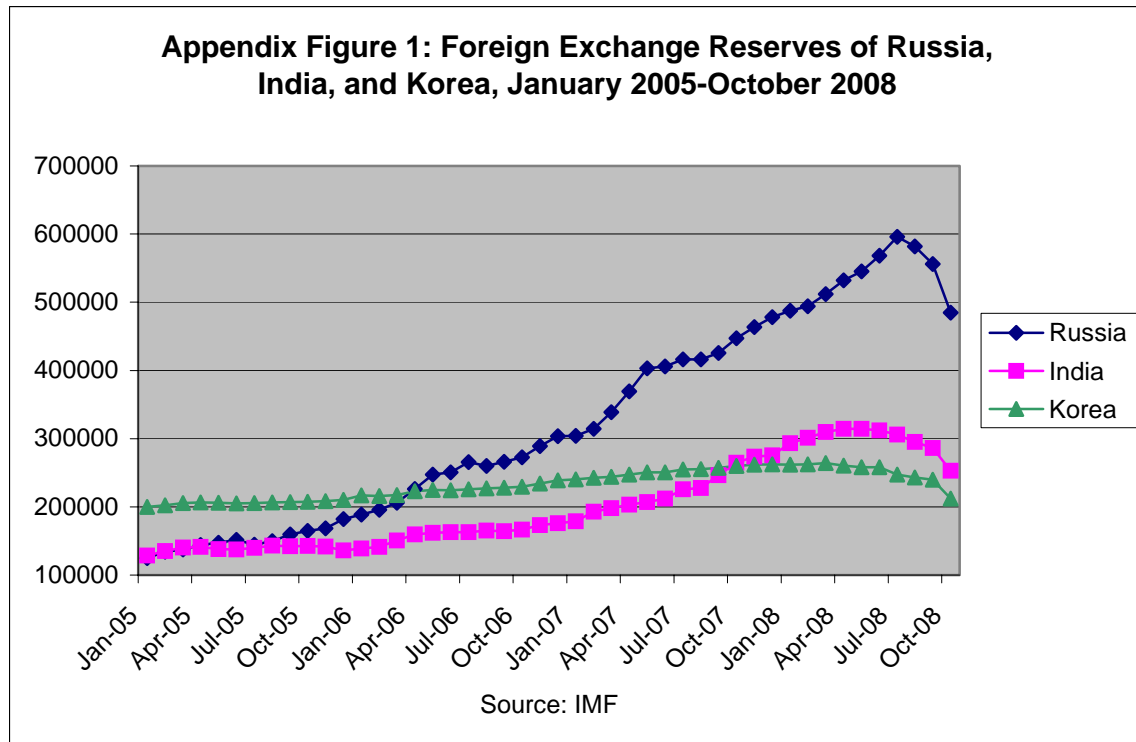


Online Appendix for “Financial Instability, Reserves, and Central Bank Swap Lines in the Panic of 2008”

By Obstfeld, Shambaugh, and Taylor

1. Figure: Selected emerging market reserves, 2005-2008



2. Description of estimating equation in section I.

As noted in the main text, in Obstfeld, Shambaugh, and Taylor (2008), we perform extensive tests of the hypothesis that factors relating to financial stability are strongly related to the demand for reserves. In this paper, we use a particular specification taken from that work. The specification that we use focuses on the financial motives only, and it is given by:

$$\ln(\text{Res}/\text{GDP}) = -6.514 + 1.047*\text{FinOpen} + .224*\text{Peg} + .187*\text{SoftPeg} + .604*\ln(\text{M2}/\text{GDP}) - 1.098*\text{AD} + 1.498*\text{Sin}$$

In this subsection of the Appendix, we provide some details regarding the equation. *FinOpen* is a measure of financial openness scaled from 0 to 1 from Edwards (2007). The indicator is based on the status declared to the IMF, but then is adjusted based on

actual practice. The *Peg* variable is a 0/1 dummy marking peg or nonpeg status from Shambaugh (2004). It is a *de facto* measure that marks a country as pegged if it stays within +/- 2% bands against a base currency over the course of a year.¹ The *soft peg* is a similar variable generated in Obstfeld *et al.* (2008) where countries that stay within +/- 5% bands are considered soft pegs. The *AD* dummy is a simple dummy marking advanced countries. The *Sin* variable measures the share of external debt that is issued in foreign currency. Countries that issue all external debt in foreign currency are assigned a value of 1. There is relatively little variation across the EM sample. Most EM countries have a value close to 1, but there is considerable variation within the AD sample. The data are based on BIS issuance data and is the same as that used in Eichengreen *et al* (2005).

The sample is the Emerging and Advanced countries for which “Sin” data are available. Data constraints limit us to a sample from 1993-2005, providing 552 observations. The details of the regression output are provided below.

