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All Banking Crises Are Not Created Equal

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Abstract

This paper uses a multinomial logit model to examine the factors associated with the occurrence of both self-fulfilling and fundamental banking crises. We construct an index that differentiates between the two types of banking crises. By doing this, important characteristics particular to each type of run come to light which are not accounted for by standard binomial logit specifications. We find evidence indicating that the two types of crises are indeed different, and are explained by different variables. Self-fulfilling crises tend to occur when bank liabilities relative to reserves are high, when the financial system is liberalized, and for high levels of short-term debt relative to total debt. They are also associated with lending booms and government surpluses. In contrast, fundamental crises are linked to depreciations of the local currency, to financial liberalization and are negatively related to the country's level of development and quality of institutions. Also, countries that experienced multiple crises are more likely to experience fundamental crises. Finally, by accounting for both types of crises, our results provide better support to existing self-fulfilling theoretical models.

Resumen

Este trabajo utiliza un modelo logit multinomial para examinar los factores asociados con el desencadenamiento de crisis bancarias tanto de tipo auto-generadas como las de tipo fundamental. Construimos un índice que diferencia entre los dos tipos de crisis bancarias. Al hacer esto, se manifiestan importantes características particulares a cada tipo de crisis, que no surgen cuando se utilizan especificaciones binomiales estándar. Encontramos evidencia de que los dos tipos de crisis efectivamente son diferentes, y son explicadas por distintas variables. Las crisis auto-generadas tienden a ocurrir cuando los pasivos bancarios relativos a las reservas son altos, cuando el sistema financiero es liberalizado, y para niveles altos de deuda de corto plazo relativa a deuda de largo plazo. También son asociadas a booms de crédito y superávits gubernamentales. En contraste, las crisis de tipo fundamental están relacionadas a depreciaciones, liberalización financiera, y relacionadas negativamente al nivel de desarrollo y la calidad de las instituciones. Economías que experimentaron crisis múltiples tienen mayor probabilidad de experimentar crisis fundamentales. Finalmente, al tomar en cuenta ambos tipos de crisis, nuestros resultados proveen apoyo a los modelos teóricos de las crisis auto-generadas.

All Banking Crises Are Not Created Equal

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Preliminary version

Abstract

This paper uses a multinomial logit model to examine the factors associated with the occurrence of both self-fulfilling and fundamental banking crises. We construct an index that differentiates between the two types of banking crises. By doing this, important characteristics particular to each type of run come to light which are not accounted for by standard binomial logit specifications. We find evidence indicating that the two types of crises are indeed different, and are explained by different variables. Self-fulfilling crises tend to occur when bank liabilities relative to reserves are high, when the financial system is liberalized, and for high levels of short-term debt relative to total debt. They are also associated with lending booms and government surpluses. In contrast, fundamental crises are linked to depreciations of the local currency, to financial liberalization and are negatively related to the country's level of development and quality of institutions. Also, countries that experienced multiple crises are more likely to experience fundamental crises. Finally, by accounting for both types of crises, our results provide better support to existing self-fulfilling theoretical models.

JEL Classification Numbers: E44, G21.

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Introduction

The last 25 years have seen the resurgence of banking crises, with some prominent examples occurring in Latin America and Asia. When banks fail, the consequences are felt across the entire economy, with some dramatic examples[1]. There are two main theoretical views for the causes of banking crises. One view is that they are the consequence of poor economic performance. Examples of such literature are Chari and Jagannathan (1988), Jacklin and Bhattacharya (1988), and Allen and Gale (1998)[2]. The second view is that bank runs are a result of multiple equilibria, where a panic is the realization of a bad equilibrium caused by self-fulfilling expectations. In this view, banking crises may be the actual cause of the deterioration of macroeconomic variables. Examples of these are the original Diamond and Dybvig (1983), Freeman (1988), Cooper and Ross (1997), and Peck and Shell (2002).

While one literature views the banking crisis as a consequence of poor macroeconomic performance, the other views it as the actual cause of macroeconomic downturns. For example, Argentina may be a country where both sunspot and fundamental bank runs have recently occurred. The first bank run was triggered by the Mexican crisis that started in December 1994. Mexico's crisis had no fundamental effect on Argentina, since both countries have almost no relationship. Further, Argentina was coming from a four-year expansion, where GDP growth for the 1991-94 period averaged 8.2%. What caused the bank run was a sudden change in confidence, which set off a self-fulfilling crisis. In contrast, the 2001-2003 crisis appears to have marked differences relative to the "Tequila effect." Prior to the crisis, Argentina was immersed in a deep recession that lasted four years. Argentina's GDP declined an average of 2.9% per year between 1999 and 2001. As a result, banks were at the verge of collapsing by December 2001. Thus it appears that the latter crisis was caused by fundamentals. It therefore seems that both types of crises are not mutually exclusive, but each may best represent distinct states of the world.

