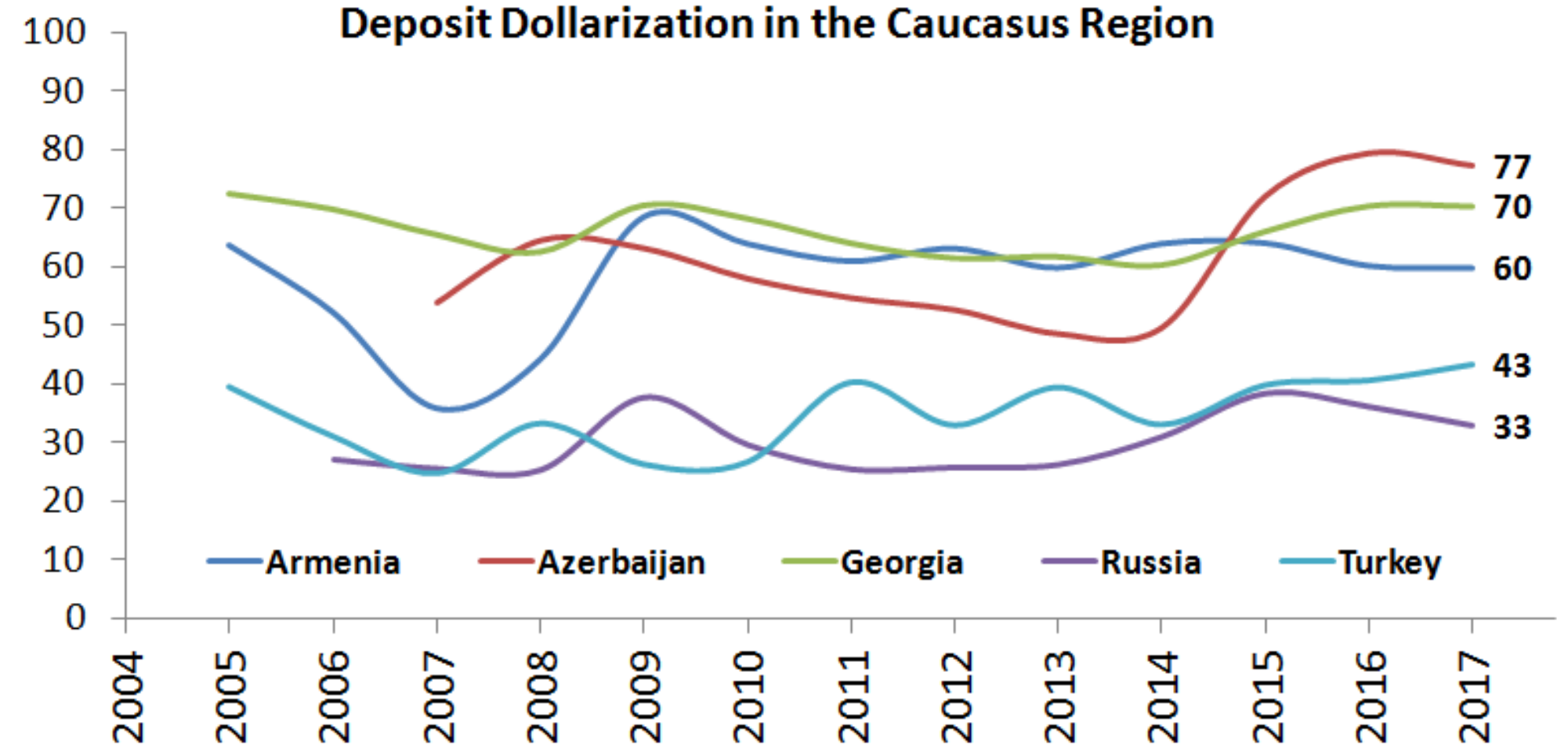
Financial Dollarization Isn't Rare

Figure 1. Deposit Dollarization in EMEs
(2000:Q1-2015:Q1)

