Crashes

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The global financial crisis (GFC), and subsequent events such as the US sovereign downgrade and the "taper tantrum," have been rude reminders of the volatility of cross-border capital flows to emerging market economies (EMEs). The highly episodic nature of these flows suggests that emerging markets with open capital accounts are necessarily at the mercy of global events that are beyond their control. But are there policy actions that these countries can undertake (or have in place) during the inflow phase to mitigate the impact of a subsequent reversal? That is the question we take up in this paper.

We begin our analysis by identifying *surge* episodes—that is, periods of exceptionally large net capital inflows—in a sample of 53 EMEs over 1980–2014. We then classify these episodes according to whether they end in a "crash" (a financial or growth crisis), or a soft-landing, and associate the outcome with both shifts in global conditions, as well as with domestic factors and policy responses over the surge episode.

Our analysis yields 152 completed surge episodes, with highly synchronized endings and highly synchronized crashes—clustered around the East Asian financial crisis (1997), the global financial crisis (2007-08), and more recently, the US sovereign debt rating downgrade (2011), and the taper tantrum (2013). In the full sample, about 20 percent of surge episodes end in a financial crisis—of which one-half are also associated with large output declines (or "growth collapses"). The synchronicity of surges ending in a crash suggests that global factors matter in determining the post-surge outcome, while the diversity of outcomes points to a possible role for domestic conditions and policy responses.

Indeed, we find that changes in global conditions (US interest rates, global risk aversion and commodity prices) have an important bearing on how surge episodes end, but countries that allow the buildup of macroeconomic imbalances and financial

vulnerabilities—credit expansion, currency overvaluation, and economic overheating—and that receive most of their flows in the form of debt are also significantly more likely to end the episode with a crash. By contrast, those with higher stocks of foreign exchange reserves and a larger share of inflows in the form of foreign direct investment (FDI) are significantly less likely to experience a crisis.

Our analysis makes several contributions to existing studies. While a burgeoning literature examines the determinants of capital flows to EMEs and the potential risks they pose—typically finding a strong positive association between inflows and subsequent crises—they tend to overlook the fact that not all countries receiving large inflows ultimately experience a crisis.[1] Likewise, several studies analyze policy responses to mitigate the impact or severity of crises, whereas we focus on policies that could be adopted in "good times" (when capital is entering the country) to prevent a bad outcome when the global tide turns.[2]

I. Hard versus Soft Landings

To identify surge episodes, we follow Ghosh et al. (2014), who define a surge as a net capital flow observation that lies in the top 30th percentile of both the country-specific and the full sample's distribution of net capital flows, expressed in percent of GDP.[3] We focus on *net* (as opposed to gross) flows as sudden stops—and subsequent crisis—in EMEs have largely been a net flow phenomenon.

Applying the above definition yields 344 surge observations in our panel of 53 EMEs over 1980–2014. Grouping consecutive surge years, we obtain 165 episodes—of which 152 are completed, while 13 are ongoing as of the end of the sample (see online appendix for details). An initial snapshot of surge endings shows that they are highly synchronized (Figure 1[a])—occurring most frequently around 1997 (onset of the East Asian financial crisis), 2007-08 (the global financial crisis), and recently, in 2011 and 2013 (the US sovereign debt rating downgrade and taper talk, respectively). The occurrence of crash landings is also highly synchronized, with the

[1] On studies examining the factors associated with capital flows to EMEs, see, e.g., Calvo, Leiderman, and Reinhart (1993); Chuhan Claessens, and Mamingi (1998). More recently, Reinhart and Reinhart (2008), and Ghosh et al. (2014) examine the factors associated with *large* net capital inflows. On the crisis risks associated with capital flows, see, e.g., Caballero (2014); Ghosh, Ostry, and Qureshi (2015).

[2] An exception is Cardarelli, Elekdag, and Kose (2010), who examine the association between domestic policy responses during inflow surges and eventual growth outcomes, but their sample comingles advanced and emerging market economies. Moreover, they analyze simple correlations, and do not undertake formal econometric analysis. Some recent studies, e.g., Eichengreen and Gupta (2015), focus on the impact of US Fed's taper talk in 2013 on asset prices in EMEs, and highlight the role of domestic factors in influencing the outcome—but they do not differentiate between countries that experienced an inflow surge prior to the talk, and those that did not.

[3] The reason for adopting a country-specific *and* sample-wide criterion is to ensure that surges are large by the country's own experience but also by cross-country standards. This prevents countries experiencing mostly capital outflows or small inflows (on a net basis) through the sample to be identified as having surges.

share of surge episodes ending in a financial or growth crisis increasing sharply in late 1990s and around the GFC. Nevertheless, even in these years, not all surges end in a crisis and there is considerable cross-sectional variation in the magnitude of the net flow reversal (Figure 1[b]). Overall, of the 152 completed surge episodes, 30 experienced a financial (banking or currency) crisis within two years of the end of the episode, and 9 experienced a "twin" banking-currency crisis.[4] The implied probabilities (20 percent and 6 percent) are, however, substantially higher than those for the full sample (7 percent and 1 percent), indicating that a country is at least *three times* more likely to experience a financial crisis after a surge episode than in normal times (Figure 2[a]).

Moreover, the magnitude of the net flow reversal is significantly larger in episodes that end in a financial crisis compared to those that do not (Figure 2[b])—suggesting that the drop in inflows may trigger the crisis (though it is equally possible that the onset of crisis precipitates the reversal of flows). Growth declines are also significantly larger after episodes that end in a financial crisis. In fact, defining growth collapses as those that are in the bottom quartile of growth declines (two-year average after the episode relative to the average over the surge episode)—which corresponds to a fall in the growth rate of real GDP of about 4 percentage points in our sample—suggests that about half of the episodes that end in a financial crisis also suffer growth collapses. (This proportion rises to two-thirds for episodes that end in twin crisis.) Conversely, about 40 percent of post-surge growth collapses are associated with some form of banking or currency crisis.

II. Estimation Methodology and Results

What factors determine whether a surge episode ends gracefully or in crisis? It seems plausible that both global and domestic factors would be relevant. A tricky issue in specifying the empirical model is the timing of the variables (and the period over which the change should be measured). The change in global conditions (US real interest rate, global risk aversion, commodity prices), for example, could be defined either as the change between the *average* value during the surge and the value in the year(s) following the surge, or as the change between the value in the *last* year of the surge episode and the year(s) that follow. Since we define crash endings as a financial or growth crisis occurring within two

[4] In the sample, banking crises are more likely to occur after a surge than currency crises (about 16 percent of episodes end in a banking crisis, while 10 percent end in a currency crisis). In two cases, Hungary (2006-08) and Slovak Republic (1996-98), a banking crisis is associated with two surge episodes that are separated by one year. Classifying just one episode (either the first or the second) as a crash landing does not affect the results.

years of the end of the surge, we define changes in global conditions as the average in the two post-episode years relative to the average over the episode.

Changes in domestic conditions (e.g., current account balance, fiscal balance, output gap, financial-stability conditions, etc.) could in principle be defined the same way, but using the post-surge value gives rise to a potentially serious endogeneity problem: domestic variables such as the interest rate, output growth, or the current account and fiscal balance can (and generally do) move in response to the occurrence of a crisis. For this reason, we define changes in domestic variables as the average values prevailing over the surge episode relative to those in the year before the episode began. This allows us to assess the impact of policies pursued over the surge episode on the outcome (rather than in response to the outcome).

In addition, several domestic factors (such as the degree of currency overvaluation, stock of foreign exchange reserves, external debt, exchange rate regime, etc.) may affect investor sentiment (or otherwise affect the likelihood of a crisis) in level terms. For these variables, we use the value in the last year of the surge episode.[5] The probit model that we estimate thus takes the following form:

$$(1)\quad \Pr(Crisis_{jt|S_{jt-1}=1}=1)=F(\Delta x'_{jt}\delta+\Delta z'_{jt}\eta+z'_{jt}\xi)$$

where $Crisis_{jt|S_{jt-1}=1}$ is an indicator variable of whether country *j* experiences a crisis in period *t* or *t*+1, conditional on having received an inflow surge in period *t-1*; Δx is the change in global conditions (as defined above) *when* the episode ends; Δz is the change in domestic conditions *over* the surge episode; and *z* includes domestic factors whose level at the *end* of the episode may make the country more vulnerable to crisis. Moreover, we include regional dummies in (1) to capture any contagion from crises in neighboring countries, as well as (pre-episode) country-specific per capita real GDP to control for heterogeneity in institutional development across countries. We estimate (1) for financial (i.e., banking or currency) and growth crises separately.

A. Financial Crisis

We begin by considering the impact of changes in global conditions on the likelihood of a crash-ending, controlling only for region-specific effects, and the country's initial per

[5] For both changes and levels of domestic factors, we exclude large values that are in the top and bottom 0.25th percentile of the distribution. See online appendix for variable definitions and data sources.

capita real GDP. The results presented in Table 1 (col. [1]) show that changes in the US real interest rate, commodity prices, and investor risk aversion, are strongly associated with a crisis occurring after the surge episode. For instance, against an unconditional probability of 20 percent in the estimated sample, the predicted probability of a crisis (keeping other variables at their mean value) increases by 6 percentage points if US real interest rates rise by 100 bps relative to no change in interest rates at all.[6] Similarly, doubling (relative to the average) the increase in global risk aversion when the surge ends, raises the crisis probability by 2 percentage points. Conversely, the probability of a crash ending is about 8 percentage points lower if commodity prices are 10 percent higher (relative to no change) at the end of the surge. Taken together, changes in global conditions explain surge endings rather well: the global factors are jointly highly statistically significant (Wald test *p*-value=0.00) with a pseudo-R^2 of 16 percent, and 19 percent of crash endings called correctly.

