ADDICTED TO DOLLARS

Carmen M. Reinhart
University of Maryland,
NBER, and CGD

December 15, 2006

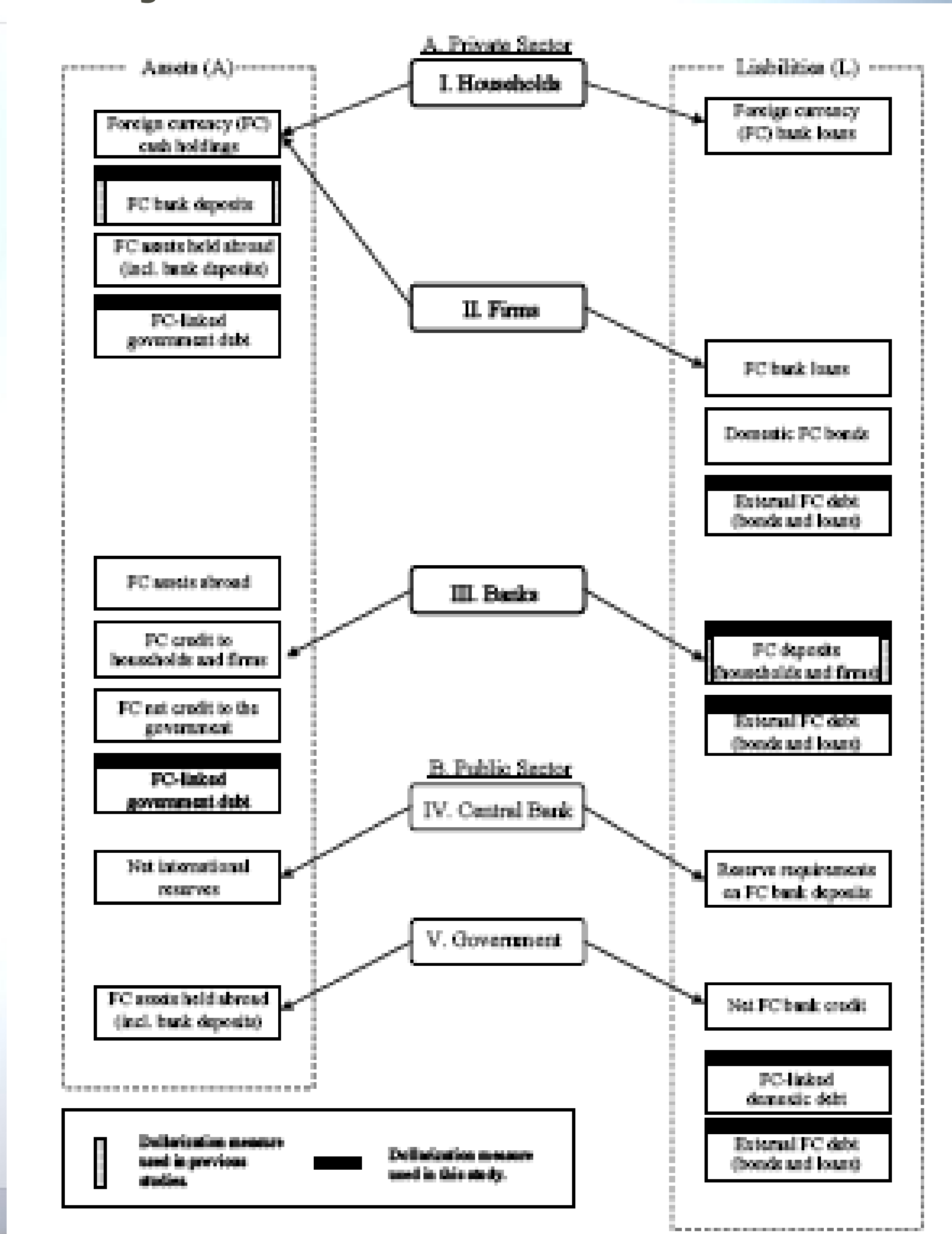
An early look at the bottom line

- Dollarization is increasingly a defining characteristic of many emerging market economies.
- This paper proposes a measure of dollarization.
- Using that measure, a high degree of dollarization
  - does not seem to be an obstacle to monetary control or to disinflation; and,
  - does appear to increase exchange rate pass-through, reinforcing the claim that "fear of floating" is a greater problem for highly dollarized economies.
- We try to explain why some countries have been able to avoid certain forms of the addiction, and examine the evidence on successful de-dollarization, the subject of this conference.

As for generalities,

- Dollarization is a defining characteristic of many emerging market economies.
  - Governments often borrow in dollars,
  - Individuals can hold dollar- denominated bank accounts,
  - Firms and households can borrow in dollars both domestically and from abroad.
- In the literature up to the late 1990s, a dollarized economy was one in which domestic residents held foreign currency or financial assets denominated in foreign currency.
- More recently, the concept of *liability dollarization* has stressed the role of foreign currency borrowing by the private and public sectors.