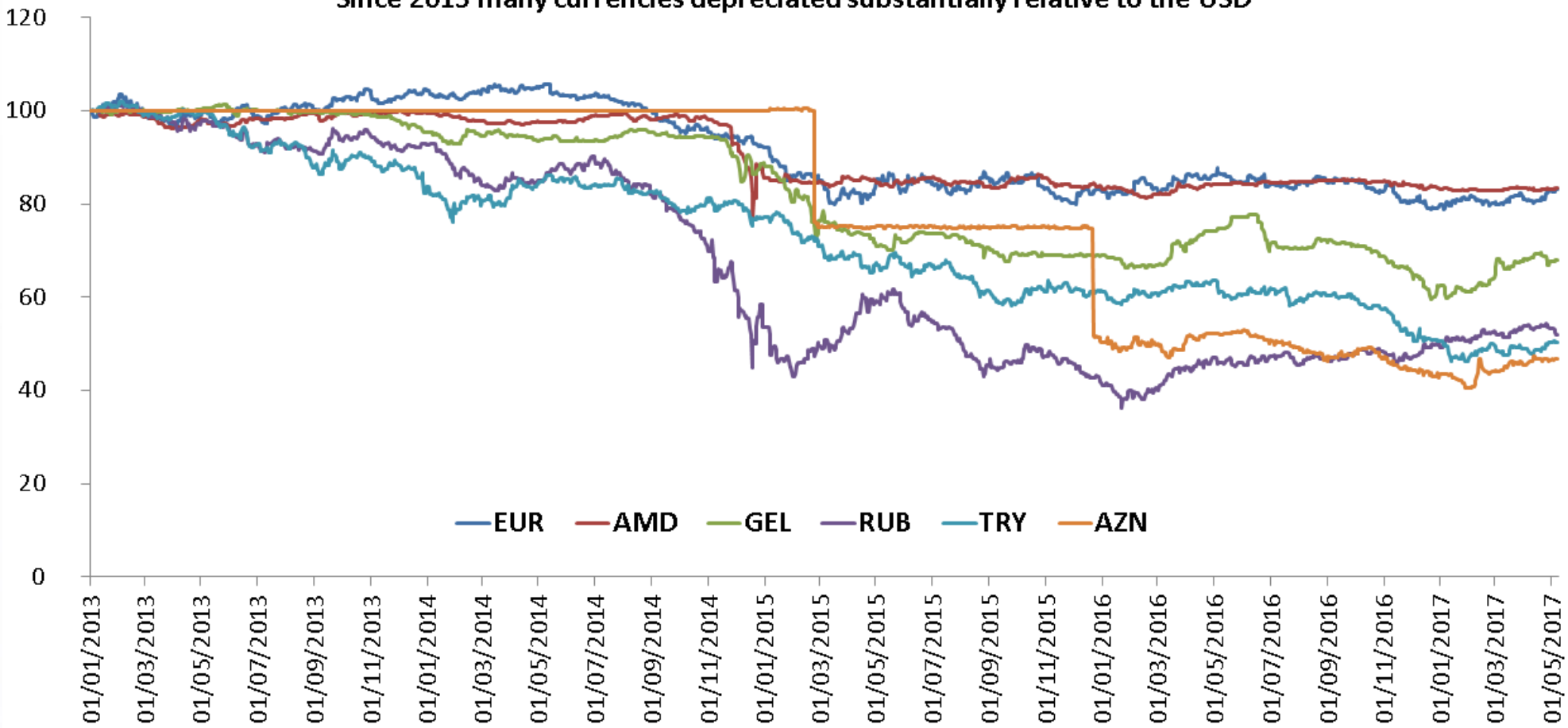


Source: Catao and Terrones (2016)

Especially in the Caucasus Region



And Many Shocks Involve Exchange Rates



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- Suppose exchange rate is flexible ("monetary policy autonomy"), there are no foreign banks, no spillovers from long-term interest rates, etc... Are we close to being immune from foreign policy spillovers in this case?
- Absolutely NOT if financial intermediation is in foreign currency, **even if** UIP works perfectly! Why?
- In short, because financial dollarization involves balance sheet effects.
  - I.e. while flexible exchange rate gives monetary policy the ability to influence the attractiveness of new loans (flows) for domestic borrowers, it cannot insulate us when it comes to dollarized balance sheets (stocks), simply because balance sheets are predetermined.

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2. Our trading partner can respond to this shock by depreciating its currency relative to the US and absorbing the shock. Assume it does so and completely neutralizes the shock.
3. How can we respond to this? If we let our exchange rate follow trading partners' path to the extent that our real effective exchange rate remains unchanged, then our competitiveness, current account or real economy would also be unchanged (other things being equal).

How the Channel Works (*continued*)

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5. The latter, however, would then exert negative balance sheet effects for dollarized loans, which will depress the economy. Therefore, **even when our trading partner itself neutralized the shock, we still got hit!**

Not So Friendly Channel

Spillovers that go through the channel of financial dollarization aren't quite benign, as they create couple of difficult trade-offs:

- **external stability VS financial stability**
- **price stability VS output stability**

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- But if the financial system is dollarized, exchange rate depreciation may pose financial stability risks, as dollarized liabilities become riskier for economic agents that have income in local currency.

