Sovereign Debt and Default

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Introduction

- Sovereign debt differs from corporate debt because of the lack of a legal mechanism to enforcement repayment
- In this lecture, we consider the Panizza, Sturzenegger, Zettelmeyer (2009) survey on the existing theories of sovereign debt/default and the empirical literature

Theories of Sovereign Debt and Default

- Can a sovereign debt market exist if repayment cannot be enforced?
  - Eaton and Gersovitz (1981) - yes, with the threat of permanent exclusion from credit
  - However, Bulow and Rogoff (1989) show that even with the threat of exclusion from credit, if there exist other methods to smooth consumption such as savings or insurance, then borrowing is impossible.

Theories of Sovereign Debt and Default

- Sachs and Cohen (1982), Bulow and Rogoff (1989), Fernandez and Rosenthal (1990) focus on direct punishment for reasons to repay (interference with a country's current transactions such as seizure of trade and payments)
- Cole and Kehoe (1998) - if default can damage government reputation, for instance, with the government's domestic partners, then debt can be sustained
- Sandleris (2005), Catao and Kapur (2006) focus on information revealed by default. If default signals, for instance, that government financial position is weaker than previously thought, then future output may be reduced (perhaps due to increase in expected taxation)

Theories of Sovereign Debt and Default

- Mendoza and Yue (2008) assume defaults limit the ability of private agents to obtain private capital - model is consistent with rapid output and TFP collapses
- Broner et al. (2006) highlight the role of secondary markets in limiting sovereign risk.
  - if foreigners can sell debt to domestic residents in secondary markets, then debt will always be repaid back, even in the absence of punishments.
  - this result is ex-post inefficient for the borrower (because if domestic agents could coordinate and not buy back debt, the government could default and be better off)
  - but ex-ante efficient (because it allows the country to borrow, by solving the sovereign risk problem)

Theories of Sovereign Debt and Default

- A strand of the literature takes the existence of sovereign debt as given, and explore the effect of investor behavior or expectations
  - run on debt (Sachs 1984, Alesina 1990, Cole and Kehoe 1996, 2000)
  - run on currency (Aghion 2001, 2004, Krugman 1999, Burnside et al. 2004)
  - sudden stops (Mendoza 2012, Calvo 1998, Hur and Kondo 2013)

Theories of Sovereign Debt and Default

- Many recent papers have gone back to Eaton and Gersovitz's (1981) implicit assumption that countries do not have a savings opportunity after defaulting
  - Aguiar and Gopinath (2006), Arellano (2008), Benjamin and Wright (2008), Yue (2006) to name a few...

Empirical Literature

- When do countries borrow?
- When do countries default?
- What are the default costs?

When do Countries Borrow?

- Levy-Yeyati (2009) finds that private lending to sovereigns is procylical, while official lending is coutercyclical, with a net procyclical effect.
- This is in contrast to standard theory where sovereign borrowing is countercyclical (to smooth consumption)

Why is Borrowing Procylical?

- market failure: lack of access to international lending credit during recessions (Gavin and Perotti 1997), incomplete markets (Caballero and Krishnamurthy 2004), limited enforcement (Kehoe and Perri 2002), moral hazard (Atkeson 1991), etc
- political failure: conflict of interest groups (Tornell and Lane 1999), political pressure for wasteful spending (Talvi and Vegh 2005), corrupt politicians (Alesina et al. 2008)
- nature of output shocks: Aguiar and Gopinath (2006) and Rochet (2006) show that a model with persistent shocks can generate procyclical borrowing even in the absence of political or market imperfections

When do Countries Default?

- In standard sovereign debt models, countries borrow during bad times and repay during good times.
  - countries might be tempted to default, but anticipating this, creditors will not lend beyond a threshold level of debt at which defaulting is preferable to repaying.
  - as a result, in the simplest models, defaults never happen.
- Defaults can arise in equilibrium in sovereign debt models with output uncertainty and incomplete contracts.
  - countries default in bad states