Figure 1. Foreign Currency Balance Sheet of a Partially Dollarized Economy



A key objective of this paper is to

- Shed light on the interconnection between the two competing concepts of partial dollarization.
- To this effect, we define a partially dollarized economy as one where
  - households and firms hold a fraction of their portfolio (inclusive of money balances) in foreign currency assets and/or where
  - The private and public sector have debts denominated in foreign currency
- Thus, we combine *both* concepts.

Dollarization depends on

- the degree of domestic dollarization; or
  - Foreign currency deposits to broad money; and
- the amount of foreign borrowing by the private sector; or
  - Domestic government debt in foreign currency to total government debt.

To make an operational definition,

- We construct a composite index of dollarization for every country as the (normalized) sum of
  - bank deposits in foreign currency as a share of broad money,
  - total external debt as a share of GNP, and
  - Domestic government debt denominated in (or linked to) a foreign currency as a share of total domestic government debt.
- Each of the three components is previously transformed into an index that can take a value from 0 to 10.
  - The composite index allows us to measure the degree of partial dollarization of every country in the sample on a scale that goes from 0 to 30.
- We classify the countries into four categories according to the variety—or “type”—of dollarization they exhibit.

Varieties of dollarization

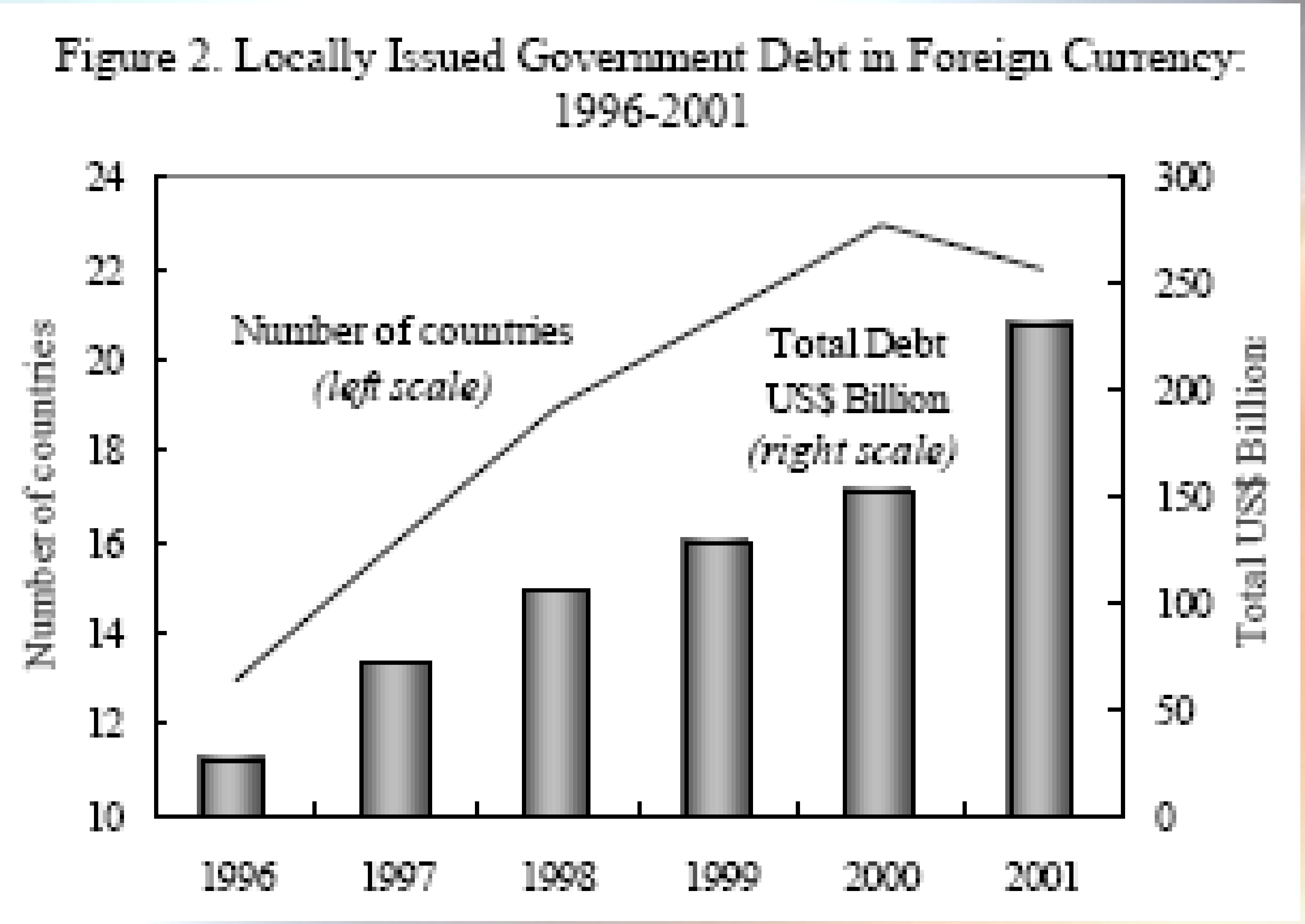
Table 1. Varieties of Dollarization

	Private sector debt accounts for ten percent or more of total external debt.	Private sector debt accounts for less than ten percent of total external debt.
At least ten percent of broad money or of domestic public debt are denominated in or linked to a foreign currency.	Type I	Type II
Less than ten percent of broad money and of domestic public debt are denominated in or linked to a foreign currency.	Type III	Type IV