Therefore, financial dollarization **complicates the conduct of financial stability policy**.

Price Stability VS Output Stability

- Financial dollarization (balance sheet effect) partially dampens competitiveness effects of exchange rate. In addition, if depreciation is *high enough* to trigger significant non-linear effects of financial stability (due to FX debt service burden), this *could make depreciation contractionary* instead of being expansionary.

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Therefore, dollarization can turn standard demand shock into supply shock with significant trade-offs and, thus, **complicate the conduct of monetary policy**.

Overview

Macroeconomic Block

Macroeconomic part of the model is a standard New-Keynesian small open economy model:

1. Demand side is represented by a **standard new IS curve, but enlarged with financial linkages**. In particular, output gap in addition to lag, expectations, real interest rate and effective exchange rate, also depends on asset prices, deleveraging needs and possible financial distresses (modeled in a non-linear way)

2. Supply side is represented by a **standard new Phillips curve, augmented with balance sheet effects on producers side**. This captures the exchange rate effect via producers's dollarized loans.

Macroeconomic Block (*continued*)

3. Exchange rate is determined through **modified UIP condition**. Modification implies exchange rate expectations depending on the degree of over/under-valuation and past developments. In addition, changes in FX leverage also affect the exchange rate - deleveraging causing depreciation and upleveraging causing appreciation.

4. Policy interest rate adjusts according to a **standard IT reaction function of the monetary authority**, i.e. depending on inflation deviation from the target and the output gap.

Financial Block

Financial block, the most important part for current purposes, is incorporated in the model in a reduced-form way.

1. **Asset prices** reflect possible optimism/pessimism about the future of the economy, and is a function of expected future outputs.
2. **Deleveraging impulse** comes from imbalances in the leverage of borrowers and reflect financial accelerator effect. The higher is this impulse the stronger is its' negative effect on future credit growth and output.
3. **Part of the stock of loans is dollarized**, i.e. exchange rate movements have valuation effects on the stock of credit and, hence, leverage.

Financial Block (*continued*)

There are several important channels captured in the equations for deleveraging process and asset prices:

- **standard financial accelerator**
- **balance sheet effects of exchange rate**
- **asset prices are sensitive to risk premiums and deleveraging**
- **new loans create contemporaneous demand for assets**

Which of these (and even other) channels will dominate depends on the structure of the economy and parameter values.

Strong US Dollar Scenario

The scenario assumes that the US dollar appreciates amid improved labor market conditions in the US.

- The **US dollar appreciates globally by 15 percent** cumulatively.
- In line of the shock, our exchange rate with respect to the USD is under pressure although effective exchange rate does not depreciate much, as our trading partners' currencies are also depreciating relative to the USD.