The goal of this paper is to investigate the factors that may be associated with self-fulfilling and fundamental banking crises. In the theoretical counterpart of this paper, Fontenla (2005) finds that policy implications may be different depending on the type of crises an economy faces. Thus, identifying the particular characteristics to each type of crisis becomes critical. If banking crises are due to fundamentals, then macroeconomic stabilization policies should be crutial to prevent such occurrences. Further, once a crisis is underway, suspension of convertibility may be more harmful than beneficial if the crisis is based on fundamentals. On the other hand, if a crisis is due to multiple equilibria, then policies conductive to eliminate indeterminacies and volatility may be the adequate government measure.

The empirical literature on the causes of banking crises has grown large in the last few years as a consequence of the resurgence and significance of these crises[3]. Empirical

[1] See Caprio and Klingebiel (2003) for some figures.
[2] Champ Smith and Williamson (1996) and Smith (2002) are also considered part of the fundamentals literature. However, they differ in that their crises are caused mainly by aggregate uncertainty in liquidity preference, rather than poor economic performance.
[3] See Eichengreen and Arteta (2002) for an excellent summary of the literature.

work that addresses the divergence in the theoretical literature has been mixed. Gorton (1988) and Calomiris and Gorton (1991) examine panics during the U.S. National Banking Era (1863-1914). They find that, during that era, panics were linked to business cycles, and thus caused by fundamentals. They further argue that the sunspot explanation of bank runs is inconsistent with evidence for that period. Demirgüç-Kunt and Detragiache (1998a) confirm Gorton's findings for a sample of countries for the 1980-94 period. Using a binomial logit model, they find that the risk of banking crises is heightened mainly by slow growth, high inflation and high real interest rates. In contrast, Boyd, Gomis, Kwack and Smith (2001) look at banking crises across countries covering the period from 1970 to 1998. Their findings suggest that it is more the exception than the rule that there are any unusual macroeconomic events that cause banking crises. They conclude that banking crises may often be the outcome of bad realizations of sunspot equilibria.

In this paper, we construct an index that differentiates between the two types of banking crises. This allows us to use a multinomial logit model to investigate the determinants of self-fulfilling and fundamental banking crises. By doing this, important characteristics particular to each type of run come to light which are not accounted for by standard binomial logit specifications. We find evidence indicating that the two types of crises are indeed different, and are explained by different variables.

Self-fulfilling crises tend to occur when bank liabilities relative to reserves are high, for periods of rapid domestic credit growth and when the financial system is liberalized. In addition, self-fulfilling crises are associated with government surpluses and high levels of short-term debt relative to total debt. In contrast, fundamental crises are linked to depreciations of the local currency, to financial liberalization and to the country's level of development as proxied by GNP per capita. Also, countries that experienced multiple crises are more likely to experience fundamental crises.

Finally, by accounting for the possibility of self-fulfilling crises, our results provide better support to existing self-fulfilling theoretical models. In particular, our results agree with the self-fulfilling banking models outlined above, and more generally to financial crises models such as Calvo and Mendoza (1996), and Cole and Kehoe (2000).

Data

The data covers the period 1974-1997 for 51 developing countries. Following previous literature, we exclude centrally planned economies and high income OECD countries[4]. The identification and dating of banking crises is taken from Caprio and Klingebiel (2003). Caprio and Klingebiel divide crises between systemic, defined as much or all capital being exhausted, and smaller, borderline events. There are 84 systemic banking crises in our period. Since crises often last several years, we consider only the first observation for each systemic banking crisis, in order to prevent reverse causality.

Identifying types of Crises

[4] Here I follow Eichengreen and Arteta in keeping Mexico and Korea in the sample, both OECD countries, since we can consider them to be developing countries.