Evidence

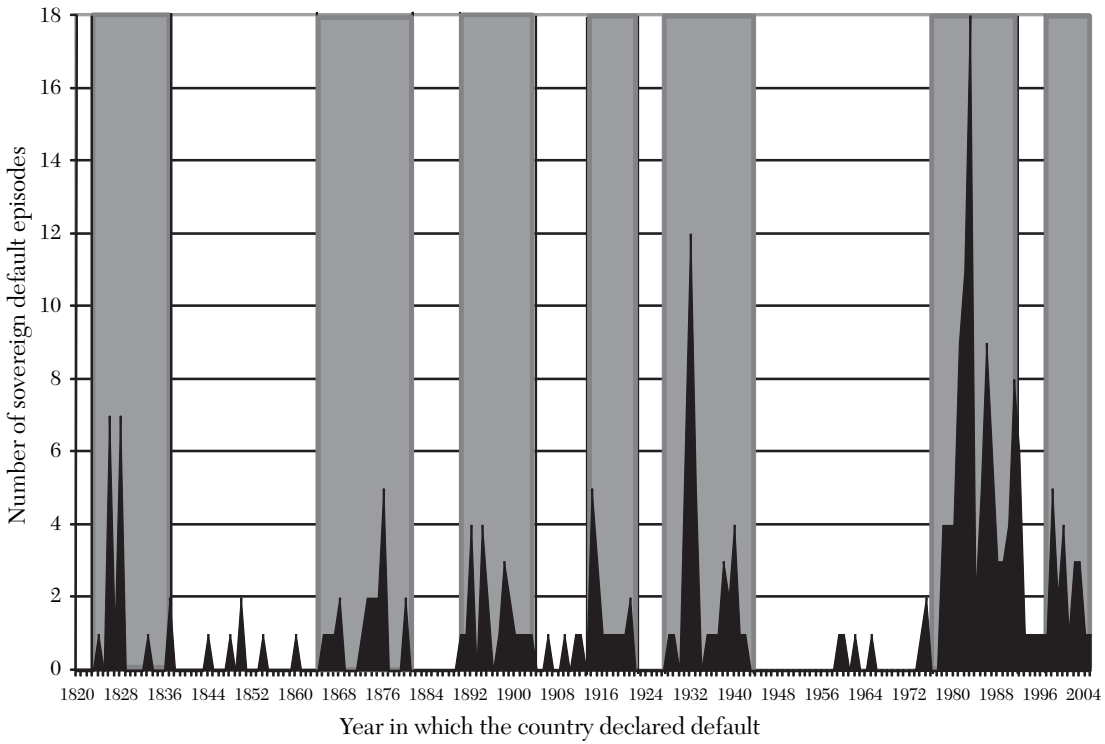
- The evidence is broadly consistent with theory
  - Levy-Yeyati (2006) finds that defaults tend to follow output contractions (1982-2003)
  - Tomz and Wright (2007) find a negative correlation between output and defaults (1820-2004)

Puzzles Remain..

- Still, the theory is inconsistent with several features of default
  - theories underpredict default - Aguiar and Gopinath (2006) generate higher default rates through persistent shocks; Hatchondo and Martinez (2008) with long-duration bonds. Still default probabilities are lower than observed.
  - empirical relationship between bad output and defaults is not as tight - Tomz and Wright show that only 62 percent of defaults occur when output is below trend. This could be due to other shocks such as political shocks, credit shocks, interest rate shocks

Defaults Happen in Clusters

- Defaults tend to happen in clusters, suggesting that defaults are influenced by the behavior of creditors and international capital markets (interest rate shocks, sudden stops), in addition to debtor country shocks (output or political shocks)



Costs of Default

- Capital market exclusion
  - Sandleris et al. (2004) find that countries were excluded for an average of four years after defaults ended (1980s) and 0-2 years since then
  - Richmond and Dias (2008) using a stronger definition of exclusion (positive net transfers) find exclusions of 5.5 years (1980s), 4.1 years (1990s) and 2.5 since
  - bottom line: calibrated models with exclusion alone cannot generate debt levels and default frequencies, many assume additional exogenous output costs (Alfaro and Kanzcuk 2005, Arellano 2008, Aguiar and Gopinath 2006, Benjamin and Wright 2008)

Costs of Default

- Higher borrowing costs
  - Borendztein and Panizza (2010) find that spreads are 400 basis points higher in the year after default, 250 higher in second year, and loses statistical significance thereafter (1997-2004)
  - Flandreau and Zumer (2004) find that spreads are 90 basis points higher in the year after, but the effect dies out rapidly (1880-1914)
  - bottom line: calibrated models with borrowing costs alone cannot generate debt levels and default frequencies, unless for instance output costs are assumed (Alfaro and Kanzcuk 2005)