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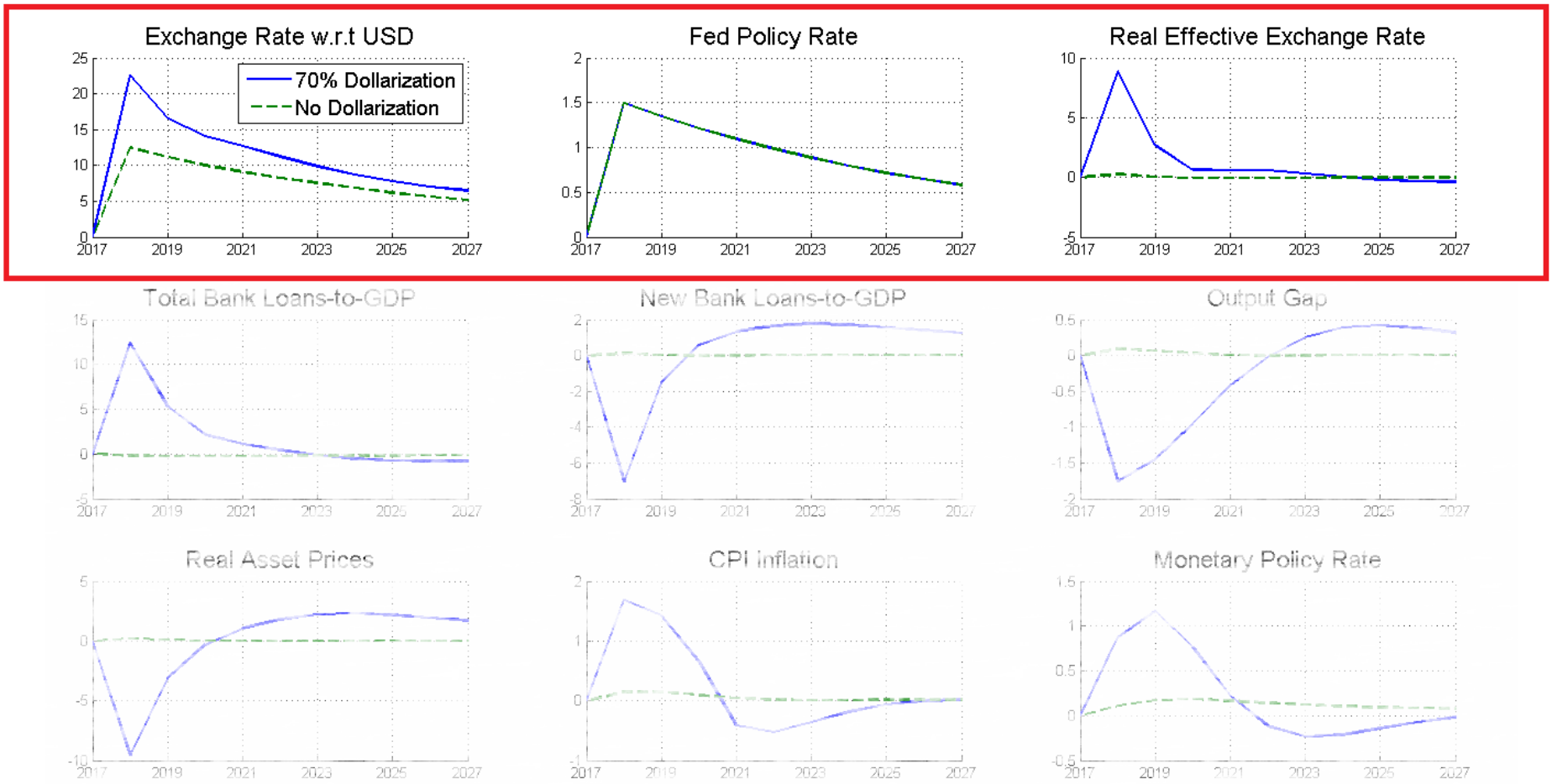
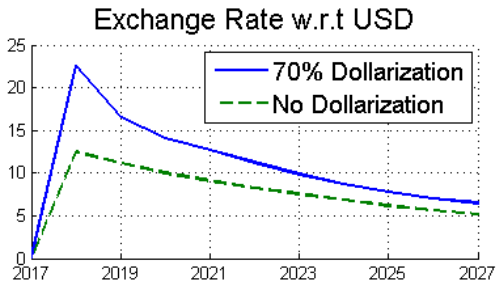
To demonstrate how financial dollarization propagates this type of external shock, **two cases** are analyzed:

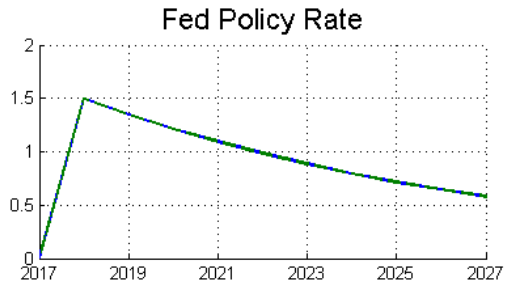
- One with **70% dollarization**. *This is close to actual level for Georgia.*
- The other with **no dollarization**. *This shows what would have happened had there been no dollarization.*