The advantages of this two-prong approach:

- It produces a measure of dollarization that encompasses both holdings of foreign currency assets by the private sector and the external foreign currency liabilities of the economy.
- The inclusion of domestic government debt in foreign currency in the composite index takes explicitly into account a form of domestic dollarization that has become increasingly important in many countries and which has thus far been ignored by studies on dollarization.
- The approach relies on quantitative indicators easily applicable to all countries to measure the degree and type of dollarization, hence reducing the scope for introducing bias in empirical analyses of the data caused by arbitrary manipulations of the sample.

Looking at debt is important



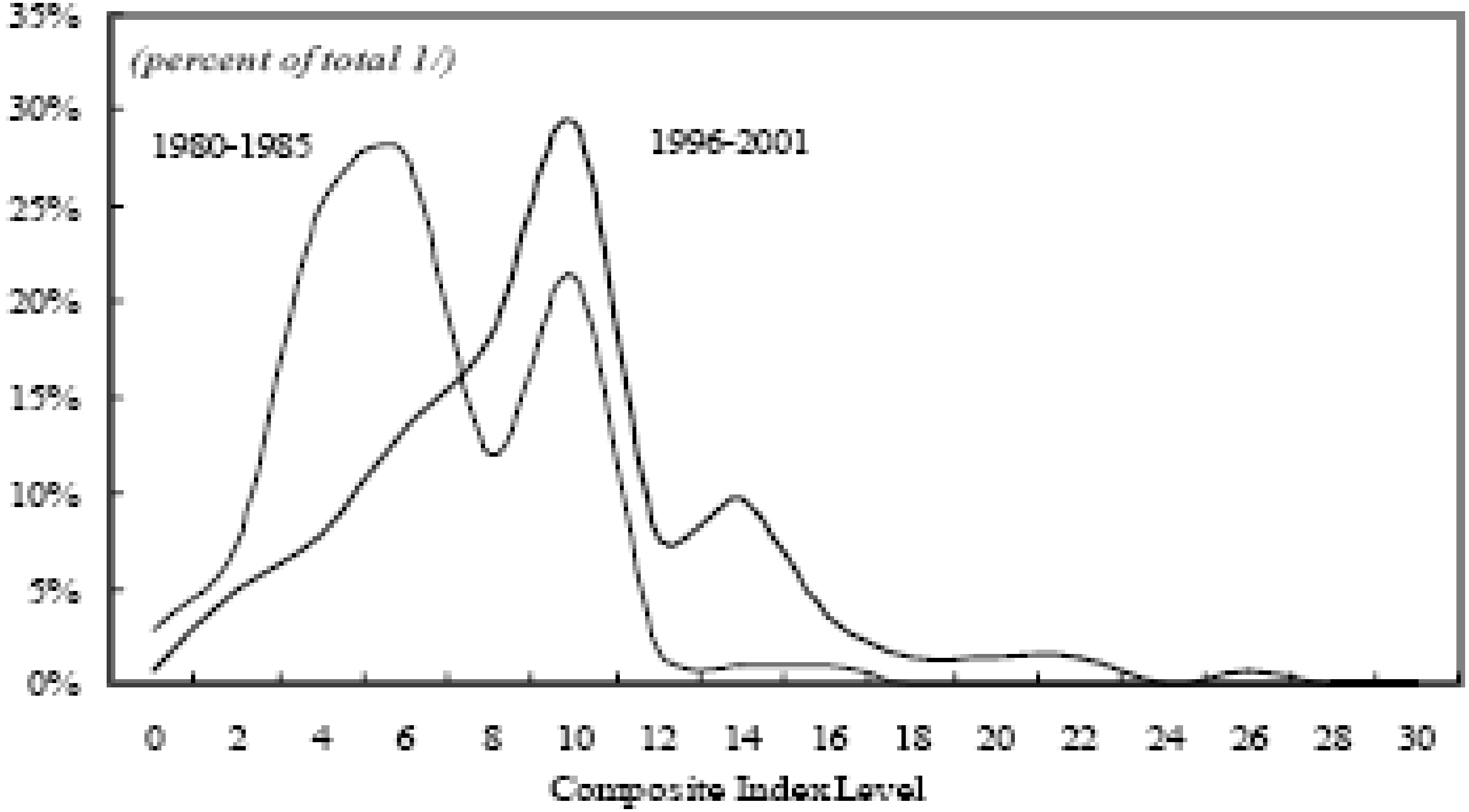
Of course, this measure is crude.

- Owing to lack of data, the composite index understates the "true" degree of dollarization in every economy.
  - On the asset side, it does not account either for the cash holdings of foreign currency or for the deposits households and firms maintain in banks abroad
  - On the liability side, the composite index does not include local borrowing in foreign currency by the private sector.
- The ratio of external debt to GNP and the share of private sector debt in total external debt are admittedly coarse measures of external liability
- The composite index combines variables that are generally not determined or explained by the same set of economic and/or institutional factors.