Fundamental banking crises, as their name suggests, are driven by adverse changes in macroeconomic fundamentals. In particular theory suggests that negative or weak GDP growth, excessively high real interest rates and high inflation should all be causes of fundamental banking crises[5]. Adverse output growth deteriorates the returns of bank investments, and this may trigger banking crises. High short-term interest rates may produce a mismatch between rates of return on assets and liabilities, since banks liabilities tend to be short-term while bank assets usually have longer maturities. Finally, high inflation rates may affect real returns and exacerbate financial market frictions (Barnes, Boyd and Smith, 1999; Boyd, Levine and Smith, 2001).

Given this, we use a simple method to identify types of crises, following similar work by Eichengreen, Rose and Wyplosz (1996) and Kaminsky and Reinhart (1999)[6]. We construct a weighted average of lagged GDP growth, real interest rates and inflation, for the systemic crises identified by Caprio and Klingebiel. The three components of the index are weighted so that their conditional volatilities are equal. Then, when this index falls below a threshold, we identify it as a fundamental crisis. Conversely, when GDP growth is high, and interest rates and inflation are low, we label it a self-fulfilling crisis[7].

Table 1 ranks the 50 crises we are able to measure according to this classification criteria, and shows the values for the three lagged variables included in the index. Roughly, we set the threshold such that it will label a crisis self-fulfilling when GDP growth exceeds 4 percent, and real interest rates and inflation are reasonable. Notice from table 1 that the 1995 Tequila and the 1997 Asian crisis all fall in the self-fulfilling group, which explains the resurgence of theoretical models of self-fulfilling crises. Finally, given the ad-hoc, but hopefully intuitive, nature of this threshold, we conduct sensitivity analysis to see how lowering or raising this threshold matters. We find the main conclusions to be robust.

Explanatory Variables

Explanatory variables are chosen to reflect both theory and previous empirical work, subject to data availability. We choose to lag all of the variables by one period in order to rule out reverse causality. For example, if we were to use a contemporaneous measure of depreciation, we may find that depreciation is correlated with banking crises. We then may erroneously conclude that depreciation explains crises when truly large depreciations may be government responses or consequences of banking crises.

All regressions include the rate of depreciation, a ratio of M2 to foreign exchange reserves, a measure of domestic credit growth, a financial liberalization dummy, government surplus to GDP, a ratio of short-term to total debt, and GNP per capita. We also add a dummy for multiple crisis countries, dummies for fixed and floating exchange rates, a measure terms of trade changes, northern interest rates and OECD growth.

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[5] Demirgüç-Kunt and Detragiache (1998a) find these three variables to be determinants of banking crises, which leads them to favor the idea that crises are best explained by the fundamentals literature.

[6] Eichengreen et al create an index of exchange rate speculative pressure by creating a weighted average of exchange rate changes, reserves and interest rate changes. Kaminsky and Reinhart create a similar index based on exchange rate and reserves changes.

[7] It seems impossible to directly identify self-fulfilling crises, since they are based on agents' beliefs, which are hard to measure. However, at a very minimum, these crises are not the consequence of deterioration of these fundamental macroeconomic variables.

We include the rate of depreciation of the exchange rate relative to the US dollar. This intends to capture the extent to which sharp depreciations may cause crises in countries over exposed to foreign exchange risk. In good times, domestic banks in developing countries often borrow abroad in foreign currency, and lend domestically in the local currency. However, when the wind shifts, depreciations then produce a mismatch between rates of return on assets and liabilities.

To measure vulnerability to capital outflows, we include the ratio of M2 to foreign exchange reserves. M2 may be thought as a proxy for liabilities of the banking system. When M2 exceeds foreign reserves, a negative money demand shock, perhaps self-fulfilling, may render fixed exchange rates implausible (Calvo and Mendoza, 1996). Domestic Credit Growth is used to account for the view that bank lending booms generally precede crises. Lending booms can foster vulnerability by causing a decline in the quality of bank's assets (Gavin and Hausmann, 1998).

We incorporate a financial liberalization dummy, since lifting restrictions on capital flows may increase its volatility and allow for foreign exchange risk. Also, financial liberalization of the banking system may increase competition, thus reducing profit opportunities. Further, lifting restrictions on banks may allow them to take on riskier projects. Especially in the early years of liberalization, bank managers may not have the skills required to screen and monitor risky portfolios. Because of these reasons, banks may become more vulnerable when financial systems are liberalized. Previous empirical work finds that financial liberalization significantly increases the probability of banking crises.