Turning to domestic factors, cols. [2]-[7] in Table 1 indicate that the post-surge crisis probability is statistically significantly higher for episodes that experience greater credit expansion, economic overheating (measured by the output gap), external debt accumulation, and capital account openness. By contrast, episodes where the fiscal balance improves appear to be less likely to experience a subsequent crisis.

In addition, currency overvaluation strongly raises the probability of a crash landing, whereas a higher stock of foreign exchange reserves reduces it (cols. [8]-[9]). Surges dominated by FDI flows are also less likely to experience a crisis, while those dominated by other investment liabilities (mostly bank flows) are more likely to end in a crisis (cols. [10]-[11]). This result suggests that the composition of inflows matters—large inflows in the form of FDI may allow countries to reap the benefits of financial globalization without posing significant risks. Including both global and domestic factors, the estimated coefficients remain largely similar in magnitude and statistical significance, while the pseudo-R^2 jumps to 34 percent, and the percentage of crash endings correctly called rises to 38 percent.[7]

[6] In about one-fifth of the surge endings, US interest rates (in real terms) rise by at least 100 basis points.

[7] In addition to the variables presented in Table 1, we consider (changes and level of) several other variables. Our main conclusions remain robust to alternate specifications, where we also find that an increase in bank foreign liabilities (in terms of GDP) over the episode significantly raises crisis likelihood. See online appendix for detailed robustness analysis.

B. Growth Collapses

Turning to growth collapses, the results reported in Table 2 indicate that the global factors associated with financial crises—higher US interest rates or global risk aversion, and lower commodity prices—are also associated with growth collapses. Domestic factors, however, show greater differentiation. Thus, as with financial crises, credit expansion, overheating, external debt, and overvaluation are all associated with greater susceptibility to growth collapses, but improvement in fiscal balance, increased capital account openness, the level of reserves, and the composition of flows during the episode seem less relevant. Conversely, fixed exchange rates significantly raise the likelihood of a growth collapse—suggesting that pegs (through increased financial vulnerabilities or insufficient external adjustment) precipitate a sharp decline in output growth when flows reverse.

Conclusion

Emerging markets with open capital accounts are subject to inflow surges that can end gracefully or in some form of crisis. While global factors are a major determinant of how surges end, policy responses of EMEs also matter. Avoiding excessive credit growth, economic overheating, and currency overvaluation; maintaining fiscal and foreign exchange buffers; and regulating the composition of inflows through (structural or cyclically-varying) capital controls and macroprudential policies (Ostry et al., 2012) lowers the likelihood that the surge will end in crisis. Exchange rate flexibility can also help the economy to avoid sharp output declines.

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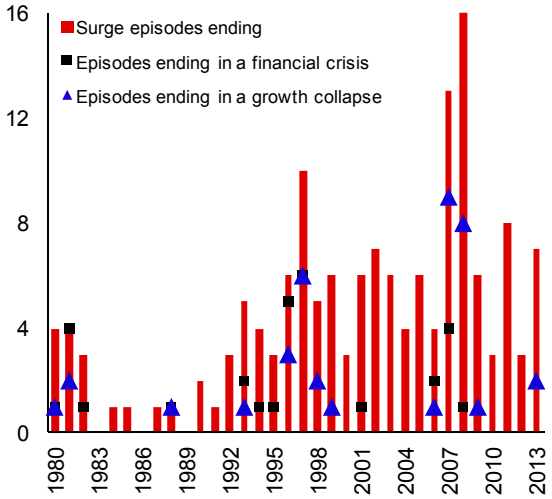
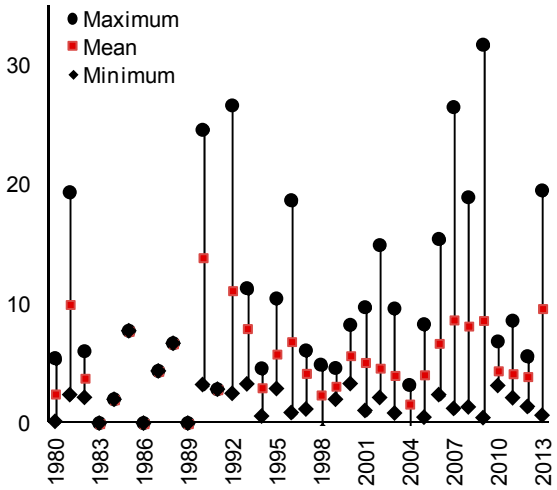
Figure 1. Endings of Surge Episodes in EMEs, 1980-2013

[a] Surge episode endings (total no. by year)



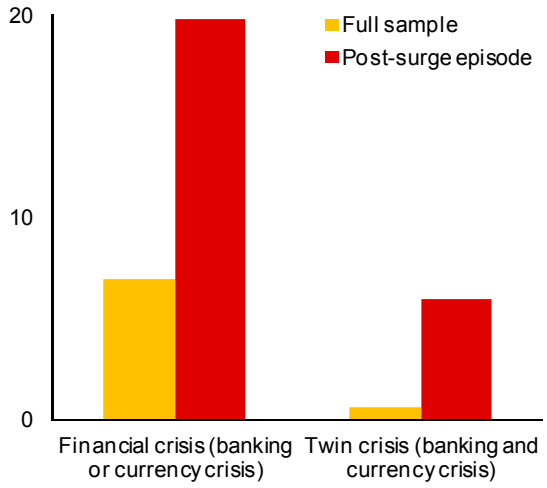
[b] Magnitude of net flow reversal (in percent of GDP)



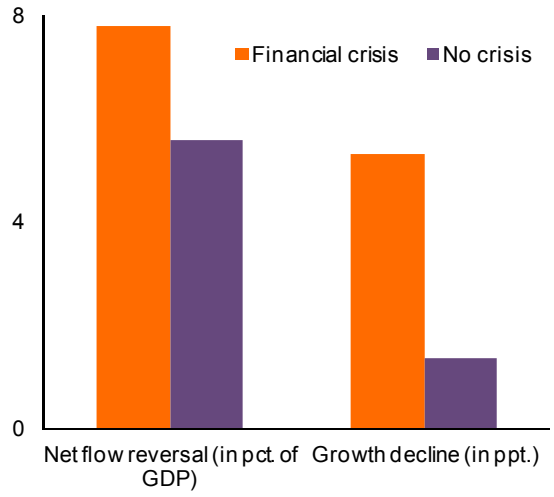
Source: Authors' calculations.
Notes: Only completed surge episodes are included in the figure. Panel [a] shows the number of surge episodes ending (that is, the last year of the surge episode) in a given year, and those that end in a financial/growth crisis. Data for financial crisis is available up to 2012 only. Panel [b] shows the difference between the average net capital flow (in percent of GDP) over the surge episode, and the two-year average after the episode has ended.

Figure 2. Post-Surge Episode Financial Crisis in EMEs, 1980-2013

[a] Financial crisis probability (in percent)



[b] Post-surge episode net flow and growth decline



Source: Authors' calculations.
Note: Post-surge crisis probability in panel [a] is defined as a (banking/currency) crisis occurring within two years after a surge episode ends. Net flow reversal and growth decline in panel [b] is the difference between the average over the surge episode, and the two-year average after the episode has ended.

Table 1. Post-Surge Episode Financial Crisis Probability in EMEs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
US real interest rate[a]	0.224**	0.220**	0.195*	0.217**	0.207*	0.192*	0.322***	0.255**	0.244**	0.225**	0.169*	0.217**	0.212*
	(0.102)	(0.103)	(0.104)	(0.101)	(0.107)	(0.103)	(0.108)	(0.108)	(0.104)	(0.103)	(0.101)	(0.105)	(0.123)
Commodity prices[a]	-0.035**	-0.035**	-0.038**	-0.031**	-0.033*	-0.031***	-0.042***	-0.032***	-0.025**	-0.035**	-0.033***	-0.032***	-0.027**
	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.010)	(0.010)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)	(0.013)
S&P500 returns' volatility[a]	0.066**	0.074**	0.039	0.065**	0.053**	0.067**	0.105***	0.085***	0.062**	0.066**	0.066**	0.069**	0.039
	(0.028)	(0.031)	(0.030)	(0.029)	(0.027)	(0.030)	(0.028)	(0.031)	(0.030)	(0.028)	(0.030)	(0.029)	(0.032)
Real GDP per capita (log)[b]	0.244	0.191	0.159	0.199	0.195	0.190	0.216	0.521**	0.302	0.275	0.145	0.241	0.273
	(0.191)	(0.186)	(0.219)	(0.194)	(0.203)	(0.227)	(0.223)	(0.225)	(0.234)	(0.201)	(0.182)	(0.206)	(0.334)
Current acc. bal./GDP[c]		0.058											
		(0.054)											
Domestic credit/GDP[c]			0.038***										0.059**
			(0.012)										(0.024)
Fiscal balance/GDP[c]				-0.093*									
				(0.055)									
Output gap[c]					0.046*								0.014
					(0.026)								(0.048)
Capital acc. openness[c]						0.534***							0.416
						(0.192)							(0.270)
External debt/GDP[c]							0.040*						
							(0.023)						
FX reserves/GDP[d]								-0.059**					-0.051*
								(0.023)					(0.029)
Overvaluation[d]									0.078***				0.068**
									(0.022)				(0.027)
Exchange rate regime[d]										-0.089			0.079
										(0.215)			(0.253)
FDI surge[e]											-0.576**		
											(0.251)		
Other investment liab. surge[e]												0.461**	
												(0.215)	
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142	140	141	137	141	131	140	142	142	142	142	142	130
Countries	48	48	48	47	48	47	48	48	48	48	48	48	47
R2 (Pseudo)	0.162	0.163	0.199	0.17	0.159	0.162	0.273	0.224	0.254	0.163	0.187	0.181	0.362
Wald chi2 (p-value)	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent correctly predicte	84.51	84.29	84.40	84.67	84.40	87.02	84.29	84.51	86.62	83.8	83.10	83.80	90.00
Sensitivity	19.23	20.00	20.00	20	16.00	19.05	20.83	26.92	46.15	19.23	23.08	26.92	40.00