What do we find?

The degree and incidence of dollarization has increased in the developing world between the early 1980s and the late 1990s

Figure 3. Dollarization in the Developing World: The early 1980s and the late 1990s



Compare 1988-93 to …

1988-1993

	Number of cases and shares in parentheses		
	Private sector debt accounts for ten percent or more of total external debt.	Private sector debt accounts for less than ten percent of total external debt.	Total
At least ten percent of broad money or of domestic public debt are denominated in or linked to a foreign currency.	8 (5.9%)	35 (25.5%)	43 (31.4%)
Less than ten percent of broad money and of domestic public debt are denominated in or linked to a foreign currency.	15 (10.9%)	79 (57.7%)	94 (68.6%)
Total	23 (16.8%)	114 (83.2%)	137

… 1996-2001

1996-2001

	Number of cases and shares in parentheses		
	Private sector debt accounts for ten percent or more of total external debt.	Private sector debt accounts for less than ten percent of total external debt.	Total
At least ten percent of broad money or of domestic public debt are denominated in or linked to a foreign currency.	29 (20.3%)	43 (30.0%)	72 (50.3%)
Less than ten percent of broad money and of domestic public debt are denominated in or linked to a foreign currency.	18 (12.6%)	53 (37.1%)	71 (49.7%)
Total	47 (32.9%)	96 (67.1%)	143

A *large regional variation* has characterized the spread, degree, and varieties of dollarization

1996-2001

	Number of countries: Total	Types I-III	Type IV	Composite Dollarization Index	Foreign currency deposits to broad money	Total External Debt to GDP	Share of Private debt in total external debt
				(scale: 0-30)	*(percent)*	*(percent)*	*(percent)*
Africa	48	15	33	9	7	126	3
Emerging Asia	26	16	10	7	11	91	13
Middle East	14	12	2	8	21	60	19
Transition Economies	26	26	0	9	29	50	19
Western Hemisphere	29	21	8	10	23	62	11
of which:							
Caribbean	12	5	7	6	11	101	1
Central America	6	5	1	10	24	55	4
South America	11	11	0	14	35	47	27
Total	143	90	53				

Degrees of dollarization, 1996-2001

	Composite Index Level	Number of countries in category	Countries 2/
Very High		16	
	25	(1)	Ecuador
	22	(1)	Bolivia
	21	(1)	Uruguay
	20	(1)	Argentina
	19	(1)	Bulgaria
	17	(2)	Lao, Nicaragua
	16	(2)	Angola, Peru
	15	(2)	Cambodia, Paraguay
	14	(5)	Guinea-Bissau, Lebanon, Mozambique, São Tomé & Príncipe, Zambia

Degrees of dollarization, 1996-2001

High		34	
	13	(6)	Bosnia & Herzegovina, Ghana, Honduras, Jordan, Tajikistan, Turkey
	12	(8)	Congo DR, Croatia, Guinea, Indonesia, Malawi, Sierra Leone, Tanzania, Yemen
	11	(4)	Kyrgyz Republic, Mongolia, Russia, Vietnam
	10	(5)	Bahrain, Côte d'Ivoire, Jamaica, Moldova, Philippines
	9	(11)	Armenia, Belarus, Costa Rica, El Salvador, Estonia, Georgia, Hungary, Pakistan, Thailand, Turkmenistan, Uganda

Some implications

Does partial dollarization make monetary policy more complex and less effective? In theory,

- *Currency substitution.* Strong direct associations between the degree of currency substitution and
  - the volatility of a floating exchange rate,
  - the instability of domestic money velocity, and
  - the inflation rate needed to close a fiscal gap with revenues from seigniorage.
- *Fear of floating.* The presence of liability dollarization will
  - tend to make countries less tolerant to large exchange rate changes, out of concern of the adverse effects those changes may have on sectoral balance sheets and, ultimately, on aggregate output.

As for inflation and output …

- The average inflation rate is consistently higher and more variable in countries with a high degree of dollarization than in countries where the degree of dollarization is low or moderate.
  – Excluding Brazil, average inflation is the lowest in countries where dollarization is predominantly of the external variety (Type III economies).
- Clear patterns for output volatility and output growth are more difficult to detect.
  – output growth is highly volatile in economies with external liability dollarization (Type III economies).

