Annex
Selected Case Studies—Quantitative Analysis

In order to analyze the implications of unsound banking systems for macroeconomic policy, a sample of eight countries that experienced banking sector crises was selected.[65] The sample includes Argentina, Chile, Finland, Ghana, Norway, the Philippines, Uruguay, and Venezuela.[66] In seven of these eight countries, an outright crisis occurred and provided evidence that the banking system was unsound—a condition that might otherwise not have been observed. We can posit, however, that in the period leading up to a crisis, there was a high degree of unsoundness. Thus, it is in the precrisis period that we can look to verify some of the macroeconomic effects discussed in this study.

While assessing the full range of interlinkages between policy and banking system soundness and between banking system soundness and macroeconomic performance is beyond the scope of this brief analysis, several trends do emerge. It is interesting to note that all of the sample countries had undertaken financial sector reforms prior to their banking crises.

Impact on the Real Sector

The evidence from the sample suggests that both output growth and efficiency decreased in the aftermath of banking crises (Table 9). However, causality cannot be attributed definitively to the banking crises. Causality often runs from a downturn in the real sector to unsoundness in the banking sector, and while the data in Table 9 suggest persistent lower growth after a crisis, which may be due to banking sector effects on the real economy, the factors leading to reduced output growth may have been the same factors that led to banking system fragility and crisis.

[65] This annex draws heavily on work done by Ceyla Pazarbaşioğlu. Able research assistance by Kiran Sastry is also gratefully acknowledged.

[66] Ghana was not identified in Table 1 as a crisis case; because the financial system was predominantly state owned and its assets were dominated by the public sector, no liquidity crisis or need for sudden intervention arose (see Sheng and Tannor, 1996).

Table 9. Impact of Banking Crises on the Real Sector[1]

	Argentina	Chile	Finland	Ghana	Norway	Philippines	Uruguay	Venezuela
Real GDP growth								
Mean_0	2.08	8.03	2.84	5.21	3.16	5.78	2.47	2.89
Mean_1	0.62	1.35	–4.07	2.60	1.66	–1.26	–0.23	—
Efficiency[2]								
Mean_0	0.38	0.40	0.28	0.47	0.27	0.50	0.34	0.31
Mean_1	0.29	0.34	0.20	0.31	0.21	0.34	0.29	—

Sources: Sundararajan and Baliño (1991), Drees and Pazarbaşioğlu (1995); IMF, *International Financial Statistics*; and World Bank Database.

[1]Mean_0 and mean_1 are the sample means for the five-year period before and after each banking crisis, respectively. For Ghana, Norway, and Finland, the postcrisis is taken as periods of three, two, and one year respectively. For Venezuela, postcrisis data are not available.

[2]Output-to-capital ratio, calculated as GDP at 1987 prices divided by capital stock at 1987 prices.

Monetary Policy Implications

The analysis of the conditions in the sample countries suggests that the relationships between monetary aggregates and the stability of interest rates were affected by episodes of banking system unsoundness. Greater volatility of the money multiplier was evident in all countries except Finland (Chart 1); in Argentina, Chile, Ghana, the Philippines, and Uruguay, the money multiplier increased sharply prior to or during the banking crisis. Most of the sample countries experienced sharp increases in interest rates after the crises, and interest rates exhibited a high degree of volatility prior to the crisis episodes (Table 10).

All of the sample countries except Venezuela experienced a sharp expansion of credit to the private sector prior to the crisis (Chart 2), consistent with the observation that rapid credit expansion can be a factor in poor lending decisions that ultimately contribute to unsoundness.

Except for Ghana and Finland, interest rate spreads were very high in the period leading up to the crisis (Table 10), reflecting lack of competition, inefficiency, and the need to cover increased expenses due to loan losses.