Note: Dependent variable is a binary variable equal to 1if a banking or currency crisis occurred within two years of a surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table 2. Post-Surge Episode Growth Collapse Probability in EMEs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
US real interest rate[a]	0.222**	0.214**	0.253**	0.247**	0.344***	0.243**	0.176*	0.240***	0.232**	0.257**	0.204**	0.215**	0.496***
	(0.091)	(0.089)	(0.109)	(0.100)	(0.108)	(0.096)	(0.095)	(0.089)	(0.095)	(0.100)	(0.098)	(0.091)	(0.120)
Commodity prices[a]	-0.025**	-0.024**	-0.035***	-0.029**	-0.041***	-0.026***	-0.025**	-0.028***	-0.019**	-0.031**	-0.024**	-0.023**	-0.048***
	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)	(0.008)	(0.010)
S&P500 returns' volatility[a]	0.151***	0.148***	0.116***	0.166***	0.110***	0.149***	0.157***	0.154***	0.153***	0.162***	0.151***	0.153***	0.119***
	(0.032)	(0.031)	(0.032)	(0.033)	(0.030)	(0.034)	(0.035)	(0.031)	(0.036)	(0.037)	(0.032)	(0.032)	(0.038)
Real GDP per capita (log)[b]	0.309	0.287	0.224	0.327	0.284	0.259	0.249	0.217	0.374	0.549**	0.268	0.293	0.493
	(0.225)	(0.236)	(0.271)	(0.250)	(0.314)	(0.250)	(0.252)	(0.234)	(0.251)	(0.256)	(0.223)	(0.234)	(0.338)
Current acc. bal./GDP[c]		-0.010											
		(0.040)											
Domestic credit/GDP[c]			0.097***										0.058
			(0.024)										(0.037)
Fiscal balance/GDP[c]				0.098									
				(0.070)									
Output gap[c]					0.344***								0.332***
					(0.066)								(0.085)
Capital acc. openness[c]						0.376							-0.110
						(0.294)							(0.349)
External debt/GDP[c]							0.028**						
							(0.014)						
FX reserves/GDP[d]								0.017					0.011
								(0.015)					(0.021)
Overvaluation[d]									0.056***				0.065**
									(0.018)				(0.029)
Exchange rate regime[d]										-0.656**			-0.751***
										(0.306)			(0.262)
FDI surge[e]											-0.192		
											(0.318)		
Other investment liab. surge[e]												0.314	
												(0.290)	
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142	140	141	137	141	131	140	142	142	142	142	142	130
Countries	48	48	48	47	48	47	48	48	48	48	48	48	47
R2 (Pseudo)	0.215	0.206	0.349	0.247	0.452	0.214	0.259	0.226	0.261	0.257	0.218	0.223	0.565
Wald chi2 (p-value)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent correctly predicte	78.87	77.86	81.56	78.10	85.82	80.15	80.00	78.17	79.58	78.87	78.87	79.58	87.69
Sensitivity	41.67	37.14	52.78	44.44	65.71	40.63	48.57	41.67	41.67	44.44	44.44	44.44	68.75

Note: Dependent variable is a binary variable equal to 1if a growth collapse occurred after the surge episode. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

ONLINE APPENDIX

This appendix provides information on data sources, the variables used in the analysis, and the identified surge episodes (Part A). It further reports various robustness tests on the main regressions reported in the text (Part B).

A. Data and Surge Episodes

Table A.1 List of countries in the sample

Albania	Estonia	Panama
Algeria	Georgia	Peru
Argentina	Guatemala	Philippines
Armenia	Hungary	Poland
Belarus	India	Romania
Bosnia & Herzegovina	Indonesia	Russian Federation
Brazil	Jamaica	Serbia
Bulgaria	Jordan	Slovak Republic
Chile	Kazakhstan	South Africa
China	Korea, Rep.	Sri Lanka
Colombia	Latvia	Thailand
Costa Rica	Lebanon	Tunisia
Croatia	Lithuania	Turkey
Czech Republic	Macedonia, FYR	Ukraine
Dominican Republic	Malaysia	Uruguay
Ecuador	Mexico	Venezuela, RB
Egypt, Arab Rep.	Morocco	Vietnam
El Salvador	Pakistan	

Note: Countries in the sample are emerging markets as identified by the IMF's Early Warning Exercise for Emerging Markets.

Table A.2 List of identified surge episodes and crash ending

Country	Episode	Financial crisis	Growth collapse	Country	Episode	Financial crisis	Growth collapse	Country	Episode	Financial crisis	Growth collapse
Albania	2006-14	N.a.	N.a.	Estonia	1996-97	No	**Yes**	Panama	2010-11	No	No
Argentina	1993	**Yes**	**Yes**	Estonia	2003-07	No	**Yes**	Panama	2013-14	N.a.	N.a.
Argentina	1997-98	No	**Yes**	Georgia	2005-08	No	**Yes**	Peru	1994-97	No	**Yes**
Armenia	1996-200(	No	No	Georgia	2011-12	No	No	Peru	2002	No	No
Armenia	2008	No	**Yes**	Guatemala	1987	No	No	Peru	2007-08	No	No
Armenia	2013	N.a.	No	Guatemala	1991-94	No	No	Peru	2010-13	N.a.	**Yes**
Belarus	1997	**Yes**	**Yes**	Guatemala	1997-98	No	No	Philippines	1991	No	No
Belarus	2004	No	No	Guatemala	2000-03	No	No	Philippines	1994-97	**Yes**	No
Belarus	2007	**Yes**	No	Hungary	1993-95	No	No	Philippines	1999	No	No
Belarus	2009-11	No	No	Hungary	1998-2000	No	No	Philippines	2010	No	No
Belarus	2013	N.a.	No	Hungary	2004-06	**Yes**	No	Poland	1995-96	No	No
Bosnia	2001	No	No	Hungary	2008	**Yes**	No	Poland	1998-2000	No	No
Bosnia	2003-05	No	No	India	2007	No	No	Poland	2005	No	No
Bosnia	2007-08	No	**Yes**	Indonesia	2014	N.a.	N.a.	Poland	2007-11	No	No
Brazil	1980-81	**Yes**	No	Jamaica	1992	No	No	Romania	1980	No	No
Brazil	1994	**Yes**	No	Jamaica	1996	**Yes**	No	Romania	1997-98	No	No
Brazil	2007	No	No	Jamaica	2001-02	No	No	Romania	2001-08	No	**Yes**
Brazil	2014	N.a.	N.a.	Jamaica	2004-08	No	No	Russia	2007	**Yes**	**Yes**
Bulgaria	1992-93	No	No	Jamaica	2011	No	No	Serbia	2007-08	No	**Yes**
Bulgaria	2000-08	No	**Yes**	Jamaica	2014	N.a.	N.a.	Serbia	2011	No	No
Chile	1980-81	**Yes**	**Yes**	Jordan	1988	**Yes**	**Yes**	Slovak Rep.	1996	**Yes**	No
Chile	1989-90	No	No	Jordan	1991-92	No	No	Slovak Rep.	1998-99	No	No
Chile	1992-97	No	**Yes**	Jordan	2005-11	No	No	Slovak Rep.	2002	No	No
Chile	2011	No	No	Jordan	2013	N.a.	No	Slovak Rep.	2004-05	No	No
China	1994	No	No	Kazakhstan	1996-97	**Yes**	No	Slovak Rep.	2007	No	**Yes**
China	2004	No	No	Kazakhstan	2001	No	No	South Africa	2006-07	No	**Yes**
China	2010	No	No	Kazakhstan	2003-04	No	No	South Africa	2009	No	No
Colombia	1996-97	**Yes**	**Yes**	Kazakhstan	2006	**Yes**	**Yes**	South Africa	2012	No	No
Colombia	2007	No	**Yes**	Korea	1980	No	No	Sri Lanka	1980	No	No
Colombia	2013-14	N.a.	N.a.	Korea	2009	No	No	Sri Lanka	1982	No	No
Costa Rica	1995	No	No	Latvia	1995	**Yes**	No	Sri Lanka	1993-94	No	No
Costa Rica	1999	No	**Yes**	Latvia	1999	No	No	Sri Lanka	2009	No	No
Costa Rica	2002	No	No	Latvia	2001	No	No	Sri Lanka	2011-13	N.a.	No
Costa Rica	2005-08	No	**Yes**	Latvia	2004-07	**Yes**	**Yes**	Thailand	1981	**Yes**	No
Costa Rica	2011-14	N.a.	N.a.	Lebanon	2003	No	No	Thailand	1988-96	**Yes**	**Yes**
Croatia	1996-97	**Yes**	**Yes**	Lebanon	2008-09	No	**Yes**	Thailand	2010	No	No
Croatia	1999	No	No	Lebanon	2014	N.a.	N.a.	Tunisia	1981-82	No	No
Croatia	2001	No	No	Lithuania	1997-98	No	**Yes**	Tunisia	1984	No	No
Croatia	2003	No	No	Lithuania	2003	No	No	Tunisia	1993	No	No
Croatia	2006-07	No	**Yes**	Lithuania	2005-07	No	**Yes**	Tunisia	2006	No	No
Czech Rep.	1995-96	**Yes**	**Yes**	Macedonia	2002	No	No	Tunisia	2008-09	No	No
Czech Rep.	2000-02	No	No	Macedonia	2004-08	No	No	Tunisia	2012-14	N.a.	N.a.
Czech Rep.	2004	No	No	Malaysia	1980-85	No	No	Turkey	2004-08	No	No
Dominican Rep	2000-01	**Yes**	No	Malaysia	1991-93	No	No	Turkey	2010-14	N.a.	N.a.
Dominican Rep	2008	No	No	Malaysia	1995-96	**Yes**	**Yes**	Ukraine	2005	No	No
Dominican Rep	2010-11	No	No	Mexico	1981	**Yes**	**Yes**	Ukraine	2007	**Yes**	**Yes**
Dominican Rep	2013-14	N.a.	N.a.	Mexico	1991-93	**Yes**	No	Ukraine	2012-13	N.a.	No
Ecuador	1990-92	No	No	Mexico	1997	No	No	Uruguay	1980	**Yes**	**Yes**
Ecuador	2002	No	No	Mexico	2013	N.a.	No	Uruguay	1982	**Yes**	No
Egypt	2005	No	No	Morocco	2013-14	N.a.	N.a.	Uruguay	2005-08	No	No
El Salvador	1998	No	No	Pakistan	2006-07	No	No	Uruguay	2011-14	N.a.	N.a.
El Salvador	2003	No	No	Panama	1997-99	No	No	Venezuela	1990	No	No
El Salvador	2006	No	No	Panama	2001	No	No	Vietnam	1996-97	**Yes**	No
El Salvador	2008	No	No	Panama	2005	No	No	Vietnam	2003	No	No
El Salvador	2012	No	No	Panama	2007-08	No	**Yes**	Vietnam	2007-09	No	No