	By degree of dollarization		By type of dollarization		
	High-to-very high	Low-to-moderate	Type I	Type II	Type III
Inflation					
average	134.3	33.7	147.1	35.5	42.9
excluding Brazil		16.4			8.8
standard deviation	366.1	40.6	405.0	54.5	58.8
excluding Brazil		14.1			7.0
GDP growth					
average	2.7	3.7	3.1	3.1	3.9
standard deviation	4.2	4.7	4.7	5.3	5.3
Number of countries	15	30	13	12	17

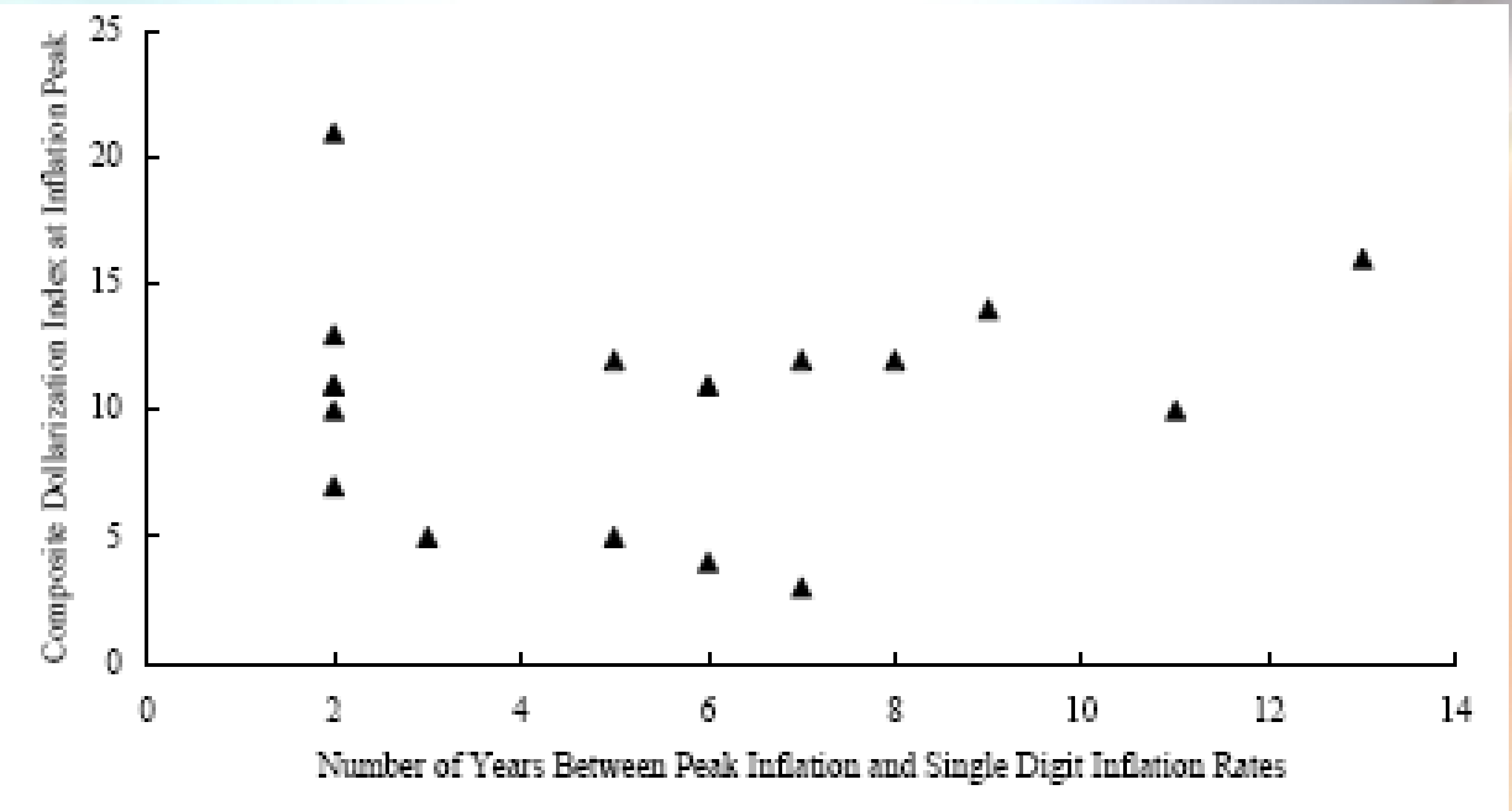
The revenue from seigniorage …

- does not differ much across the various categories of dollarized economies,
  - especially in the late 1990s.