Costs of Default

- Domestic costs
  - models predict defaults happen in bad states. Do defaults cause output drops, or make already bad states worse? evidence is mixed
    - Sturzenegger (2004): defaults are *associated with* a reduction in growth of 0.6 percent (2.2 percent if default comes with banking crisis)
    - De Paoli et al. (2006): output losses are *correlated with* defaults and increase with duration of default
    - Levy-Yeyati and Panizza (2006): defaults tend to happen in trough, and often mark beginning of *recovery*
  - suffer from endogeneity biases

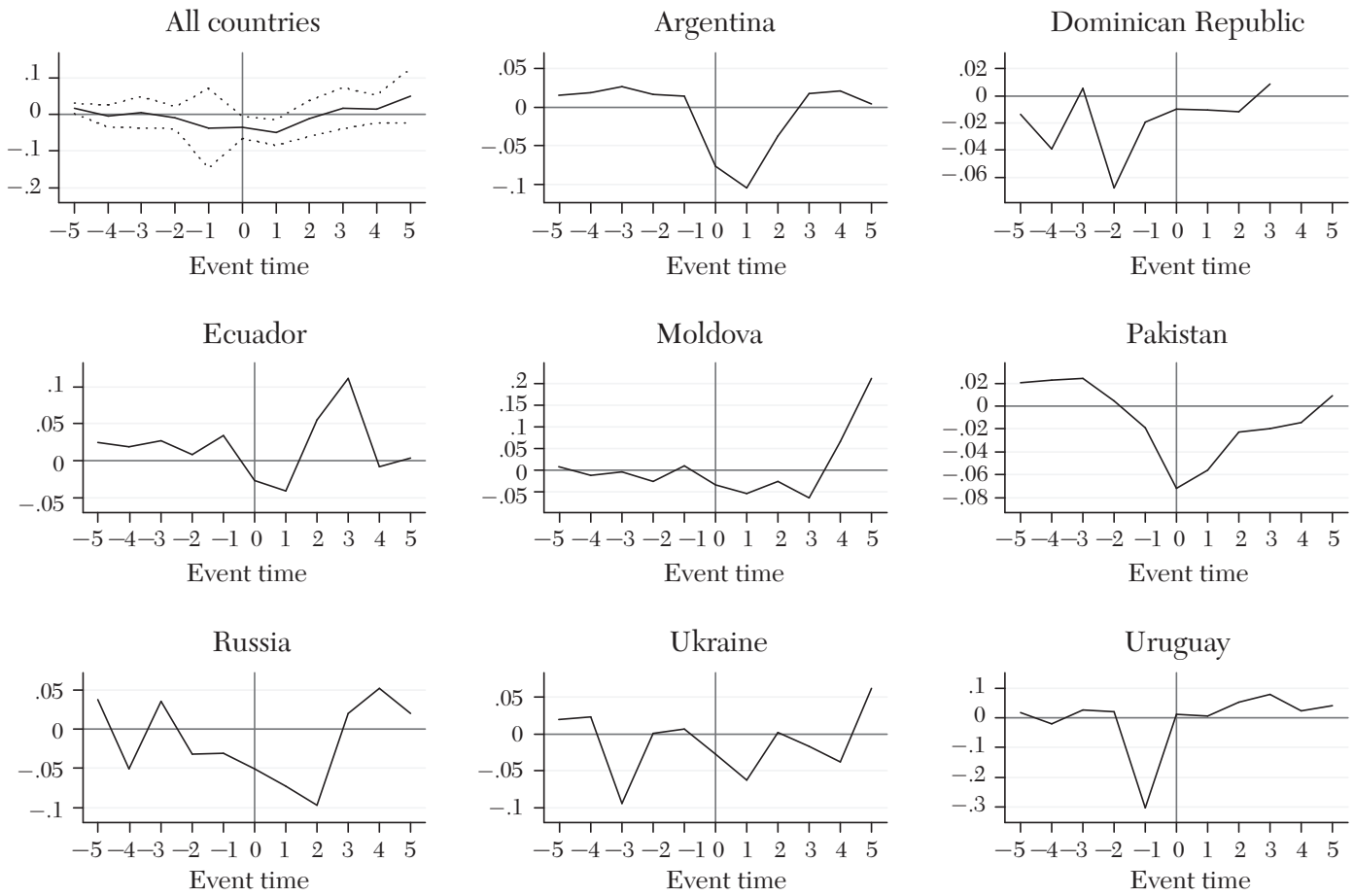
Recent Default Episodes

Country	Year	Total amount restructured[1] (bill US$)	Haircut (%)	Type of restructuring
Russia	1998–2000	38.7	52.6	Postdefault
Ukraine	1998–2000	7.8	28.9	Predefault
Pakistan	1999	0.61	31	Predefault
Ecuador	1999–2000	6.5	28.6	Postdefault
Argentina	2001–2005	145	75	Pre- and postdefault
Uruguay	2003	5.4	13.3	Predefault
Moldova	2002	0.08	37	Pre- and postdefault
Dominican Republic	2005	1.5	2	Predefault

[1] Domestic and external debt with private creditors.