Government surplus as a percentage of GDP signals the ability of governments to repay their debts. Banks in developing countries often hold large shares of their portfolios in government debt, rendering them vulnerable to government's capacity to repay. We also include a ratio of short-term to total external debt. Cole and Kehoe (2000) construct a model where if government debt and its maturity structure reach a critical level, they generate fear of default on part of international bankers which becomes self-fulfilling. Rodrik and Velasco (1999) develop a theoretical model linking short-term debt to crises, and find empirical evidence that short-term debt to reserves ratio is a robust predictor of financial crises.

GNP per capita is added as a control variable, since it may be thought as a proxy for the development of the financial system, quality of institutions and quality of data, as all these variables are thought to be positively correlated with GNP per capita.

We add a dummy variable for countries that experienced multiple crises, since Boyd et al (2001) find that what determines a crisis is different across countries that experience only one crisis in the last 25 years versus those that have had repeated crises.

Fixed exchange rates have often been linked to banking crises, because they may induce banks to excessively borrow abroad. This increases banks' vulnerability in that if fixed exchange rates are abandoned, banks liabilities increase in proportion to devaluations. Floating exchange rates, on the other hand, may be viewed as generating exchange risk and adding another layer of uncertainty to banks. Following Eichengreen and Arteta (2002), we include dummies for both fixed and floating exchange rates.

To measure real external effects, we include a measures of northern interest rates and OECD growth. Changes in capital flows respond to changes in world interest rates and

world output growth. Finally, to account for external shocks in trade that may cause financial distress, we also add a variable measuring terms of trade changes.

Results

We begin the analysis by using a binomial logit model where the independent variable is the Caprio and Klingebiel crisis dates, for the purpose of comparing it to previous work and to our multinomial logit regressions. Table 2 reports the regressions for the variables described above. P-values are reported in parenthesis, where they denote the probability that the coefficient is equal to zero.

The ratio of M2 to foreign exchange reserves, financial liberalization and domestic credit growth all are significant across specifications, agreeing with previous work, in particular Demirgüç-Kunt and Detragiache (1998b) and Eichengreen and Arteta (2002). The rate of depreciation becomes significant at the 10 percent level when we control for exchange rate regimes, but loses significance in all other regressions.

The dummy representing countries that experienced multiple banking crises enters significantly at the 5 percent level, agreeing with Boyd et al (2001). As in Eichengreen and Rose (1998), northern interest rates are associated with banking crises in this specification. Short-term to total debt enters significantly at the 10 percent level for some specifications, but does not appear to be robust. Finally, the other variables considered have no significant effect in this model.

We then divide crises into self-fulfilling and fundamental according to our index, and run maximum-likelihood multinomial logit regressions. Table 3 presents the main results of this paper. The first specification in table 3 provides the benchmark regression, the second regression includes the dummy for countries that experienced multiple crises, and the third specification tests different exchange rate regimes. To test for external factors that may cause banking crises, regression 4 includes changes in the terms of trade and regression 5 includes both northern interest rates and OECD growth rates. The quality of the model specification is tested by the model χ^2, where the hypothesis that the coefficients of the independent variables are jointly equal to zero is tested. We reject the hypothesis at the 1 percent level in all regressions.

Further, and more interestingly, we test that all the coefficients except the constant are equal across the self-fulfilling and fundamental equations. We report the p-values at the bottom of each specification. In the baseline regression the hypothesis that self-fulfilling and fundamental crises are equal is rejected at the 1 percent significance level. For all other specifications we reject it at least at the 5 percent level. This leads us to believe that all banking crises are not alike, and perhaps both self-fulfilling and fundamental theories are correct.

In all regressions, the coefficient for the rate of depreciation is negative (appreciation) but not significant for self-fulfilling crises. In contrast, the rate of depreciation is positively associated with a higher probability of fundamental crises. The coefficient is significant at the 5 percent level for all specifications. Notice that for the binomial logit regressions in table 2, depreciation shows no significant effect for most regressions. In this sense, by differentiating between the two types of crises, we are disentangling important characteristics particular to each type of run.

The ratio of M2 to gross international reserves is positive and highly significant for

all self-fulfilling crises, but loses significance for fundamental crises. While the significance of this variable is also picked up in the binomial regressions, the results given by accounting for both types of crises provides stronger support to self-fulfilling theoretical models such as Calvo and Mendoza (1996).

The rate of domestic credit growth tells a similar story, in that it is positively associated with self-fulfilling banking crises while it shows no effect for fundamental crises. This confirms the idea that lending booms may have played an important role in self-fulfilling events.