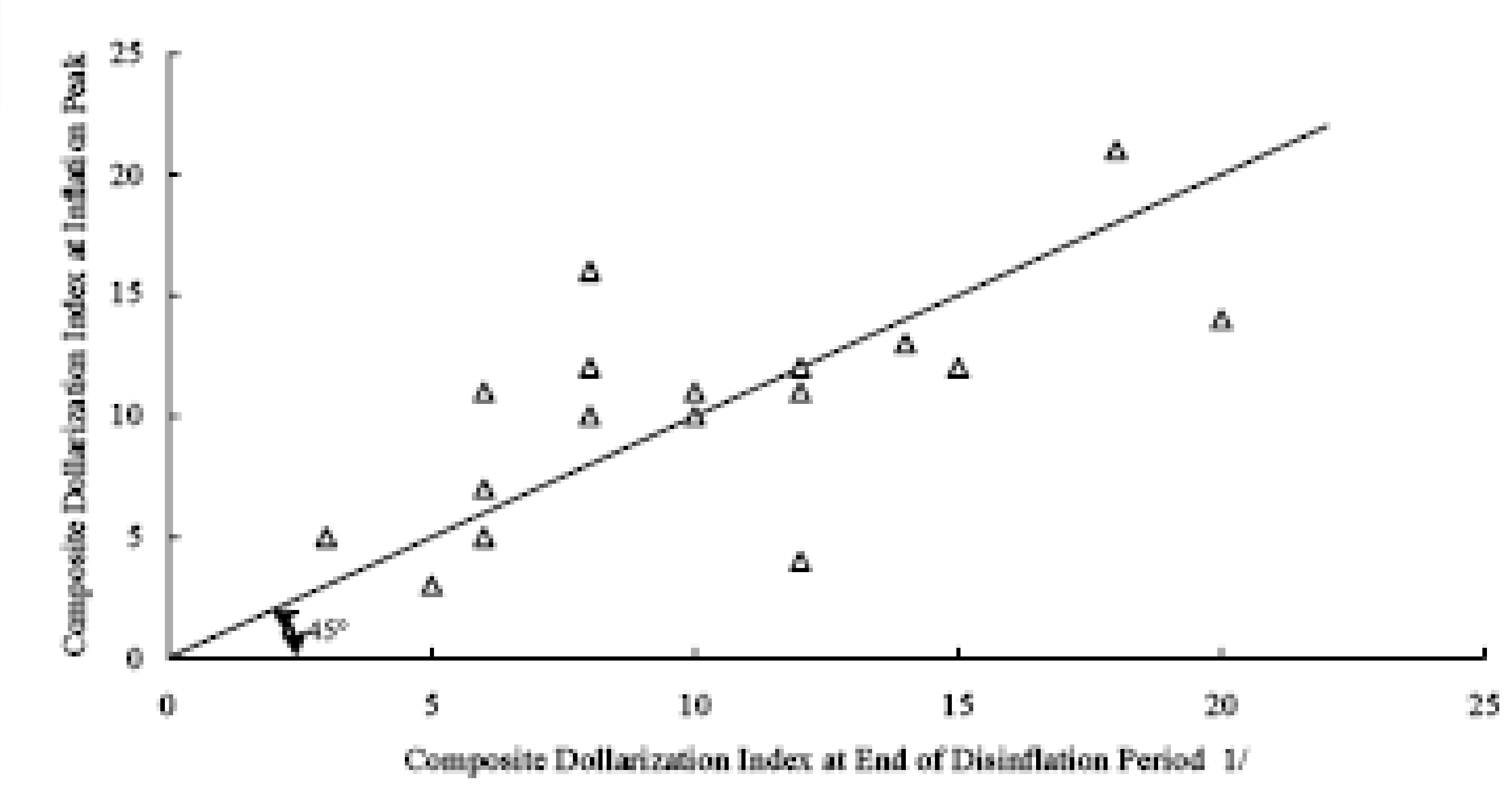
Table 7. Dollarization and Revenues from Seigniorage 1/
(in percent of GDP)

	By degree of dollarization		By type of dollarization		
	high-to-very high	low-to-moderate	Type I	Type II	Type III
Long sample 2/					
Seigniorage (average)	2.60	1.40	1.98	2.98	1.06
standard deviation	2.37	2.08	1.96	3.15	1.86
Short sample 3/					
Seigniorage (average)	2.13	1.41	1.40	2.09	1.73
standard deviation	1.68	1.38	1.25	1.59	1.68