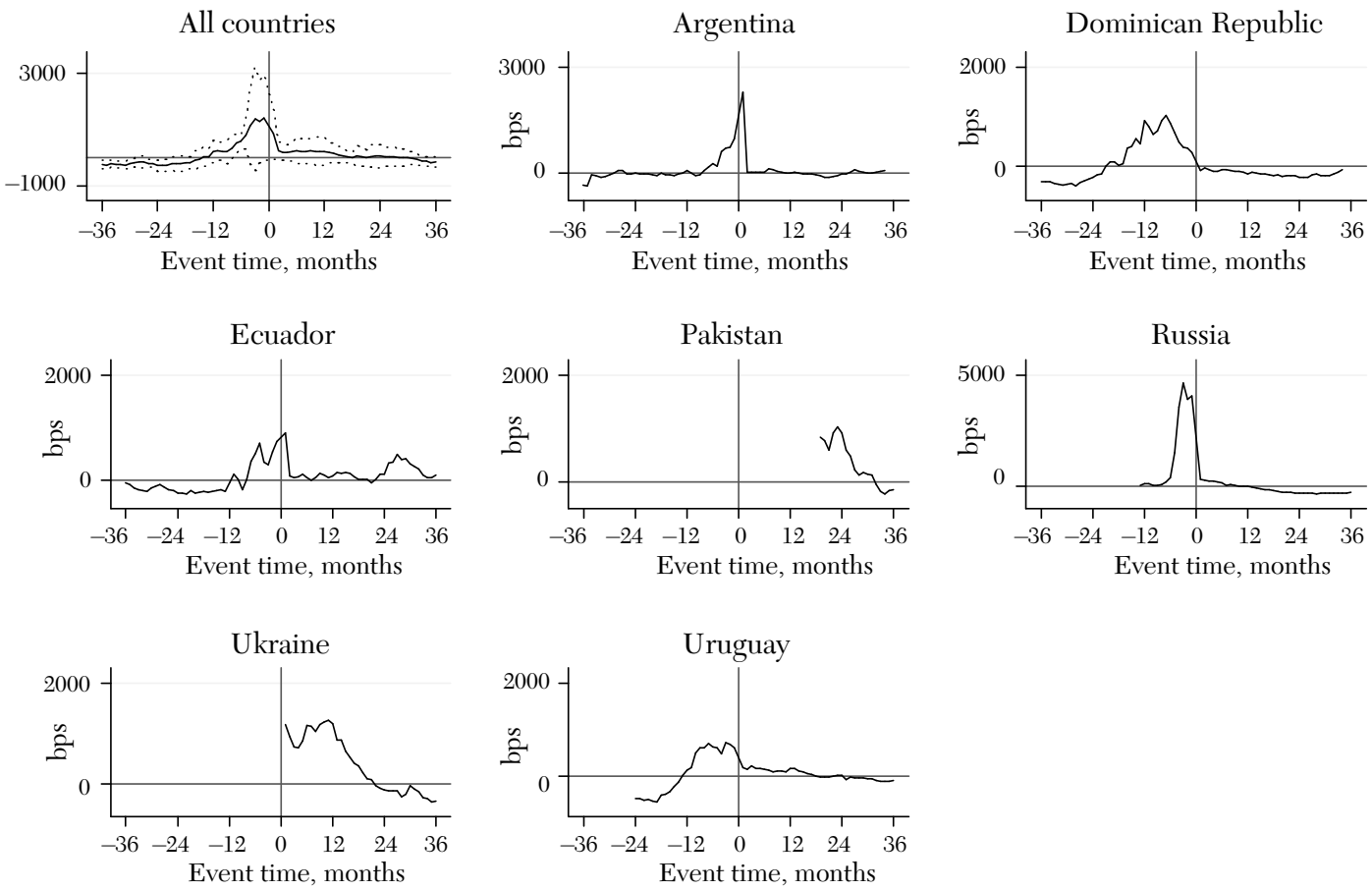
Source: Sturzenegger and Zettelmeyer (2007, 2008).