Source: Authors' calculations.

Note: N.a.= if no information is available on whether the country had a crisis or not. Financial crisis are identified as a banking or currency crisis (as defined in Laeven and Valencia (2013)) within two years of the end of a surge episode. Growth collapses are identified as real GDP growth declines greater than 4 percentage points (25th percentile) after the end of the surge episode (two-year average) relative to the surge average.

Table A.3 Variable definitions and data sources

Variables	Description	Source
Bank foreign liabilities	In billions of USD	IMF's IFS database
Capital account openness	Index (high=liberalized; low=closed)	Chinn-Ito (2008)[1]
Commodity prices	Index	IMF's WEO database
Current account balance	In billions of USD	IMF's WEO database
Exchange rate regime	De facto (1=Fixed; 2=Intermediate; 3=Flexible)	Ghosh et al. (2015)[2]
Financial crisis	Binary variable equal to 1 for banking or currency crisis, zero otherwise	Laeven and Valencia (2013)[3]
GDP current/constant prices	In billions of USD (or LC)	IMF's WEO database
Institutional quality	Index (average of ICRG's 12 political risk components)	Political Risk Group
Net capital flows	Net financial flows excluding financing items and other investment liabilities of general government (In USD bln.), i.e., the difference between IFS series codes "..4995W.9" and "..4753ZB9" (in terms of BPM5 presentation)	IMF's IFS database
Money market rate	In percent	IMF's IFS database
Private sector credit	In billions of LC	IMF's IFS database
Real Effective Exchange Rate	Index	INS database
Output gap	Log difference between real GDP and real GDP trend (obtained from HP filter)	Authors' calculations
Overvaluation	Log difference between REER and REER trend (obtained from HP filter)	Authors' calculations
Real GDP per capita	In USD	IMF's WEO database
Real interest rate	[(1+nominal interest rate)/(1+expected inflation)]- 1, where expected inflation is one-period ahead inflation	Authors' calculations
S&P 500 index returns volatility	Annual average of twelve-month rolling standard deviation of S&P 500 index annual returns	Authors' calculations based on data from Bloomberg.
Stock of foreign exchange	In billions of USD	IMF's WEO database
Surge	Net capital flow/GDP (as defined above) for a country lies in the top 30th percentile of the country-specificand full sample's distribution of net capital flows/GDP	Authors' calculations based on data from IMF's IFS database
U.S. 3-month Treasury Bill rate	In percent	IMF's WEO and Bloomberg
VIX/VXO	Chicago Board Options Exchange Market Volatility Index (high values indicate greater volatility of S&P 500 index	Bloomberg

1/ Chinn, M., and H. Ito, 2008, "A New Measure of Financial Openness," *Journal of Comparative Policy Analysis* 10 (3): 309-322.

2/ Ghosh, A., J. Ostry, and M. Qureshi, 2015, "Exchange Rate Management and Crisis Susceptbility: A Reassessment," *IMF Economic Review* 63 (1): 238-276.

3/ Laeven, L., and F. Valencia, 2013, "Systemic Banking Crises Database," *IMF Economic Review* 61(2): 225–270.

B. Sensitivity Analysis

Alternate specifications

While the estimations reported in Tables 1-2 include a range of domestic factors both in changes and in levels, we also check the sensitivity of our results to the inclusion of other variables when crash ending is defined as a financial crisis (Table B.1) or in terms of a growth collapse (Table B.2). Cols. [1]-[7] in Tables B.1 and B.2 include—in addition to global factors, initial real GDP per capita, and regional effects—changes (computed over the surge episode) in currency overvaluation, real GDP growth rate, the rate of REER appreciation, domestic real interest rate, stock of reserves (in percent of GDP), short-term debt (in percent of GDP), bank foreign liabilities (in percent of GDP), and institutional quality. The estimated coefficients in all specifications show that the impact of global factors remains statistically significant, while the added domestic variables are mostly statistically insignificant. An important exception to this is the increase in banks' foreign liabilities, which significantly raises the likelihood of a subsequent growth collapse—suggesting that financial vulnerabilities accumulated over the episode may subsequently have real consequences (Table B.2, col. [7]).[1] (Faster real GDP growth rate over the surge episode is also found to be associated with a higher likelihood of a growth collapse (Table B.2, col. [2]), but this is perhaps true by definition as a slowdown in growth after a period of fast expansion will appear as a large change in the growth rate.)

Cols. [8]-[12] include some of the variables in levels at the end of the surge episode that may impact investor sentiment such as the current account balance, fiscal balance, short-term debt, total external debt (all defined relative to GDP), and the output gap. The results show that a higher output gap significantly raises the probability of a crash ending (financial crisis or growth collapse) while a higher current account balance and lower short-term debt reduce the probability of a growth collapse. Moreover, there is also some evidence that surge episodes with greater liability (or nonresident) flows are significantly more likely to experience a growth collapse

[1] The estimated coefficient on bank foreign liabilities also turns highly significant in the financial crisis regressions if—for the few one-year surge episode observations where the financial crisis occurs in the same year as the surge—we consider changes in bank foreign liabilities in the preceding year to mitigate endogeneity concerns (or if we drop these observations from the sample).

when they end, while those with greater asset flows are less likely to experience a crash ending (though the latter association is statistically insignificant).[2]

Although, as shown in Figures 1 and 2, surges in capital flows to the EMEs occurred in the early 1980s (as a continuation of the surge in late 1970s), the frequency of surges and their ending in different forms of crises increased post-1990.[3] To examine whether the role of global and domestic factors in later years has been any different, we re-estimate the benchmark specification for the 1990-2013 sample. The results summarized in Tables B.3 and B.4 for financial crisis and growth collapses, respectively, show a largely unchanged impact of global and domestic factors in the more recent sample.

Alternate crash definitions

To check whether our results are sensitive to the definition of crash endings, we employ different strategies. First, instead of considering banking and currency crisis jointly, we analyze them individually to see if there are any differences in the factors associated with each type of crisis. In our dataset, banking crisis occur more frequently (25 cases) relative to currency crisis (14 cases) following surge episodes. The results reported in Tables B.5 and B.6 suggest that indeed there may be some differences in the importance of both global and local factors: banking crisis, for instance, are significantly more likely to occur when the end of a surge episode in EMEs is marked with an increase in US real interest rates or global risk aversion, as well as with a decline in commodity prices By contrast, currency crisis appear to be mainly driven by changes in commodity prices. Among domestic factors, banking crisis are more likely to occur when the surge episode is driven by other investment liability flows (predominantly cross-border banking flows)—indicating the flighty nature of these flows, as established in earlier literature (e.g., Milesi-Ferreti and Cedric and Tille, 2011; Brunnermeier et al., 2012)—but less likely to occur when inflows over the episode are mostly FDI related. Moreover, increased capital account openness over the episode is also more likely to raise the probability of a banking crisis but has a statistically insignificant impact on the occurrence of a currency crisis.

[2] In addition, we estimate the specifications reported in Tables 1 and 2 controlling for surge duration and the average (or cumulative) net flow received over the surge episode, and find that the results remain robust to the inclusion of these variables.

[3] Several studies (e.g., Chuhan, Claessens, and Mamingi, 1993; and Taylor and Sarno) note that the composition of flows in the surge of 1990s and later years has also been different with a pronounced increased in portfolio flows.

In the analysis conducted above, we consider a two-year window after the end of a surge episode to identify cases of financial and growth crisis. To confirm that the results are robust to the length of the window, we also consider three-year and one-year windows, which yield 33 and 22 episodes ending in a financial crisis, respectively. The estimated coefficients obtained using the 3-year definition of crash endings (reported in Tables B.7 and B.8) remain very similar to those obtained above: both global factors and domestic conditions—notably, credit expansion, economic overheating, and currency overvaluation, as well as the nature of flows received over the surge episode—matter for how episodes end. (The results obtained for the one-year window are also very similar, and hence are not reported here.)