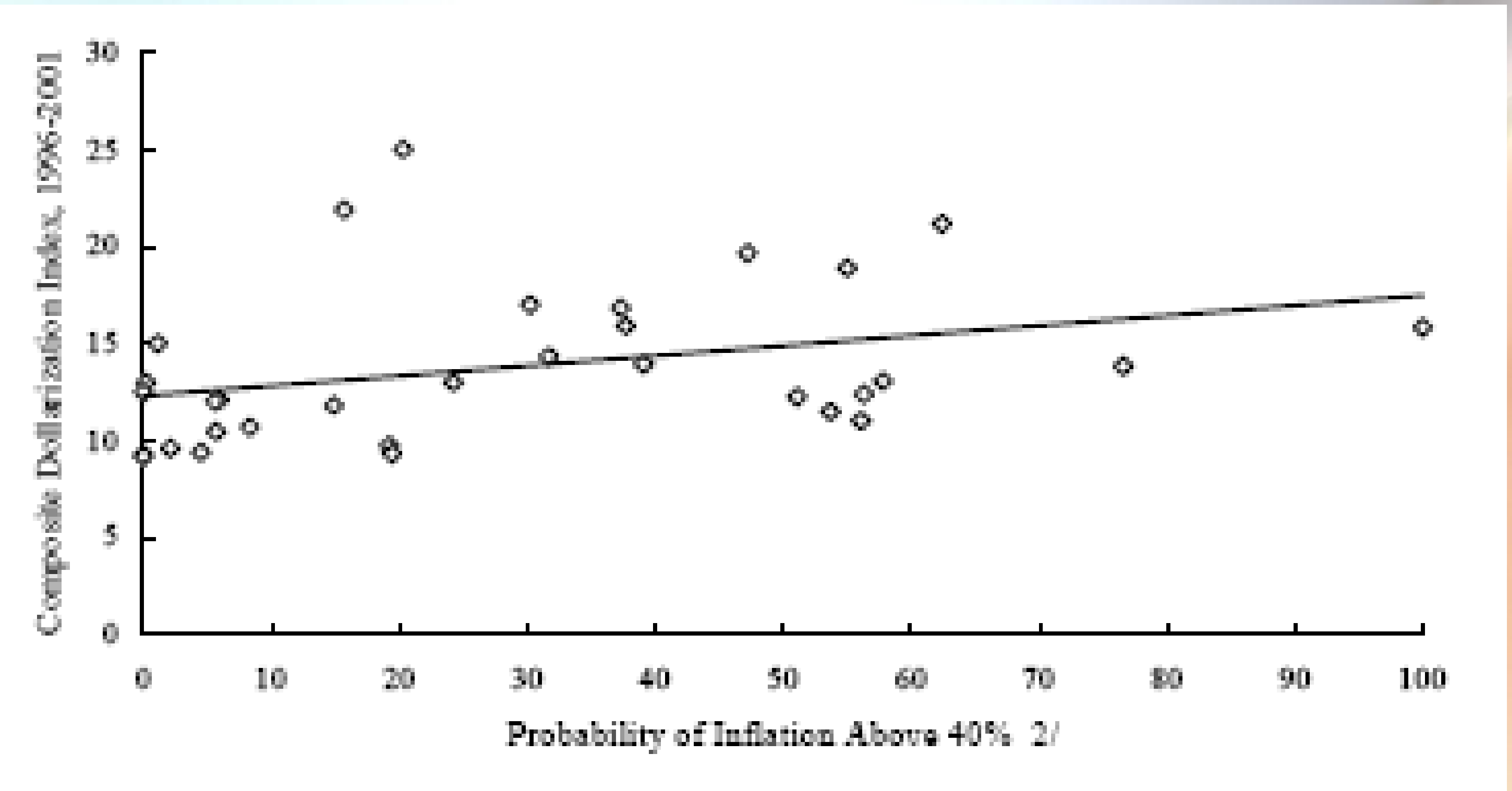
Dollarization has had no clear effects on the duration of disinflations



Disinflation has had no clear effects on the degree of dollarization.



Current levels of dollarization are related to the country's history of high inflation.



Dollarization tends

- to increase the instability of broad money velocity (and, hence, of broad money demand),
- but does not seem to increase the instability of velocity measures of narrow monetary aggregates
  - —i.e., of the aggregates often used in the formulation of monetary policy in developing countries

	By degree of dollarization		By type of dollarization		
	High-to-very high	Low-to-moderate	Type I	Type II	Type III
Panel A. Long Sample 2/					
Annual growth in velocity					
base money	2.4	2.3	2.3	3.1	3.1
broad money 3/	-1.0	-0.4	-1.0	0.2	-0.3
Standard deviation					
base money	19.4	20.2	23.9	21.5	19.9
broad money 3/	15.3	13.2	16.8	15.3	10.3
Panel B. Short Sample 4/					
Annual growth in velocity					
base money	-1.6	0.7	-0.8	-0.8	0.4
broad money 3/	-3.1	-1.6	-2.3	-1.5	-1.4
Standard deviation					
base money	14.3	16.7	14.5	16.7	17.3
broad money 3/	11.9	7.4	10.8	16.3	8.2

As to exchange-rate pass-through

- In the large majority of dollarized economies—i.e., in the 66 countries where the degree of dollarization was either high or moderate during 1996-2001—the pass-through coefficient is about 0.5
  - This comparable to estimates found in other cross-country studies for developing countries.
  - A high pass-through coefficient is one of the reasons why central banks have little tolerance for large exchange rate changes.

As to exchange-rate flexibility

- All groups of dollarized economies had exchange rates that fluctuated within relatively narrow bands.
- Countries with a very high degree of liability dollarization exhibited a significantly lower degree of exchange rate flexibility.

	Degree of dollarization				Type of dollarization		
	Very high	High	Moderate	Low	Type I	Type II	Type III
Exchange rate flexibility 1/							
average score	6.8	9.0	8.4	8.9	7.7	8.8	8.7
standard deviation	3.1	3.8	3.7	3.2	3.7	3.7	3.3
number of countries	*10*	*26*	*31*	*6*	*26*	*34*	*13*
Test of equality of means	*very high vs. rest of sample*				*Type I vs. rest of sample*		
t-statistic 2/	-1.71				-1.23		
(degrees of freedom)	*14*				*52*		