Some Evidence of Temporary Exclusion



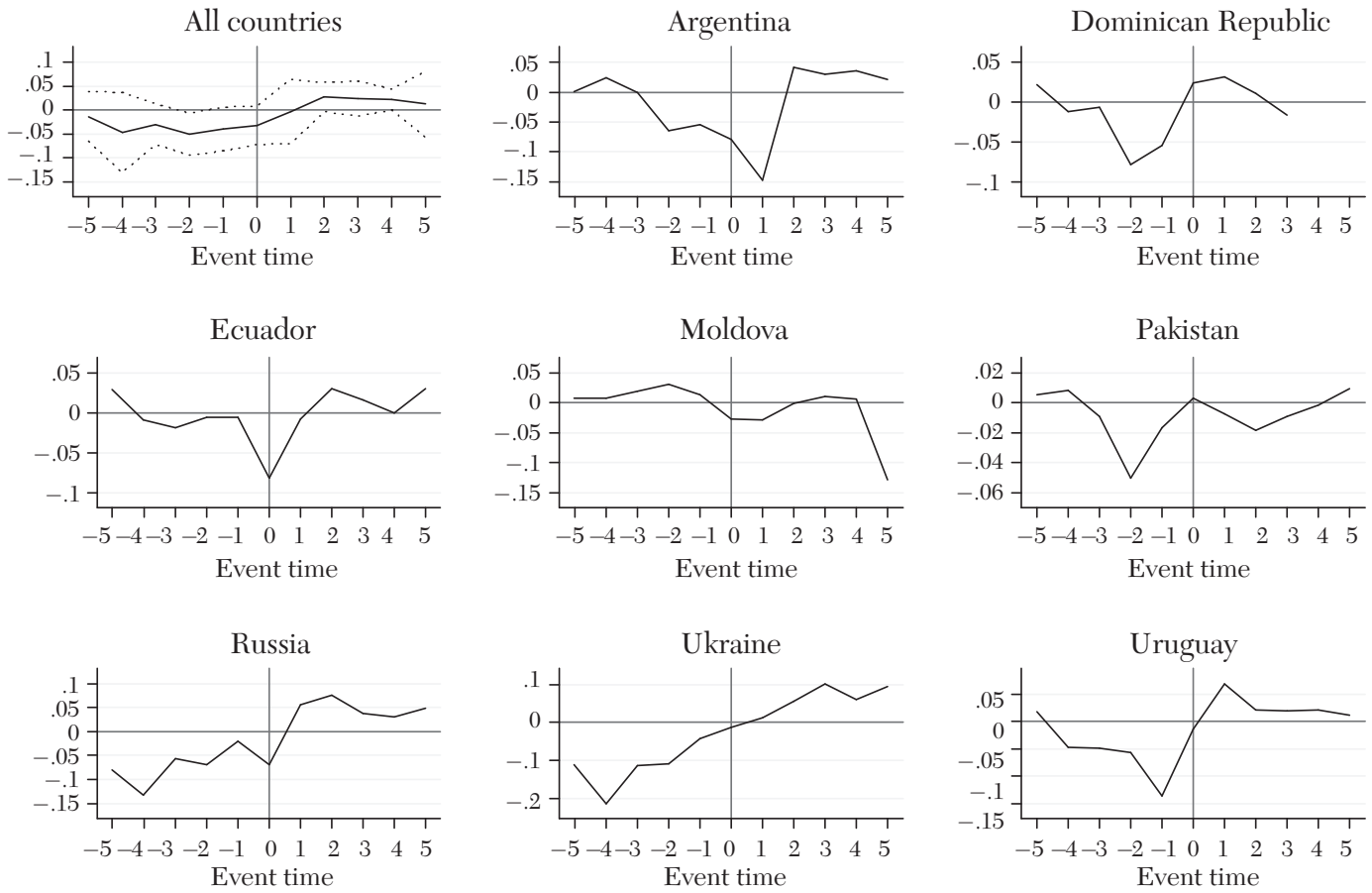
private capital flows (residuals of regression with country and year fixed effects)

Limited Evidence of High Spreads Post-Default



spreads (residuals of regression with country and year fixed effects)

Mixed Evidence of Output Costs



GDP growth (residuals of regression with country and year fixed effects)

Costs of Default

- Sovereign defaults are typically associated with output declines, financial sector declines, and a temporary period of capital market exclusion
- Evidence for persistent effects of default is limited