The financial liberalization dummy is strongly significant in the binomial logit specification, and continues to be significant across both types of crises when we run multinomial logit regressions. This suggests that financial liberalization may be conducive to the existence of indeterminacies and excess volatility, and may also have direct effects on bank's balance sheets through increased competition and risk taking.

Government budget surplus as a percent of GDP is positive and significant at the 5 percent confidence level for all self-fulfilling crises, except when the multiple crises dummy is introduced. For fundamental crises the coefficient is not significant, but negative. This result sheds light over previous empirical work that is not able to explain their finding that budget surpluses, rather than deficits, are associated with banking crises. Our interpretation here is that budget surpluses support the notion that it is not fundamentals that are causing these group of crises. In contrast, for the group of fundamental crises, the intuitive negative sign denoting deficits is found.

Short term debt to total debt is positive and significant at the 5 percent level for all self-fulfilling crises, and negative and insignificant for fundamental crises. This result provides strong support for Cole and Kehoe's theoretical model of self-fulfilling debt crises.

We find support for the belief that less developed countries, or countries with weaker institutions, are more prone to fundamental crises, as proxied by GNP per capita. This variable is negative and significant at the 10 percent level for fundamental crises except when terms of trade changes are introduced, and shows no effect for self-fulfilling crises. When we introduce the multiple crises dummy, we find backing for the idea that countries that experienced multiple banking crises are more vulnerable to fundamental crises.

All other variables introduced in our regressions show no significant effect on either type of crises. Northern interest rates show no effect on either equation, when its coefficient was significant for the binomial logit regression.

Conclusion

This paper applied a very simple method to differentiate between fundamental and self-fulfilling crises. We then run multinomial logit regressions, and find strong evidence indicating that the two types of crises are indeed different, and are explained by different variables. The assesment of economic conditions that lead to these types of crises becomes essential, since policy implications may be different depending on the type of crises an economy faces.

Self-fulfilling crises tend to occur when M2 relative to reserves is high, for periods of rapid domestic credit growth and when the financial system is liberalized. In addition,

self-fulfilling crises are associated with government surpluses and high levels of short-term debt relative to total debt, results that are not present in the binomial logit model. In contrast, fundamental crises are linked to depreciations of the local currency, to financial liberalization and to the country's level of development as proxied by GNP per capita. Also, countries that experienced multiple crises are more likely to experience fundamental crises.

By accounting for the possibility of self-fulfilling crises, our results provide better support to self-fulfilling theoretical models. In particular, our results agree with models such as Diamond and Dybvig (1983), Calvo and Mendoza (1996), and Cole and Kehoe (2000).

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Table 1

Banking Crises: Index

Country	CrisisYear	GDP growth	Real Interest	Inflation	Index
Bolivia	1986	-1.68	-97.81	11749.61	-9.06125
Brazil	1990	3.28	4974.25	1430.73	-7.949196
Chad	1980	-21.44	0.29	8.19	-4.004833
Brazil	1994	4.90	1356.46	1927.98	-2.546432
Burundi	1994	-5.71	2.52	9.68	-1.075489
Argentina	1989	-1.89	180.73	342.95	-0.8772328
Ghana	1982	-3.50	-32.25	116.50	-0.7872517
Togo	1993	-3.98	13.81	1.39	-0.7642791
Zambia	1995	-3.43	8.94	53.61	-0.6928381
Panama	1988	-1.81	10.08	1.00	-0.3533107
Benin	1988	-1.50	10.16	3.03	-0.2972938
Burkina Faso	1988	-1.35	11.68	-2.68	-0.2719275
Cote d'Ivoire	1988	-0.35	18.32	6.94	-0.0978344
Venezuela	1994	0.25	13.07	38.12	-0.0007555
Jamaica	1994	1.43	6.95	22.07	0.2406257
Kenya	1992	1.44	6.68	19.82	0.2436258
Niger	1983	1.62	4.89	11.64	0.286781
Nepal	1988	1.70	2.06	10.75	0.3052191
Kenya	1985	1.76	3.91	10.28	0.3138735
El Salvador	1989	1.88	0.65	19.76	0.3346719
Ecuador	1996	2.34	26.33	22.89	0.3804255
Congo, Rep.	1992	2.40	19.94	9.16	0.4107605
Sri Lanka	1989	2.47	2.09	13.99	0.4477193
Paraguay	1995	3.09	9.46	20.57	0.5463623
Guinea-Bissau	1995	3.20	10.62	15.18	0.57037