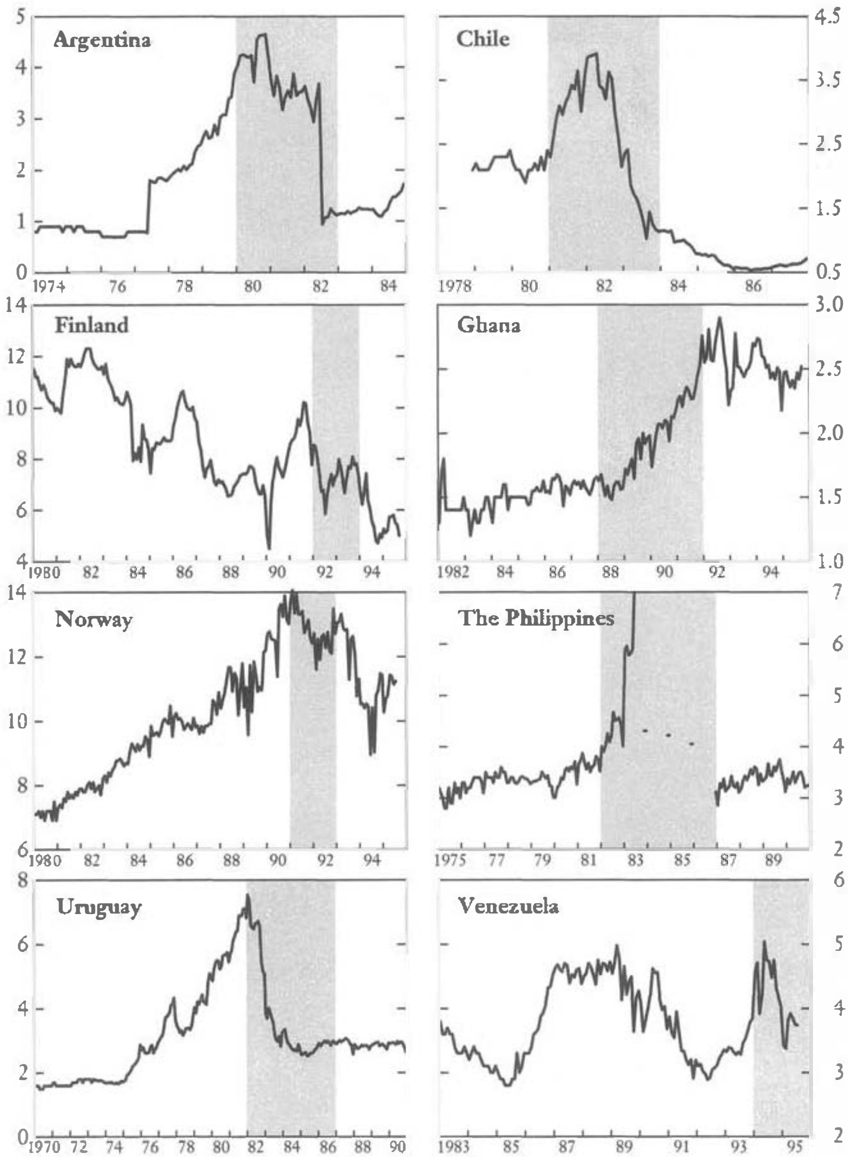
Fiscal Policy Implications

Since the crises are over in these countries, most of the difficulties in assessing the likely fiscal impact of unsoundness have been resolved. Recorded fiscal costs are provided in Table 11, along with the year in which the estimate was made. It should be noted, however, that in some cases, the final costs will continue to change as loan recoveries proceed, asset prices recover, or banking system problems continue.

External Sector Effects

Significant exchange rate volatility and currency crises took place in the aftermath of banking crises in Argentina, Finland, Norway, Uruguay, and Venezuela (Chart 3). The degree to which exchange rate effects contributed to the banking crisis or were a result of banking system unsoundness cannot be stated with certainty, however.

Chart 1. Money Multiplier[1]



Source: IMF, *International Financial Statistics.*

[1]Seasonally adjusted monthly data, except for Chile and the Philippines. The shaded area indicates a crisis period.

Table 10. Interest Rate Developments Surrounding the Banking Crises[1]

	Argentina	Chile	Finland	Ghana	Norway	Philippines	Uruguay	Venezuela
Real interest rate[2]								
Mean_0	−4.55	−6.41	0.28	2.10	2.95	4.49	9.57	−8.61
Mean_1	−0.87	1.02	3.64	7.33	5.56	13.80	21.24	—
Sdev_0	0.73	0.51	0.39	0.73	0.29	0.49	0.53	0.10
Sdev_1	0.28	0.26	—	0.21	—	0.13	0.09	—
Gross interest margins[3]								
Mean_0	16.15	18.40	2.86	3.40	8.61	7.87	28.53	5.44
Mean_1	7.49	12.20	4.71	8.10	4.47	3.93	15.49	—
Sdev_0	0.62	0.56	0.82	0.68	0.73	0.59	0.30	0.41
Sdev_1	0.59	0.38	—	0.31	—	0.15	0.16	—