Alternate surge definitions

Next, we also check whether our results are sensitive to the definition of surge episodes by identifying surges using two alternative approaches. First, instead of imposing any ad hoc threshold (like 30th percentile) to define surges, we apply the cluster analysis (specifically, the *k-means* clustering technique) on each country's standardized net capital to GDP observations. Using this method, we group observations into three clusters (surges; normal flows; and outflows) such that the within-cluster sum of squared differences from the mean is minimized (while the between-cluster difference in means is maximized). As a result, each observation belongs to the cluster with the nearest mean, and clusters comprise observations that are statistically similar. Since, no sample-wide criterion is imposed in this case (so the identified surge observations represent large inflows by country-specific standards only), the total number of identified surge and surge episode observations is higher (355 and 167, respectively). But the analysis of the ending of these surge episodes yields a very similar picture to that obtained in Tables 1 and 2: an increase in US real interest rates and global risk aversion, and a decline in commodity prices raise the likelihood of a crash ending; while, among the domestic factors, greater credit expansion, currency overvaluation, and economic overheating also significantly raise the probability of a crash (Tables B.9 and B.10).

Second, since net flows to EMEs generally mirror liability (nonresident) flows and inflow surges are largely a liability driven phenomenon (Ghosh et al., 2014), we define surges in terms of liability flows—specifically, as those observations that fall in the top 30th percentile of both the country-specific and the full sample's distribution of (net) liability flows, expressed in

percent of GDP. This definition yields 315 surge observations that are grouped into 157 surge episodes (of which 12 are ongoing as of the end of the sample). The obtained results for these episodes (reported in Tables B.11 and B.12) confirm the findings reported above for net flows, with the estimated coefficients for both global and domestic factors being generally comparable to those reported in Tables 1 and 2 in terms of statistical significance and magnitude.

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Table B.1 Post-Surge Episode Financial Crisis Probability: Alternate Specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
US real interest rate[a]	0.224**	0.219**	0.256**	0.213**	0.215**	0.224**	0.247**	0.251*	0.233**	0.202**	0.203*	0.237**	0.358***	0.189*
	(0.107)	(0.099)	(0.122)	(0.106)	(0.102)	(0.111)	(0.109)	(0.130)	(0.115)	(0.101)	(0.110)	(0.104)	(0.090)	(0.105)
Commodity prices[a]	-0.031***	-0.033***	-0.032***	-0.029***	-0.032***	-0.031***	-0.036***	-0.030***	-0.038***	-0.036***	-0.031***	-0.034***	-0.040***	-0.035***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.008)	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.008)	(0.009)
S&P500 returns' volatility[a]	0.062**	0.067**	0.070**	0.065**	0.066**	0.073**	0.067**	0.079**	0.031	0.075***	0.073**	0.067**	0.096***	0.060**
	(0.030)	(0.028)	(0.032)	(0.030)	(0.028)	(0.031)	(0.030)	(0.037)	(0.030)	(0.028)	(0.030)	(0.027)	(0.025)	(0.027)
Real GDP per capita (log)[b]	0.198	0.202	0.150	0.219	0.217	0.135	0.163	0.197	0.113	0.167	0.169	0.202	0.266	0.260
	(0.211)	(0.193)	(0.190)	(0.201)	(0.202)	(0.231)	(0.202)	(0.199)	(0.229)	(0.182)	(0.219)	(0.196)	(0.203)	(0.222)
Change in overvaluation[c]	0.026													
	(0.031)													
Change in real GDP growth rate[c]		-0.024												
		(0.043)												
Change in REER appreciation[c]			-0.021											
			(0.016)											
Change in real interest rate[c]				0.005										
				(0.020)										
Change in FX reserves/GDP[c]					-0.008									
					(0.033)									
Change in short-term debt/GDP[c]						0.033								
						(0.033)								
Change in bank foreign liab./GDP[c]							0.039							
							(0.030)							
Change in institutional quality[c]								-5.327						
								(4.633)						
Output gap[d]									0.082***					
									(0.023)					
Current account balance/GDP[d]										0.057				
										(0.035)				
Short-term debt/GDP[d]											0.006			
											(0.007)			
Fiscal balance/GDP[d]												0.020		
												(0.037)		
External debt/GDP[d]													0.002	
													(0.005)	
Liability/GDP[c]														0.005
														(0.031)
Asset/GDP[c]														-0.050
														(0.031)
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	139	141	138	122	141	125	140	123	142	142	127	140	139	139
Countries	48	48	48	46	48	45	47	45	48	48	45	48	48	48
R2 (Pseudo)	0.164	0.152	0.163	0.141	0.150	0.151	0.186	0.154	0.218	0.188	0.152	0.165	0.207	0.162
Wald chi2 (p-value)	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.001
Percent correctly predicted	84.89	83.69	83.33	84.43	83.69	81.60	84.29	83.74	85.21	83.80	84.25	84.29	82.73	84.17
Sensitivity	24.00	12.00	12.50	13.64	12.00	12.50	23.08	5.00	34.62	19.23	13.04	19.23	24.00	12.50

Note: Dependent variable is a binary variable equal to 1if a banking or currency crisis occurred within two years of a surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

Table B.2 Post-Surge Episode Growth Collapse Probability: Alternate Specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
US real interest rate[a]	0.230**	0.223**	0.242***	0.184**	0.221**	0.211**	0.250**	0.260***	0.256*	0.274***	0.256**	0.237**	0.259***	0.122
	(0.090)	(0.089)	(0.090)	(0.089)	(0.089)	(0.100)	(0.104)	(0.096)	(0.138)	(0.100)	(0.106)	(0.103)	(0.090)	(0.098)
Commodity prices[a]	-0.024***	-0.026***	-0.023***	-0.026***	-0.025***	-0.024**	-0.030***	-0.019**	-0.044***	-0.027***	-0.031***	-0.026***	-0.029***	-0.028**
	(0.007)	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)	(0.009)	(0.007)	(0.009)	(0.007)	(0.008)	(0.007)
S&P500 returns' volatility[a]	0.152***	0.149***	0.153***	0.131***	0.151***	0.145***	0.148***	0.163***	0.068**	0.151***	0.167***	0.144***	0.162***	0.128***
	(0.031)	(0.029)	(0.033)	(0.031)	(0.031)	(0.033)	(0.032)	(0.037)	(0.035)	(0.031)	(0.037)	(0.029)	(0.033)	(0.033)
Real GDP per capita (log)[b]	0.263	0.349	0.234	0.210	0.262	0.263	0.201	0.276	-0.079	0.437*	0.112	0.279	0.232	0.279
	(0.230)	(0.259)	(0.240)	(0.235)	(0.226)	(0.259)	(0.279)	(0.263)	(0.295)	(0.254)	(0.288)	(0.215)	(0.246)	(0.218)
Change in overvaluation[c]	-0.009													
	(0.020)													
Change in real GDP growth rate[c]		0.078*												
		(0.047)												
Change in REER appreciation[c]			-0.007											
			(0.016)											
Change in real interest rate[c]				-0.030										
				(0.023)										
Change in FX reserves/GDP[c]					0.015									
					(0.032)									
Change in short-term debt/GDP[c]						0.038								
						(0.029)								
Change in bank foreign liab./GDP[c]							0.113***							
							(0.031)							
Change in institutional quality[c]								0.330						
								(4.417)						
Output gap[d]									0.288***					
									(0.080)					
Current account balance/GDP[d]										-0.061**				
										(0.026)				
Short-term debt/GDP[d]											0.020***			
											(0.005)			
Fiscal balance/GDP[d]												0.099**		
												(0.045)		
External debt/GDP[d]													0.007	
													(0.004)	
Liability/GDP[c]														0.070***
														(0.026)
Asset/GDP[c]														-0.035
														(0.045)
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	139	141	138	122	141	125	140	123	142	142	127	140	139	139
Countries	48	48	48	46	48	45	47	45	48	48	45	48	48	48
R2 (Pseudo)	0.164	0.152	0.163	0.141	0.150	0.151	0.186	0.154	0.218	0.188	0.152	0.165	0.207	0.258
Wald chi2 (p-value)	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Percent correctly predicted	84.89	83.69	83.33	84.43	83.69	81.60	84.29	83.74	85.21	83.80	84.25	84.29	82.73	83.45
Sensitivity	24.00	12.00	12.50	13.64	12.00	12.50	23.08	5.00	34.62	19.23	13.04	19.23	24.00	52.94

Note: Dependent variable is a binary variable equal to 1if a growth collapse occurred after the surge episode. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