Notes: GDP growth, real interest rates and inflation are lagged one year. Where the index is given by $I = GDPG/\sigma_{GDPG} - |RIR/\sigma_{RIR}| - |INF/\sigma_{INF}|$

Table 1 cont'd

Banking Crises: Index

Country	CrisisYear	GDP growth	Real Interest	Inflation	Index
Cape Verde	1993	3.26	6.37	3.12	0.596069
Swaziland	1995	3.46	1.77	14.31	0.6314512
Mauritania	1984	3.74	4.42	7.26	0.6845862
Ecuador	1982	3.94	-4.68	16.39	0.7162723
Bolivia	1994	4.27	44.41	8.53	0.7228766
Senegal	1988	4.00	11.30	-4.14	0.7263432
Guinea	1993	4.27	1.59	25.01	0.7762778
Bangladesh	1987	4.34	3.82	11.04	0.7954443
Mexico	1995	4.42	11.18	6.97	0.8013953
Sierra Leone	1990	4.95	-19.46	60.80	0.8495151
Philippines	1981	5.15	-0.22	18.20	0.9464962
Thailand	1983	5.35	11.33	5.26	0.977164
Thailand	1997	5.52	9.00	5.81	1.011295
Costa Rica	1987	5.53	3.17	11.84	1.018159
Uruguay	1981	5.84	7.66	63.48	1.031581
Cameroon	1987	6.77	13.29	7.77	1.237033
Zimbabwe	1995	6.84	8.99	22.26	1.246215
Korea, Rep.	1997	7.06	5.22	4.92	1.305834
Indonesia	1997	7.82	9.71	7.97	1.438696
Chile	1981	8.15	14.27	35.14	1.4723
Argentina	1995	8.01	8.71	4.18	1.476774
Nigeria	1991	8.20	16.93	7.36	1.497466
Mali	1987	8.44	15.09	-1.38	1.549582
Malaysia	1997	8.58	3.53	3.49	1.591595
Vietnam	1997	9.34	16.72	6.14	1.712162

Notes: GDP growth, real interest rates and inflation are lagged one year. Where the index is given by $I = GDPG/\sigma_{GDPG} - |RIR/\sigma_{RIR}| - |INF/\sigma_{INF}|$

Table 2

Banking Crises: Binomial Logit Regressions

	(1)	(2)	(3)	(4)	(5)
Variables					
Depreciation	0.17693	0.1168806	0.1816134	0.1570966	0.1705798
	(0.104)	(0.268)	(0.098)	(0.144)	(0.106)
M2 / Gross Int'l Reserves	0.0436406	0.0382265	0.0428331	0.0457394	0.0537812
	(0.052)	(0.095)	(0.056)	(0.044)	(0.018)
Domestic Credit Growth	0.0058132	0.0051465	0.0058602	0.0055762	0.0057089
	(0.009)	(0.027)	(0.010)	(0.016)	(0.015)
Financial Liberalization	1.716014	1.703842	1.723896	1.634726	1.881389
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)
Gov't Budget Surplus / GDP	0.0509828	0.0222437	0.0504099	0.0287788	0.0703162
	(0.254)	(0.613)	(0.257)	(0.570)	(0.119)
Short Term Debt / Total	0.029232	0.0310086	0.0298204	0.0323952	0.0226192
	(0.102)	(0.082)	(0.098)	(0.080)	(0.239)
GNP per Capita	-0.000059	-0.0000674	-0.0000696	-0.00005	-0.0000498
	(0.593)	(0.535)	(0.544)	(0.652)	(0.672)
Multiple Crises	--	0.9189972	--	--	--
	--	(0.031)	--	--	--
Fixed Exch. Rate	--	--	-0.0540256	--	--
	--	--	(0.912)	--	--
Floating Exch. Rate	--	--	-0.1686768	--	--
	--	--	(0.747)	--	--
Terms of Trade Change	--	--	--	-0.8404238	--
	--	--	--	(0.616)	--
Northern Interest Rate	--	--	--	--	0.0099069
	--	--	--	--	(0.020)
Northern Output Growth	--	--	--	--	-18.96226
	--	--	--	--	(0.238)
Observations	657	657	653	621	657
LR chi2	42.25	46.68	42.12	40.15	49.88
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.1614	0.1784	0.1612	0.1593	0.1906

Notes: Multivariate Logit. P-values are given in parenthesis.