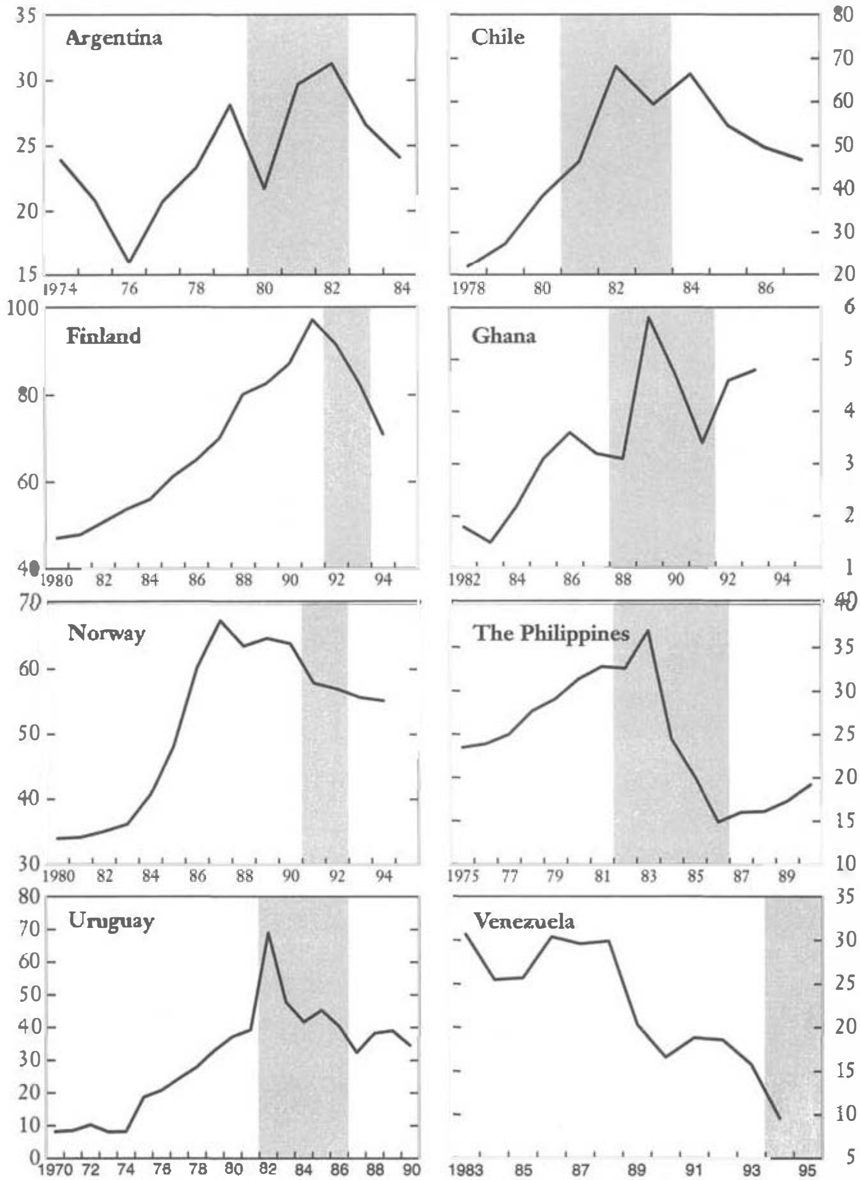
Sources: Sundararajan and Baliño (1991), Drees and Pazarbaşioğlu (1995), and IMF, *International Financial Statistics*.

[1] Mean_0 and mean_1 are the sample means for the five-year period before and after each banking crisis, respectively. Sdev_0 and Sdev_1 are the mean-weighted standard deviations for the five-year period before and after each banking crisis, respectively. For Ghana, Norway, and Finland, the postcrisis is taken as periods of three, two, and one year respectively. For Venezuela, postcrisis data are not available.

[2] Calculated as the nominal short-term interest rate minus the inflation rate.

[3] Lending rate minus deposit rate.