Table B.3 Post-Surge Episode Financial Crisis Probability: Post-1990 Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
US real interest rate[a]	0.235**	0.228*	0.211*	0.216*	0.217*	0.204	0.367***	0.248**	0.249**	0.235**	0.181	0.226*
	(0.120)	(0.118)	(0.125)	(0.117)	(0.125)	(0.124)	(0.128)	(0.119)	(0.122)	(0.119)	(0.115)	(0.119)
Commodity prices[a]	-0.033***	-0.032***	-0.038***	-0.029***	-0.031***	-0.028***	-0.040***	-0.031***	-0.023**	-0.033**	-0.031***	-0.031***
	(0.009)	(0.009)	(0.010)	(0.008)	(0.009)	(0.010)	(0.011)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)
S&P500 returns' volatility[a]	0.074**	0.075**	0.042	0.072**	0.059**	0.078**	0.112***	0.087**	0.069**	0.073**	0.072**	0.075**
	(0.032)	(0.033)	(0.034)	(0.032)	(0.029)	(0.034)	(0.031)	(0.034)	(0.034)	(0.031)	(0.033)	(0.032)
Real GDP per capita (log)[b]	0.181	0.136	0.075	0.167	0.134	0.124	0.126	0.397*	0.319	0.190	0.083	0.167
	(0.201)	(0.196)	(0.240)	(0.201)	(0.215)	(0.245)	(0.245)	(0.225)	(0.262)	(0.205)	(0.189)	(0.209)
Current acc. bal./GDP[c]		0.024										
		(0.059)										
Domestic credit/GDP[c]			0.044***									
			(0.014)									
Fiscal balance/GDP[c]				-0.081								
				(0.062)								
Output gap[c]					0.047*							
					(0.028)							
Capital acc. openness[c]						0.562***						
						(0.217)						
External debt/GDP[c]							0.036					
							(0.024)					
FX reserves/GDP[d]								-0.048**				
								(0.021)				
Overvaluation[d]									0.087***			
									(0.023)			
Exchange rate regime[d]										-0.023		
										(0.212)		
FDI surge[e]											-0.500**	
											(0.238)	
Other investment liab. surge[e]												0.346
												(0.221)
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	135	133	134	131	134	124	133	135	135	135	135	135
Countries	48	48	48	47	48	47	48	48	48	48	48	48
R2 (Pseudo)	0.169	0.157	0.219	0.178	0.167	0.180	0.253	0.210	0.272	0.169	0.188	0.180
Wald chi2 (p-value)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent correctly predicte	85.19	84.21	85.82	86.26	85.82	87.90	84.96	85.19	86.67	85.19	85.19	84.44
Sensitivity	13.04	4.545	22.73	18.18	13.64	16.67	19.05	26.09	43.48	13.04	26.09	21.74

Note: Dependent variable is a binary variable equal to 1if a banking or currency crisis occurred within two years of a surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table B.4 Post-Surge Episode Growth Collapse Probability: Post-1990 Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
US real interest rate[a]	0.220**	0.218**	0.260**	0.239**	0.334***	0.241**	0.182*	0.255***	0.220**	0.258**	0.205*	0.215**
	(0.097)	(0.095)	(0.118)	(0.106)	(0.115)	(0.104)	(0.097)	(0.095)	(0.105)	(0.108)	(0.106)	(0.097)
Commodity prices[a]	-0.024***	-0.022***	-0.035***	-0.029***	-0.040***	-0.025***	-0.024***	-0.028***	-0.019**	-0.030**	-0.024***	-0.023***
	(0.007)	(0.007)	(0.009)	(0.009)	(0.010)	(0.008)	(0.008)	(0.008)	(0.007)	(0.009)	(0.008)	(0.008)
S&P500 returns' volatility[a]	0.160***	0.153***	0.125***	0.173***	0.116***	0.158***	0.159***	0.168***	0.161***	0.173***	0.160***	0.161***
	(0.035)	(0.034)	(0.036)	(0.035)	(0.034)	(0.037)	(0.035)	(0.034)	(0.039)	(0.040)	(0.035)	(0.034)
Real GDP per capita (log)[b]	0.229	0.236	0.129	0.280	0.208	0.168	0.153	0.094	0.334	0.490*	0.191	0.208
	(0.236)	(0.251)	(0.293)	(0.267)	(0.341)	(0.264)	(0.256)	(0.252)	(0.270)	(0.268)	(0.229)	(0.237)
Current acc. bal./GDP[c]		-0.060										
		(0.040)										
Domestic credit/GDP[c]			0.098***									
			(0.025)									
Fiscal balance/GDP[c]				0.130*								
				(0.070)								
Output gap[c]					0.342***							
					(0.068)							
Capital acc. openness[c]						0.381						
						(0.296)						
External debt/GDP[c]							0.025					
							(0.018)					
FX reserves/GDP[d]								0.026**				
								(0.013)				
Overvaluation[d]									0.056***			
									(0.021)			
Exchange rate regime[d]										-0.691**		
										(0.314)		
FDI surge[e]											-0.156	
											(0.330)	
Other investment liab. surge[e]												0.255
												(0.290)
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	135	133	134	131	134	124	133	135	135	135	135	135
Countries	48	48	48	47	48	47	48	48	48	48	48	48
R2 (Pseudo)	0.230	0.234	0.368	0.270	0.466	0.231	0.249	0.252	0.271	0.277	0.232	0.235
Wald chi2 (p-value)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent correctly predicte	79.26	78.95	82.09	77.86	85.82	80.65	81.20	77.78	80.74	79.26	78.52	80.00
Sensitivity	44.12	45.45	55.88	44.12	66.67	46.67	48.48	41.18	44.12	44.12	41.18	47.06

Note: Dependent variable is a binary variable equal to 1if a growth collapse occurred after a surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table B.5 Post-Surge Episode Banking Crisis Probability

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
US real interest rate[a]	0.221**	0.218**	0.183*	0.215**	0.203*	0.185*	0.323***	0.242**	0.240**	0.221**	0.149	0.211*	0.194
	(0.109)	(0.109)	(0.111)	(0.109)	(0.110)	(0.110)	(0.115)	(0.113)	(0.110)	(0.109)	(0.109)	(0.113)	(0.125)
Commodity prices[a]	-0.030***	-0.030***	-0.033***	-0.026***	-0.028***	-0.027***	-0.036***	-0.027***	-0.020*	-0.030**	-0.028***	-0.026***	-0.019
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.012)
S&P500 returns' volatility[a]	0.063**	0.070**	0.034	0.063**	0.055*	0.067**	0.104***	0.075**	0.060*	0.063**	0.061*	0.066**	0.036
	(0.029)	(0.032)	(0.030)	(0.031)	(0.028)	(0.032)	(0.029)	(0.031)	(0.031)	(0.029)	(0.031)	(0.031)	(0.034)
Real GDP per capita (log)[b]	0.397**	0.345*	0.335	0.357*	0.351*	0.358	0.421**	0.621***	0.512**	0.391**	0.273	0.401*	0.445
	(0.188)	(0.183)	(0.214)	(0.191)	(0.195)	(0.218)	(0.207)	(0.226)	(0.214)	(0.192)	(0.184)	(0.215)	(0.354)
Current acc. bal./GDP[c]		0.055											
		(0.057)											
Domestic credit/GDP[c]			0.040***										0.064**
			(0.013)										(0.026)
Fiscal balance/GDP[c]				-0.093									
				(0.059)									
Output gap[c]					0.029								-0.026
					(0.021)								(0.051)
Capital acc. openness[c]						0.592***							0.444
						(0.194)							(0.301)
External debt/GDP[c]							0.038**						
							(0.018)						
FX reserves/GDP[d]								-0.047**					-0.033
								(0.023)					(0.028)
Overvaluation[d]									0.080***				0.080***
									(0.021)				(0.029)
Exchange rate regime[d]										0.018			0.065
										(0.224)			(0.265)
FDI surge[e]											-0.730**		
											(0.298)		
Other investment liab. surge[e]												0.600**	
												(0.253)	
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142	140	141	137	141	131	140	142	142	142	142	142	130
Countries	48	48	48	47	48	47	48	48	48	48	48	48	47
R2 (Pseudo)	0.147	0.147	0.187	0.158	0.137	0.157	0.263	0.191	0.247	0.147	0.186	0.180	0.369
Wald chi2 (p-value)	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent correctly predicte	84.51	85	85.82	86.13	85.82	88.55	85.71	85.21	87.32	84.51	87.32	85.92	90.00
Sensitivity	4.35	9.09	18.18	13.64	9.091	21.05	19.05	13.04	30.43	4.35	21.74	21.74	38.89

Note: Dependent variable is a binary variable equal to 1if a banking crisis occurred within two years of a surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table B.6 Post-Surge Episode Currency Crisis Probability

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
US real interest rate[a]	0.108	0.107	0.092	0.122	0.088	0.105	0.331**	0.168	0.130	0.107	0.107	0.107	0.260
	(0.132)	(0.140)	(0.147)	(0.135)	(0.148)	(0.133)	(0.136)	(0.156)	(0.152)	(0.134)	(0.131)	(0.132)	(0.243)
Commodity prices[a]	-0.037***	-0.038***	-0.043***	-0.038***	-0.034***	-0.039***	-0.054***	-0.033***	-0.024**	-0.037***	-0.037***	-0.036***	-0.069**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.010)	(0.011)	(0.018)	(0.013)	(0.011)	(0.011)	(0.011)	(0.011)	(0.026)
S&P500 returns' volatility[a]	0.026	0.035	-0.008	0.029	0.010	0.018	0.098*	0.054	0.018	0.024	0.026	0.027	0.024
	(0.037)	(0.040)	(0.042)	(0.039)	(0.033)	(0.036)	(0.051)	(0.050)	(0.043)	(0.036)	(0.037)	(0.037)	(0.066)
Real GDP per capita (log)[b]	-0.100	-0.053	-0.378	-0.127	-0.073	-0.043	-0.050	0.192	-0.177	-0.046	-0.101	-0.104	-0.127
	(0.327)	(0.336)	(0.349)	(0.322)	(0.327)	(0.335)	(0.401)	(0.415)	(0.323)	(0.336)	(0.293)	(0.321)	(0.471)
Current acc. bal./GDP[c]		0.067											
		(0.045)											
Domestic credit/GDP[c]			0.074***										0.169***
			(0.018)										(0.040)
Fiscal balance/GDP[c]				0.013									
				(0.059)									
Output gap[c]					0.085**								-0.017
					(0.041)								(0.041)
Capital acc. openness[c]						0.224							-0.188
						(0.219)							(0.468)
External debt/GDP[c]							0.026***						
							(0.009)						
FX reserves/GDP[d]								-0.074*					-0.171**
								(0.041)					(0.059)
Overvaluation[d]									0.081***				0.046
									(0.031)				(0.038)
Exchange rate regime[d]										-0.198			-0.342
										(0.227)			(0.310)
FDI surge[e]											-0.005		
											(0.342)		
Other investment liab. surge[e]												0.071	
												(0.250)	
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142	140	141	137	141	131	140	142	142	142	142	142	130
Countries	48	48	48	47	48	47	48	48	48	48	48	48	47
R2 (Pseudo)	0.150	0.172	0.254	0.154	0.186	0.161	0.288	0.235	0.272	0.154	0.150	0.150	0.512
Wald chi2 (p-value)	0.01	0.01	0.00	0.02	0.01	0.01	0.00	0.03	0.00	0.02	0.01	0.01	0.00
Percent correctly predicte	92.25	91.43	93.62	91.97	92.20	92.37	92.86	92.96	92.25	92.25	92.25	92.25	94.62
Sensitivity	0.00	0.00	18.18	0.00	9.09	0.00	10.00	9.09	18.18	0.00	0.00	0.00	50.00