Table 3

Banking Crises: Multinomial Logit

	(1)		(2)		(3)	
	Self-Fulfilling	Fundamental	Self-Fulfilling	Fundamental	Self-Fulfilling	Fundamental
Variables						
Depreciation	-1.073958	0.4830678	-1.120047	0.394626	-1.146996	0.5136561
	(0.330)	(0.013)	(0.299)	(0.034)	(0.282)	(0.011)
M2 / Gross Int'l Reserves	0.0926691	0.0122651	0.0919857	0.0077246	0.0977948	0.0109191
	(0.003)	(0.747)	(0.003)	(0.840)	(0.003)	(0.771)
Domestic Credit Growth	0.0096085	0.0017656	0.0088151	0.0014686	0.009587	0.0017895
	(0.014)	(0.628)	(0.031)	(0.700)	(0.019)	(0.625)
Financial Liberalization	1.678321	1.416992	1.549311	1.359341	1.467098	1.624925
	(0.053)	(0.034)	(0.077)	(0.044)	(0.091)	(0.021)
Gov't Surplus / GDP	0.2319527	-0.0135162	0.1841148	-0.0356503	0.268821	-0.0129637
	(0.037)	(0.800)	(0.111)	(0.470)	(0.026)	(0.818)
Short Term Debt / Total	0.0557317	-0.0276998	0.0567809	-0.0306277	0.0611751	-0.0212404
	(0.034)	(0.501)	(0.028)	(0.472)	(0.030)	(0.589)
GNP per Capita	0.0000587	-0.0006295	0.0000812	-0.0006379	0.0000911	-0.0006398
	(0.673)	(0.088)	(0.559)	(0.077)	(0.570)	(0.087)
Multiple Crises	--	--	0.6748266	1.159765	--	--
	--	--	(0.355)	(0.096)	--	--
Fixed Exch. Rate	--	--	--	--	0.0245935	0.5116356
	--	--	--	--	(0.978)	(0.578)
Floating Exch. Rate	--	--	--	--	0.9928716	-0.1590694
	--	--	--	--	(0.270)	(0.873)
Observations	650		650		646	
LR chi2	60.26		63.58		62.64	
Prob > chi2	0.0000		0.0000		0.0000	
Pseudo R2	0.2369		0.25		0.2466	
Test Sunspots=Fundamentals						
chi2	18.79		18.82		19.72	
Prob > chi2	0.0089		0.0158		0.0197	

Notes: Multinomial logit. P-values are given in parenthesis.

Table 3 cont'd

Banking Crises: Multinomial Logit

	(4)		(5)	
	Self-Fulfilling	Fundamental	Self-Fulfilling	Fundamental
Variables				
Depreciation	-1.111658	0.4448102	-1.147478	0.487923
	(0.330)	(0.020)	(0.308)	(0.013)
M2 / Gross Int'l Reserves	0.0906095	0.017889	0.1008191	0.0135123
	(0.003)	(0.640)	(0.002)	(0.725)
Domestic Credit Growth	0.009806	0.0015683	0.0095749	0.0016632
	(0.013)	(0.669)	(0.014)	(0.658)
Financial Liberalization	1.615514	1.438828	1.848188	1.42472
	(0.062)	(0.031)	(0.038)	(0.038)
Gov't Budget Surplus / GDP	0.2258436	-0.0286585	0.2458352	-0.0088075
	(0.045)	(0.625)	(0.025)	(0.867)
Short Term Debt / Total	0.0567259	-0.0272917	0.0491883	-0.0283277
	(0.035)	(0.508)	(0.072)	(0.502)
GNP per Capita	0.0000526	-0.0005785	0.0000792	-0.0006336
	(0.707)	(0.110)	(0.587)	(0.091)
Terms of Trade Change	-0.6571291	-0.9176985	--	--
	(0.836)	(0.715)	--	--
Northern Interest Rate	--	--	0.0080832	0.0022815
	--	--	(0.222)	(0.772)
Northern Output Growth	--	--	-10.48022	-14.27874
	--	--	(0.709)	(0.545)
Observations		615		650
LR chi2		59.28		62.44
Prob > chi2		0.0000		0.0000
Pseudo R2		0.2358		0.2455
Test Sunspots=Fundamentals				
chi2		18.55		19.38
Prob > chi2		0.0175		0.0222

Notes: Multinomial logit. P-values are given in parenthesis.