Chart 2. Claims on Private Sector/Nominal GDP[1]
(In percent)



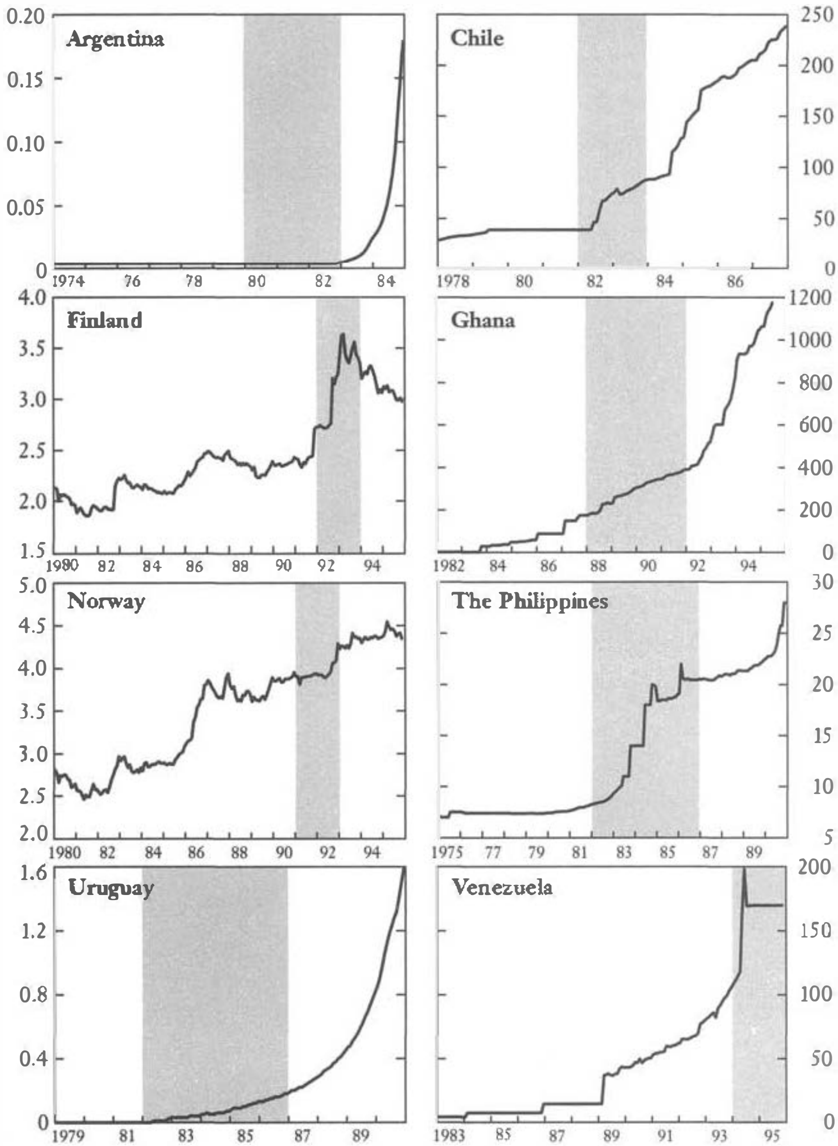
Source: IMF, *International Financial Statistics.*
[1]The shaded area indicates a crisis period.

Table 11. Direct Fiscal Impact of Banking Crises

	Argentina	Chile	Finland	Ghana	Norway	Philippines	Uruguay	Venezuela
Nonperforming loans as a percentage of total loans	9	19	13	40	6	19	11	9
Year recorded	1980	1983	1992	1989	1991	1986	1982	1993
Direct (immediate) fiscal costs as a percentage of GDP	4	5	8	3	3	6	—	17
Year recorded	1981	1985	1993	1990	1993	1985	—	1995

Sources: Sundararajan and Baliño (1991) for Argentina, Chile, Philippines, Uruguay; Drees and Pazarbaşioğlu (1995) for Finland and Norway; Sheng (1996) for Ghana; and for Venezuela, Central Budget Office (OCEPRE) and Deposit Insurance Agency (FOGADE).

Chart 3. Exchange Rate
(Currency per U.S. dollar, end of period)[1]



Source: IMF, *International Financial Statistics.*
[1]Unless otherwise indicated. The shaded area indicates a crisis period.

This page intentionally left blank