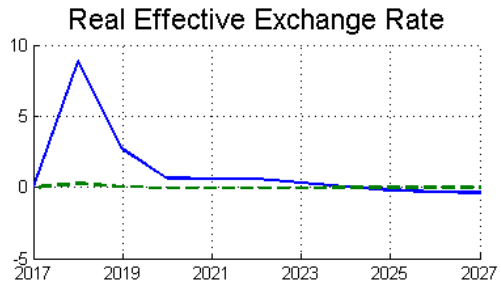
Results of the Scenario Simulation - I

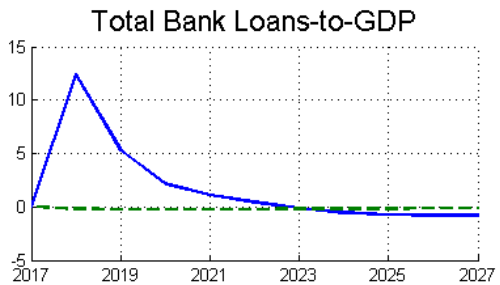


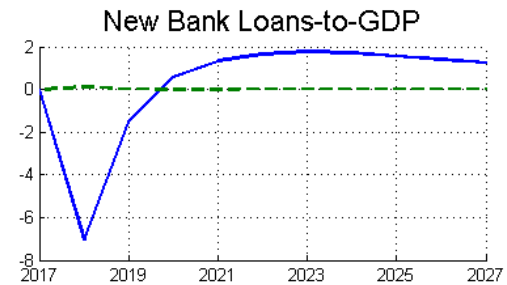
Results of the Scenario Simulation - II

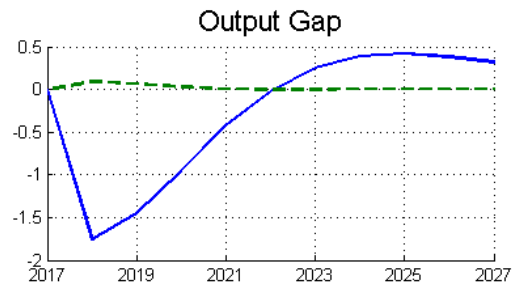


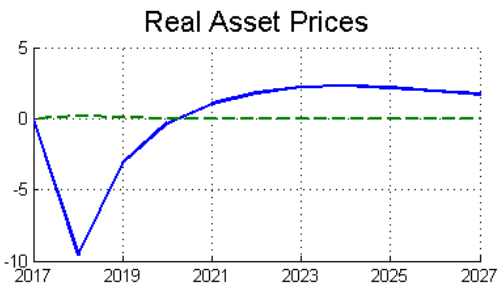


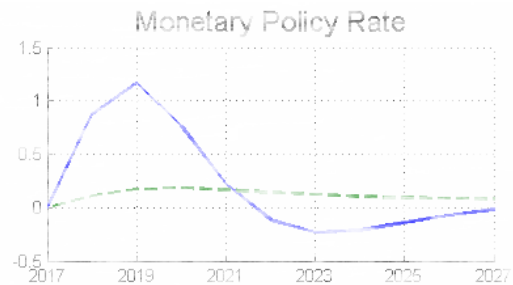




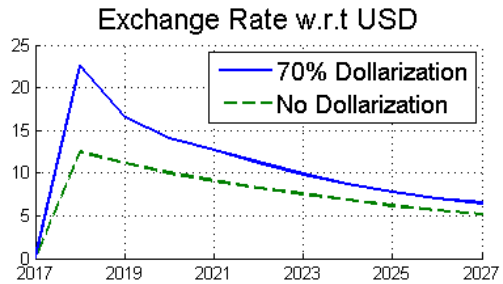


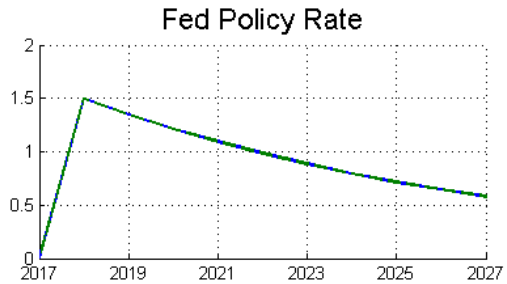


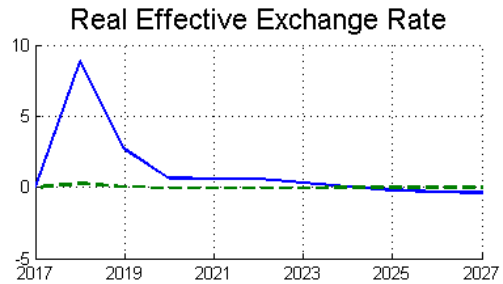


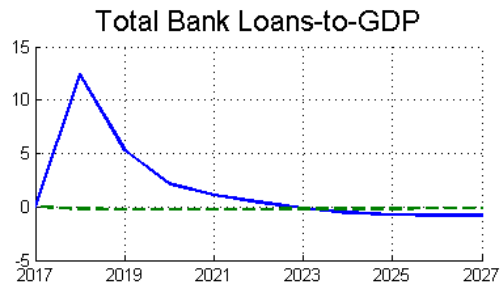


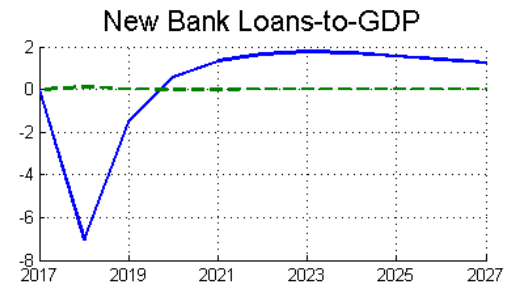
Results of the Scenario Simulation - III