Note: Dependent variable is a binary variable equal to 1if a currency crisis occurred within two years of a surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table B.7 Post-Surge Episode Financial Crisis Probability within 3-years of Surge End

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
US real interest rate[a]	0.242***	0.234***	0.220**	0.238***	0.230**	0.193**	0.332***	0.265***	0.285***	0.243**	0.193**	0.236**	0.212*
	(0.092)	(0.089)	(0.093)	(0.092)	(0.095)	(0.096)	(0.074)	(0.094)	(0.097)	(0.095)	(0.095)	(0.093)	(0.110)
Commodity prices[a]	-0.031***	-0.030***	-0.034***	-0.029***	-0.030***	-0.027***	-0.033***	-0.028***	-0.020**	-0.032***	-0.029***	-0.029***	-0.022**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)	(0.011)
S&P500 returns' volatility[a]	0.057**	0.057**	0.034	0.058**	0.049**	0.055**	0.079***	0.070***	0.051**	0.056**	0.056**	0.059**	0.017
	(0.024)	(0.024)	(0.025)	(0.025)	(0.023)	(0.025)	(0.019)	(0.025)	(0.026)	(0.024)	(0.025)	(0.025)	(0.026)
Real GDP per capita (log)[b]	0.057	0.017	-0.032	0.007	0.006	0.054	0.070	0.268	0.083	0.124	-0.045	0.050	0.125
	(0.224)	(0.221)	(0.242)	(0.222)	(0.236)	(0.278)	(0.239)	(0.288)	(0.253)	(0.242)	(0.210)	(0.246)	(0.410)
Current acc. bal./GDP[c]		0.018											
		(0.048)											
Domestic credit/GDP[c]			0.033**										0.057**
			(0.014)										(0.023)
Fiscal balance/GDP[c]				-0.032									
				(0.056)									
Output gap[c]					0.029								0.009
					(0.032)								(0.050)
Capital acc. openness[c]						0.571**							0.424
						(0.243)							(0.281)
External debt/GDP[c]							-0.000						
							(0.004)						
FX reserves/GDP[d]								-0.050**					-0.041
								(0.021)					(0.027)
Overvaluation[d]									0.094***				0.074***
									(0.023)				(0.025)
Exchange rate regime[d]										-0.184			-0.128
										(0.255)			(0.265)
FDI surge[e]											-0.550*		
											(0.288)		
Other investment liab. surge[e]												0.385*	
												(0.223)	
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142	140	141	137	141	131	140	142	142	142	142	142	130
Countries	48	48	48	47	48	47	48	48	48	48	48	48	47
R2 (Pseudo)	0.141	0.131	0.168	0.140	0.135	0.143	0.165	0.191	0.265	0.145	0.166	0.155	0.340
Wald chi2 (p-value)	0.00	0.01	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Percent correctly predicted	80.99	81.43	81.56	81.02	82.98	85.50	81.43	80.99	84.51	78.87	80.28	80.99	89.23
Sensitivity	17.24	10.71	17.86	14.29	17.86	17.39	14.81	24.14	41.38	13.79	20.69	24.14	45.45

Note: Dependent variable is a binary variable equal to 1if a banking or currency crisis occurred within three years of a surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table B.8 Post-Surge Episode Growth Crisis Probability within 3-years of Surge End

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
US real interest rate[a]	0.121	0.137	0.124	0.128	0.236**	0.124	0.091	0.139	0.121	0.131	0.108	0.116	0.311**
	(0.088)	(0.084)	(0.112)	(0.091)	(0.120)	(0.087)	(0.091)	(0.092)	(0.092)	(0.092)	(0.094)	(0.090)	(0.131)
Commodity prices[a]	-0.013*	-0.011	-0.019**	-0.014*	-0.023**	-0.011	-0.012	-0.017**	-0.008	-0.016**	-0.013	-0.011	-0.019
	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.012)
S&P500 returns' volatility[a]	0.079**	0.074**	0.037	0.085***	0.035	0.073**	0.078**	0.085***	0.074**	0.080**	0.079**	0.082***	0.021
	(0.031)	(0.030)	(0.034)	(0.031)	(0.032)	(0.030)	(0.032)	(0.029)	(0.033)	(0.032)	(0.031)	(0.031)	(0.032)
Real GDP per capita (log)[b]	0.317*	0.357*	0.295	0.318*	0.349	0.221	0.256	0.193	0.362**	0.472**	0.289*	0.313*	0.320
	(0.165)	(0.186)	(0.192)	(0.173)	(0.272)	(0.178)	(0.181)	(0.176)	(0.172)	(0.189)	(0.164)	(0.169)	(0.300)
Current acc. bal./GDP[c]		-0.067											
		(0.048)											
Domestic credit/GDP[c]			0.085***										0.041
			(0.020)										(0.029)
Fiscal balance/GDP[c]				0.029									
				(0.064)									
Output gap[c]					0.375***								0.365***
					(0.069)								(0.084)
Capital acc. openness[c]						0.059							-0.516
						(0.219)							(0.337)
External debt/GDP[c]							0.015						
							(0.010)						
FX reserves/GDP[d]								0.024*					0.018
								(0.014)					(0.021)
Overvaluation[d]									0.039**				0.063***
									(0.015)				(0.024)
Exchange rate regime[d]										-0.438*			-0.400*
										(0.234)			(0.211)
FDI surge[e]											-0.157		
											(0.241)		
Other investment liab. surge[e]												0.315	
												(0.248)	
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142	140	141	137	141	131	140	142	142	142	142	142	130
Countries	48	48	48	47	48	47	48	48	48	48	48	48	47
R2 (Pseudo)	0.108	0.119	0.243	0.114	0.411	0.09	0.122	0.131	0.133	0.131	0.111	0.118	0.486
Wald chi2 (p-value)	0.03	0.05	0.00	0.03	0.00	0.107	0.07	0.00	0.01	0.06	0.05	0.03	0.00
Percent correctly predicted	78.87	80	82.27	76.64	86.52	77.86	80.71	78.17	78.87	80.28	78.17	78.17	86.15
Sensitivity	25.00	28.57	47.22	19.44	60	15.63	28.57	27.78	25.00	36.11	25.00	22.22	62.50

Note: Dependent variable is a binary variable equal to 1if agrowth collapse occurred within three years of a surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table B.9 Post-Surge Episode Financial Crisis Probability: Cluster Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
US real interest rate[a]	0.204**	0.195**	0.220**	0.187*	0.160	0.177*	0.281***	0.219**	0.223**	0.201**	0.169*	0.194**
	(0.093)	(0.093)	(0.098)	(0.099)	(0.099)	(0.091)	(0.093)	(0.095)	(0.106)	(0.093)	(0.095)	(0.094)
Commodity prices[a]	-0.026***	-0.025***	-0.028***	-0.024***	-0.023***	-0.021**	-0.032***	-0.022**	-0.017	-0.027**	-0.026***	-0.026***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.011)	(0.009)	(0.009)	(0.009)
S&P500 returns' volatility[a]	0.052**	0.056**	0.041	0.042	0.022	0.058**	0.063**	0.060**	0.061**	0.048**	0.051**	0.051**
	(0.025)	(0.026)	(0.026)	(0.028)	(0.024)	(0.025)	(0.026)	(0.026)	(0.029)	(0.024)	(0.025)	(0.025)
Real GDP per capita (log)[b]	0.256	0.234	0.218	0.209	0.191	0.215	0.165	0.377**	0.333*	0.312*	0.215	0.268
	(0.162)	(0.159)	(0.186)	(0.155)	(0.196)	(0.169)	(0.193)	(0.179)	(0.181)	(0.185)	(0.163)	(0.168)
Current acc. bal./GDP[c]		0.030										
		(0.049)										
Domestic credit/GDP[c]			0.032*									
			(0.017)									
Fiscal balance/GDP[c]				-0.074								
				(0.046)								
Output gap[c]					0.129***							
					(0.041)							
Capital acc. openness[c]						0.179						
						(0.303)						
External debt/GDP[c]							0.049***					
							(0.019)					
FX reserves/GDP[d]								-0.036**				
								(0.017)				
Overvaluation[d]									0.063*			
									(0.034)			
Exchange rate regime[d]										-0.248		
										(0.240)		
FDI surge[e]											-0.350	
											(0.268)	
Other investment liab. surge[e]												0.246
												(0.222)
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	156	155	154	149	154	150	152	156	156	156	156	156
Countries	52	52	52	52	52	51	52	52	52	52	52	52
R2 (Pseudo)	0.128	0.120	0.147	0.138	0.177	0.108	0.203	0.162	0.233	0.134	0.139	0.134
Wald chi2 (p-value)	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01
Percent correctly predicte	83.97	84.52	84.42	85.91	86.36	84.67	83.55	83.33	89.10	83.97	85.26	85.26
Sensitivity	7.41	7.69	7.69	16.00	20.00	4.17	16.00	7.41	40.74	7.41	14.81	14.81