Avoiding domestic dollarization

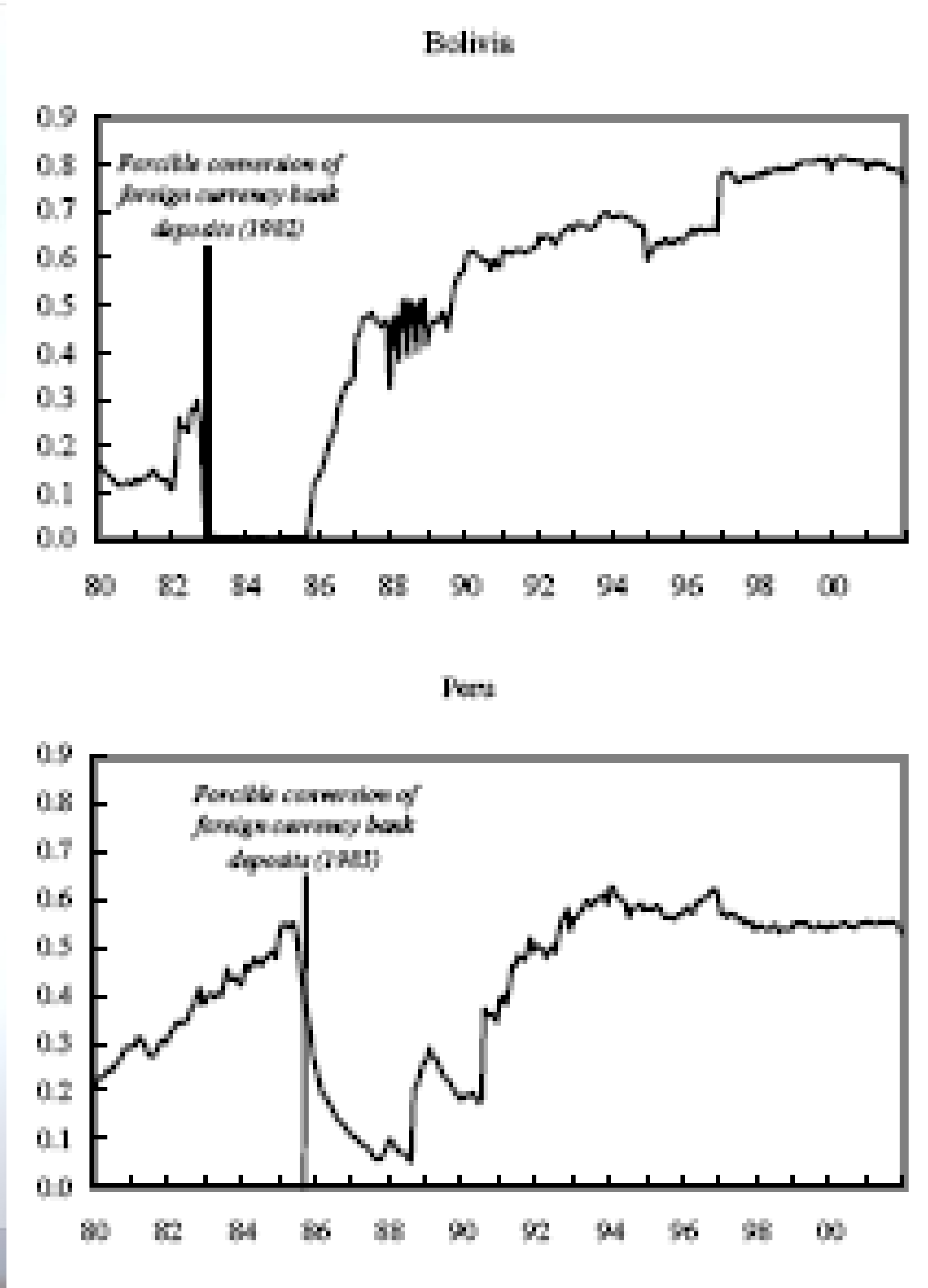
Almost one-half of the developing economies in our sample did not exhibit a significant degree of domestic dollarization. There are three groups in that total.

- The first have a good history
  - have not experienced periods of high inflation or severe macroeconomic instability and
  - have managed to retain the bulk of private savings in their domestic financial system.
- The second have had large macroeconomic imbalances, but the authorities have
  - promoted financial indexation schemes not linked to a foreign currency, and
  - imposed various types of capital controls.
- In the third, the authorities relied mainly on financial repression and capital controls.

Undoing dollarization

- The few governments in our sample that managed to de-dollarize their locally issued foreign currency obligations followed one of two strategies:
  - they either amortized the outstanding debt stock at the original terms and discontinued the issuance of those securities, or
  - they changed the currency denomination of the debt
- Falls in domestic dollarization caused by declines in the share of foreign currency deposits to broad money are more common

But some attempts have failed …



A quick summary

- We show that there has been a large increase in the degree and incidence of dollarization in developing countries in the last two decades.
  - the spread of dollarization has been consistently high in the Middle East, in the Transition Economies since the 1990s and, especially, in South America, while it has been consistently low in Africa and in most of Asia.
- We find little empirical support for the view that dollarization hinders the effectiveness of monetary policy.
- We find no evidence that would suggest that dollarization makes it more difficult to bring down inflation from high levels, or that it alters or adds complexity to the monetary transmission process

And most sobering for this conference

- We identified only two countries, out of a total of 85, that managed to achieve large and lasting declines in domestic dollarization without having to incur heavy costs in terms of financial intermediation or capital flight--Israel and Poland.