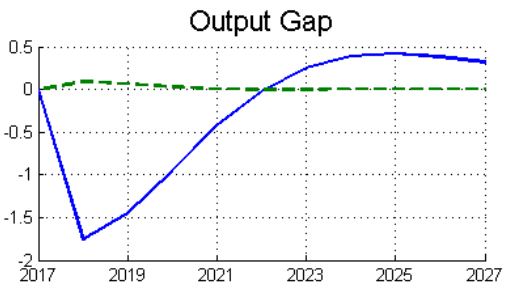


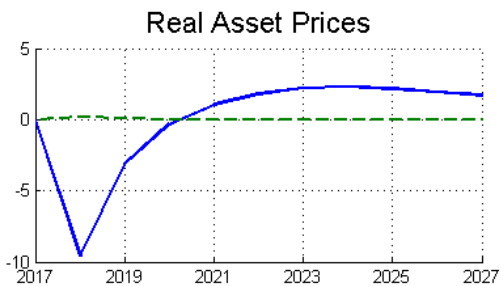


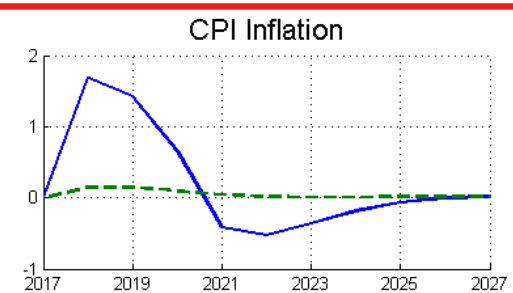


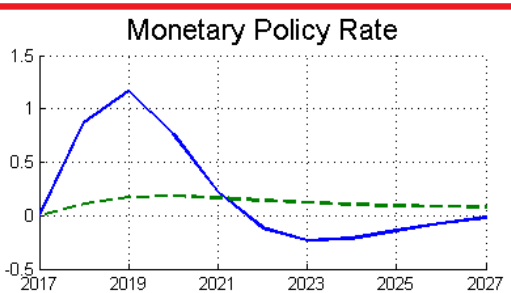












Overview

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6. Banking sector **profitability** $\Downarrow$ (Kutan et al., 2010)

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   - Central bank independence
   - Low and stable inflation expectations
   - Low volatility of domestic interest rates
2. **Two-way exchange rate flexibility** (Honohan and Shi, 2001, De Nicolo et al., 2005, Ize and Levy-Yeyati, 2005, Carrire-Swallow et al., 2016, Bahmani-Oskooee and Domac, 2002, Edwards, 2006, Calvo and Reinhart, 2000)
   - Decreasing exchange rate pass-through to inflation
   - Overcoming fear of floating
   - Avoiding skewness in exchange rate distribution

Fighting Causes Rather Than Symptoms (*continued*)

3. Internalizing negative externalities by **prudential regulation**, e.g. through higher reserve requirements for FX funds or higher risk weights for FX loans (Broda and Levy-Yeyati, 2003, Honohan and Shi, 2001, Ize and Levy-Yeyati, 2005, Turner, 2016)

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5. Pursuing political stability and supply-side reforms, that **reduce tail risks** (Carranza et al., 2003, De Nicolo et al., 2005, Ize and Levy-Yeyati, 2005)

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- There are several reasons why active de-dollarization policy is necessary. It would contain spillovers, promote financial stability, enhance monetary policy effectiveness and increase banking sector profitability.
- De-dollarization could be achieved through central bank independence, low and stable inflation expectations, overcoming fear of floating, two-way exchange rate flexibility, prudential regulation based on internilizing negative externalities in FX intermediation, capital market reforms and reducing tail risks through supply-side reforms.

Appendix

Main Equations of the Model

Output Gap

- Output gap

Wealth effect (optimism / pessimism about future)

$$\hat{y}_t = \alpha_1 \hat{y}_{t-1} + \alpha_2 \hat{y}_{t+1} + \alpha_3 \left(p_t^k - y_t\right) - \alpha_4 (\widehat{rr}_t^s + d_t) + \alpha_5 \hat{z}_t - \alpha_6 c_t - \alpha_7 \widehat{prem}_t + \varepsilon_t^{\hat{y}}$$