Variable	Coefficient	Standard error
Financial Openness	1.047**	.408
Peg	.224*	.128
Soft Peg	.187**	.082
Ln(M2/GDP)	.604***	.118
Advanced	-1.098***	.210
Sin	1.498**	.586
Observations	552	
R-squared	.52	

Standard errors are clustered at the country level, which controls for heteroskedasticity across countries and allows for an unstructured serial correlation relationship within countries. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

3. Reserves holdings in 2007, predicted versus actual.

In this table we provide details that go behind table 2 and figure 2 in the paper. The first three columns are the same three columns as in table 2, but for a wider set of countries. Columns 4 and 5 show the numbers for 2005 – the last year we have complete data for all covariates. The 2007 predicted reserveratio adjusts for changes in the M2/GDP ratio between 2005 and 2007. Column 6 shows the ratio of actual to predicted reserves and column 7 shows the change in the exchange rate in 2008. Columns 6 and 7 are used to generate figure 2 in the paper.

¹ Single year pegs are dropped as reflections of potentially spurious lack of volatility and observations with only one month of any change in the exchange rate are considered to be one-shot devaluations rather than breaks in the peg regime.

Appendix Table 1—Reserve Holdings in 2007: Predicted versus Actual

country_name	1 2007 res/gdp	2 2007 res/gdp pred	3 2007 res/gdp pred	4 2005 res/gdp	5 2005 res/gdp pred	6 2007 actual/pred	7 2008 dner
Argentina	17.6%	11.4%		15.4%	11.5%	155%	5.3%
Brazil	13.7%	13.1%		6.8%	12.6%	105%	21.6%
Chile	10.3%	14.2%		14.7%	13.9%	72%	26.4%
China	47.1%	29.0%		37.3%	29.0%	162%	-6.5%
Colombia	12.2%	11.5%		12.3%	12.4%	106%	16.0%
Czech Republic	20.8%	18.9%		23.9%	18.3%	110%	7.0%
Egypt, Arab Rep.	25.1%	30.4%		24.5%	30.8%	83%	1.0%
Estonia	15.4%	24.0%		14.9%	22.9%	64%	13.4%
Hong Kong, China	73.9%	70.7%		69.7%	66.9%	105%	-0.7%
Hungary	17.4%	19.0%		17.1%	18.1%	92%	18.3%
India	23.6%	20.4%		17.1%	21.3%	116%	23.4%
Indonesia	13.2%	13.2%		12.1%	13.7%	100%	15.6%
Israel	17.6%	30.8%		22.8%	32.6%	57%	-0.3%
Korea, Rep.	27.1%	19.4%		26.8%	19.9%	140%	41.9%
Latvia	21.2%	16.0%		14.9%	15.2%	133%	16.1%
Lithuania	20.1%	19.1%		14.9%	17.6%	106%	14.3%
Malaysia	56.4%	32.8%		54.2%	33.5%	172%	7.2%
Mexico	9.8%	11.5%		9.6%	11.2%	85%	17.6%
Pakistan	11.0%	12.4%		10.0%	12.3%	89%	31.9%
Peru	25.5%	16.9%		17.9%	16.6%	151%	2.4%
Philippines	23.4%	19.2%		18.7%	18.9%	122%	17.7%
Poland	15.6%	12.7%		14.1%	11.9%	123%	14.6%
Russian Federation	36.9%	11.8%		23.8%	10.3%	314%	10.0%
Singapore	101.0%	30.4%		99.1%	29.6%	333%	2.7%
Slovak Republic	25.3%	14.1%		33.4%	14.4%	180%	3.6%
South Africa	11.9%	12.1%		8.6%	11.3%	98%	44.3%
Thailand	35.6%	14.9%		29.4%	15.6%	239%	16.3%
Turkey	11.6%	12.0%		14.5%	12.7%	97%	30.3%
Venezuela, RB	14.8%	10.1%		21.3%	8.4%	147%	0.3%
Australia	3.3%	7.1%	11.3%	5.9%	6.3%	46%	29.2%
Canada	3.1%	10.5%	11.2%	3.0%	10.6%	30%	19.6%
Denmark	11.1%	9.5%	16.4%	13.1%	8.8%	118%	14.7%
Iceland	13.5%	4.5%	10.0%	6.8%	4.5%	303%	113.9%
Japan	22.2%	5.6%	4.7%	18.7%	5.7%	395%	-12.7%
New Zealand	13.3%	12.3%	18.4%	8.2%	11.5%	108%	29.9%
Sweden	7.0%	7.0%	12.5%	7.0%	6.6%	100%	22.4%
Switzerland	18.1%	14.0%	20.0%	15.7%	13.9%	130%	3.6%
United Kingdom	2.1%	15.6%	21.9%	2.0%	14.3%	13%	25.9%
United States	2.0%	2.8%	1.9%	1.5%	2.6%	73%	0.0%

Source: WDI data and authors' calculations. Column 6, actual reserves to predicted reserves uses column 2, the predicted reserves based on the equation defined in section 2 of the appendix for both the advanced and emerging countries. Using the higher estimate for reserves needs for AD countries that result if we estimate the equation without the AD dummy strengthens the results in table 1 and figure 2.