Note: Dependent variable is a binary variable equal to 1if a banking or currency crisis occurred within two years of a surge episode end (defined using cluster analysis). All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table B.10 Post-Surge Episode Growth Collapse Probability: Cluster Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
US real interest rate[a]	0.121	0.137	0.123	0.099	0.065	0.131	0.095	0.132	0.117	0.126	0.106	0.115
	(0.085)	(0.085)	(0.087)	(0.088)	(0.118)	(0.086)	(0.085)	(0.086)	(0.089)	(0.090)	(0.087)	(0.083)
Commodity prices[a]	-0.014*	-0.013*	-0.014*	-0.015*	-0.009	-0.010	-0.012*	-0.016**	-0.009	-0.017**	-0.013*	-0.013*
	(0.007)	(0.007)	(0.007)	(0.008)	(0.009)	(0.008)	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)
S&P500 returns' volatility[a]	0.090**	0.084**	0.081**	0.084**	0.033	0.090***	0.086**	0.091**	0.093***	0.086**	0.090***	0.089***
	(0.035)	(0.034)	(0.035)	(0.035)	(0.037)	(0.035)	(0.034)	(0.035)	(0.035)	(0.038)	(0.035)	(0.034)
Real GDP per capita (log)[b]	0.312**	0.310*	0.297*	0.279*	0.197	0.282*	0.298*	0.264*	0.351**	0.435***	0.295*	0.316**
	(0.157)	(0.168)	(0.171)	(0.151)	(0.265)	(0.158)	(0.161)	(0.153)	(0.165)	(0.158)	(0.153)	(0.161)
Current acc. bal./GDP[c]		-0.082**										
		(0.036)										
Domestic credit/GDP[c]			0.027**									
			(0.014)									
Fiscal balance/GDP[c]				0.035								
				(0.064)								
Output gap[c]					0.473***							
					(0.088)							
Capital acc. openness[c]						-0.073						
						(0.232)						
External debt/GDP[c]							0.003					
							(0.015)					
FX reserves/GDP[d]								0.011				
								(0.009)				
Overvaluation[d]									0.029			
									(0.019)			
Exchange rate regime[d]										-0.548**		
										(0.238)		
FDI surge[e]											-0.153	
											(0.247)	
Other investment liab. surge[e]												0.105
												(0.264)
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	156	155	154	149	154	150	152	156	156	156	156	156
Countries	52	52	52	52	52	51	52	52	52	52	52	52
R2 (Pseudo)	0.139	0.160	0.157	0.135	0.450	0.117	0.130	0.145	0.160	0.170	0.141	0.140
Wald chi2 (p-value)	0.04	0.04	0.04	0.06	0.00	0.13	0.09	0.08	0.02	0.02	0.06	0.05
Percent correctly predicte	80.77	78.71	80.52	81.88	86.36	80.00	80.26	78.21	80.13	81.41	79.49	80.13
Sensitivity	32.50	28.21	33.33	35.90	66.67	14.29	28.21	27.50	35.00	35.00	30.00	32.50

Note: Dependent variable is a binary variable equal to 1if a growth collapse occurred within two years of a surge episode end (defined using cluster analysis). All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table B.11 Post-Liability Inflow Surge Episode Financial Crisis Probability

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
US real interest rate[a]	0.278**	0.293**	0.289**	0.338**	0.287**	0.233**	0.314**	0.265**	0.366**	0.280**	0.210*	0.266**
	(0.122)	(0.126)	(0.122)	(0.161)	(0.114)	(0.111)	(0.124)	(0.124)	(0.161)	(0.124)	(0.114)	(0.119)
Commodity prices[a]	-0.023**	-0.023**	-0.025**	-0.017*	-0.024*	-0.023**	-0.025***	-0.016*	-0.013	-0.023**	-0.022**	-0.022**
	(0.010)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.009)
S&P500 returns' volatility[a]	0.071**	0.074**	0.058	0.083*	0.084**	0.070**	0.094**	0.071*	0.076*	0.072**	0.073**	0.069**
	(0.036)	(0.036)	(0.036)	(0.044)	(0.033)	(0.035)	(0.038)	(0.039)	(0.042)	(0.036)	(0.032)	(0.035)
Real GDP per capita (log)[b]	-0.115	-0.047	-0.139	-0.150	-0.084	0.002	-0.175	-0.056	-0.060	-0.109	-0.250	-0.110
	(0.252)	(0.262)	(0.269)	(0.258)	(0.249)	(0.267)	(0.250)	(0.242)	(0.227)	(0.255)	(0.281)	(0.263)
Current acc. bal./GDP[c]		0.007										
		(0.043)										
Domestic credit/GDP[c]			0.037**									
			(0.018)									
Fiscal balance/GDP[c]				-0.175**								
				(0.064)								
Output gap[c]					-0.043							
					(0.047)							
Capital acc. openness[c]						0.359*						
						(0.211)						
External debt/GDP[c]							0.044**					
							(0.020)					
FX reserves/GDP[d]								-0.044**				
								(0.021)				
Overvaluation[d]									0.087***			
									(0.026)			
Exchange rate regime[d]										-0.032		
										(0.232)		
FDI surge[e]											-0.857***	
											(0.295)	
Other investment liab. surge[e]												0.249
												(0.287)
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	139	136	138	130	138	132	137	139	139	139	139	139
Countries	49	49	49	48	49	48	49	49	49	49	49	49
R2 (Pseudo)	0.129	0.127	0.159	0.204	0.141	0.142	0.173	0.175	0.273	0.129	0.192	0.134
Wald chi2 (p-value)	0.08	0.09	0.00	0.01	0.03	0.107	0.02	0.10	0.00	0.12	0.00	0.11
Percent correctly predicted	83.45	83.82	84.78	85.38	83.33	84.85	84.67	84.17	89.21	83.45	82.73	83.45
Sensitivity	0.00	0.00	9.09	18.18	0.00	4.76	8.70	8.70	34.78	0.00	8.70	0.00

Note: Dependent variable is a binary variable equal to 1if a banking or currency crisis occurred within two years of a liability inflow surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).

Table B.12 Post-Liability Inflow Surge Episode Growth Collapse Probability

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
US real interest rate[a]	-0.027	0.002	0.003	-0.038	0.069	-0.014	-0.023	-0.034	-0.016	-0.010	-0.033	-0.036
	(0.105)	(0.110)	(0.108)	(0.119)	(0.121)	(0.103)	(0.109)	(0.107)	(0.113)	(0.107)	(0.109)	(0.104)
Commodity prices[a]	-0.003	-0.007	-0.010	-0.005	-0.019*	-0.005	-0.005	-0.002	0.004	-0.004	-0.003	-0.003
	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)	(0.009)
S&P500 returns' volatility[a]	0.080**	0.091**	0.068*	0.078**	0.059	0.077**	0.088**	0.079**	0.086**	0.085**	0.079**	0.078**
	(0.034)	(0.039)	(0.035)	(0.036)	(0.039)	(0.034)	(0.040)	(0.034)	(0.033)	(0.035)	(0.034)	(0.034)
Real GDP per capita (log)[b]	0.352	0.440*	0.526*	0.281	0.649**	0.393	0.322	0.364	0.448*	0.435*	0.340	0.354
	(0.237)	(0.243)	(0.270)	(0.237)	(0.287)	(0.252)	(0.243)	(0.240)	(0.248)	(0.256)	(0.241)	(0.243)
Current acc. bal./GDP[c]		-0.102***										
		(0.029)										
Domestic credit/GDP[c]			0.094***									
			(0.022)									
Fiscal balance/GDP[c]				0.060								
				(0.064)								
Output gap[c]					0.349**							
					(0.073)							
Capital acc. openness[c]						0.355						
						(0.264)						
External debt/GDP[c]							0.025					
							(0.017)					
FX reserves/GDP[d]								-0.007				
								(0.015)				
Overvaluation[d]									0.074***			
									(0.018)			
Exchange rate regime[d]										-0.389*		
										(0.210)		
FDI surge[e]											-0.063	
											(0.274)	
Other investment liab. surge[e]												0.156
												(0.329)
Region-specific effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	139	136	138	130	138	132	137	139	139	139	139	139
Countries	49	49	49	48	49	48	49	49	49	49	49	49
R2 (Pseudo)	0.151	0.225	0.299	0.159	0.395	0.159	0.168	0.153	0.251	0.171	0.151	0.153
Wald chi2 (p-value)	0.06	0.00	0.00	0.05	0.00	0.08	0.10	0.10	0.00	0.03	0.10	0.10
Percent correctly predicted	76.26	80.15	79.71	76.15	84.78	78.79	78.10	76.98	80.58	79.14	76.98	76.98
Sensitivity	18.18	39.39	45.45	25.00	51.52	28.13	24.24	21.21	42.42	27.27	21.21	21.21

Note: Dependent variable is a binary variable equal to 1if a banking or currency crisis occurred within two years of a liability inflow surge episode end. All specifications include a constant and are estimated using the probit model. Clustered standard errors (at the country level) are reported in parentheses. *, **, and *** indicate statistical significance at 10, 5 and 1percent levels, respectively.

a/ Difference between the two-year average after the end of the surge episode, and the average over the surge episode.

b/ Level in the year before the surge episode started.

c/ Difference between the average over the surge episode, and the year before the surge started.

d/ Level in the last year of the surge episode.

e/ FDI dominated surge is defined as that where the average net FDI flow (in percent of GDP) received during the surge episode is larger than the average net portfolio or other investment liability flow (in percent of GDP). Similarly, other investment liabi. dominated surge is where the average net other investment liab. flow (in percent of GDP) during the surge episode is larger than the other types of net flows (in percent of GDP).