Effective real interest rate gap

Deleveraging effect

Traditional real exchange rate effect

Proportion of households and business under distress

Inflation

- Inflation

Inflation expectations

$$\pi_t = \beta_1 \pi_{t-1} + (1-\beta_1)\pi_t^e + \beta_2 \hat{y}_t + \beta_3 \hat{z}_t + \beta_4 \theta_1 (s_t - s_{t-3}) + \varepsilon_t^\pi$$

Producers' debt service burden (with 3 years of remaining maturity)

- Inflation expectations

Endogenous credibility stock

$$\pi_t^e = \chi_1 cred_t \, E_t \pi_{t+1} + (1 - \chi_1 cred_t)\pi_{t-1}$$

Forward-looking expectations

Backward-looking expectations

Exchange Rate

- Uncovered interest parity

$$s_t = s_t^e - \left(r_t^s - r_t^f - prem_t\right) + \sigma_3 d_t$$

GEL/USD exchange rate

Nominal exchange rate expectations

- Nominal exchange rate expectations

$$s_t^e = \sigma_1 s_{t+1} + (1-\sigma_1)[s_t + (s_t - s_{t-1}) - \sigma_2 \hat{z}_t]$$

Extrapolative expectations

- Nominal effective exchange rate

$$s_t^{ef} = s_t + s_t^{US/TP}$$

Nominal exchange rate between the US and our trading partners

Unemployment

- Actual unemployment rate

$$u_t = \bar{u}_t + \hat{u}_t$$

Trend unemployment rate

Unemployment gap

- Unemployment gap

$$\hat{u}_t = \varphi_1 \hat{u}_{t-1} - \varphi_2 \hat{y}_t$$

Monetary Policy

- Monetary policy rate

$$r_t^s = \gamma_1 r_{t-1}^s + (1-\gamma_1)[\bar{r}_t^s + \gamma_2(\pi_{t+1} - target_t) + \gamma_3 \hat{y}_t] + \varepsilon_t^r$$

Neutral level of policy rate

Reaction to inflation

Reaction to GDP gap

Deleveraging Process and Asset Prices

- Deleveraging process

$$d_t = \upsilon_1\left(NL_t - p_t^y - p_t^k - \bar{n}\right) + \upsilon_2(TL_t - y_t - p_t^y - \bar{b})$$

Deviation of new loans to asset prices (log ratio) from its steady-state

Deviation of total loans to GDP (log ratio) from its steady-state

- Proxy for asset prices (optimism/pessimism)

$$p_t^k = \sum_{j=0}^{\infty} \lambda_1^j \left[(1-\lambda_1) y_{t+1+j} - \lambda_2 \left\{(1-\theta_1)\widehat{rr}_{t+j}^s + d_{t+j} - \lambda_3 (NL_{t+j} - y_{t+j} - p_{t+j}^y - \bar{n})\right\}\right]$$

Model-consistent GDP forecast

Effects of interest rates and deleveraging on discounting

Demand for assets created by new loans (relative to GDP)

Bank Loans

- New bank loans to GDP ratio ($n_t \equiv NL_t - y_t - p_t^y$)

$$n_t = \zeta_1 n_{t-1} + (1-\zeta_1)\bar{n} + \zeta_2\left(p_t^k - y_t\right) - \zeta_3 d_t$$

Wealth effect (optimism / pessimism about future)

Deleveraging effect

- Total bank loans (closing balance after exchange rate re-valuation):

$$TL_t = TL_t^0 + NL_t = TL_{t-1} + \theta_1(s_t - s_{t-1}) + NL_t$$

Opening balance of total loans after exchange rate re-valuation

Dollarization ratio

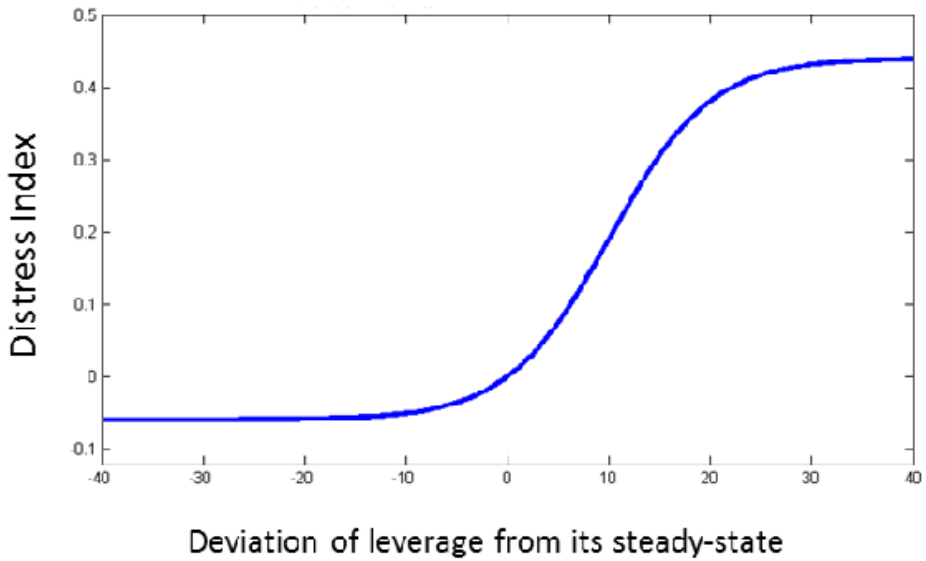
Re-valuation effect

Financial Distress Index

- Households' and businesses' **distress index:**

$$c_t = \frac{0.5}{1 + exp\left[-\frac{tl_t^0 - \bar{n} - 10}{5}\right]} - \bar{c}$$

Total bank loans (opening balance) to GDP ratio



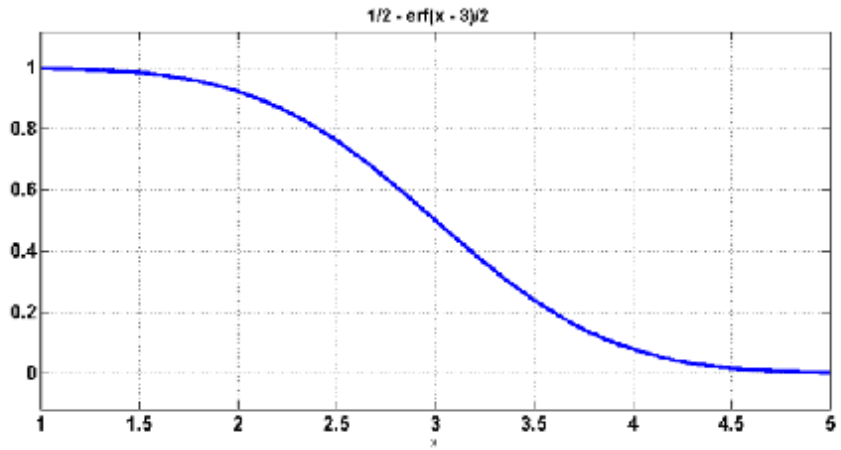
Credibility and Risk Premiums

- Credibility stock

$$cred_t = \rho_{cred} cred_{t-1} + (1 - \rho_{cred}) cred_t^{imp} + \varepsilon_t^{cred}$$

- Credibility impulse

$$cred_t^{imp} = \left\{ 0.5 + \frac{erf[-\{0.5\,\theta_1(s_t - s_{t-1}) + (1-\theta_1)\pi_t\} + 3]}{2} \right\}$$



Credibility and Risk Premiums

- Risk premium gap

$$\widehat{prem}_t = \rho_{\widehat{prem}} \widehat{prem}_{t-1} + \left[\overline{cred} - cred_t\right] prem^{bias} + \varepsilon_t^{\widehat{prem}}$$

Impact of credibility stock on risk premium gap

Causes of Financial Dollarization

There are several reasons why economic agents may wish to dollarize their assets or liabilities:

1. They may have **income stream in foreign currency** (Calvo et al., 2003), i.e. real dollarization. **But** *for Georgia very few exporters work on US markets (mostly EU, Turkey and Russia).*
2. They may want to **hedge domestic income volatility**. When domestic currency depreciates in recessions and appreciates in booms, hedging can be done by denominating assets in foreign currency (Hausmann et al., 1999, Lane and Shambaugh, 2009). **But** *are not these hedging motives already reflected in domestic currency risk premia?*
3. It may be the result of **un(der)developed capital markets**, including domestic currency bond or FX risk hedging markets (Leiderman et al., 2006, Naceur et al., 2015, Levy-Yeyati, 2005).

Causes of Financial Dollarization (*continued*)

3. Financial dollarization may also be the result of inappropriate prudential regulation - that is the one that does not make sure that **externalities (exchange rate risks)** in financial markets (that are well visible in foreign currency intermediation) are completely internalized (Broda and Levy-Yeyati, 2003, Honohan and Shi, 2001, Turner, 2016).
4. Optimal portfolio allocation may be tilted towards dollarization because of price instability. When domestic price level (that defines real return on domestic currency) is more volatile than real exchange rate (that defines real return on foreign currency), then foreign currency becomes superior (Ize and Levy-Yeyati, 2005). What's important here is expected volatility (**monetary policy credibility**), not realized one.