CAPITAL INFLOW REVERSALS, BANKING STABILITY, AND PRUDENTIAL REGULATION IN CENTRAL AND EASTERN EUROPE

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Abstract: Capital inflows to Central and Eastern Europe (CEE) are particularly vulnerable to reversals. Banking systems in the region are inordinately exposed to such volatility because of their role in channeling inflows and because of the transition-related weaknesses in their institutional environment. Although prudential bank regulations in CEE countries are largely aligned with the European Union's Banking Directives, there is a strong case for countries in the region to overshoot those directives, at least until the transition process is completed.

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I. Introduction

In the past few years, several major developing countries (including Indonesia, Korea, Mexico, and Thailand) have suffered crises of confidence that led to sudden, large-scale reversals in the flows of capital that those countries had been receiving. These reversals have had serious adverse effects on, and were in many instances accelerated by, the health of the banking systems in those economies. As a result, policymakers have become increasingly concerned with the link between stability in external financing and stability in the banking sector. This link is particularly important for Central and Eastern Europe (CEE).[1] Banks in the region intermediate a disproportionately large part of the region's capital inflows. In addition, the region is in the midst of completing a difficult process of transition away from central planning and, thus, still lacks the full array of institutions necessary to underpin efficient financial sectors (for example, well-defined property rights; transparent accounting, auditing, and reporting standards; effective court systems; adequate collateral registration and recovery mechanisms and so on).

The literature on the link between capital *inflows* and banking stability is extensive. This literature focuses heavily on the bank lending booms that frequently accompany large-scale capital inflows, and on the large credit losses that banks often experience as the result of these booms. (World Bank 1997; Hausmann and Rojas-Suãrez 1996; and Sundararajan and Baliño 1991). However, the literature on the link between capital *outflows* (or capital inflow *reversals*) and banking stability is surprisingly scant, and virtually nonexistent with reference to CEE transitional economies.

This paper analyzes the relationship between capital inflow reversals and banking stability in CEE countries. Following this introductory section, Section II describes the main features of the region's observed capital inflows since the early 1990s, with special emphasis on their potential reversibility and on the role banks have played in channeling those inflows. Section III then presents a conceptual

1. CEE countries comprise Albania, Bulgaria, Croatia, the Czech Republic, Hungary, the former Yugoslav Republic of Macedonia, Poland, Romania, the Slovak Republic, and Slovenia.

framework to highlight the linkages between reversals in capital inflows and the stability of banks, and explains why the destabilizing effects of capital inflow reversals are likely to be particularly severe in transitional economies. Section IV discusses the role that prudential regulations can play in lessening banks' vulnerability to capital inflow reversals, as well as the role that these regulations actually play in selected CEE countries. These regulations are also compared with the prudential regulations contained in the European Union's (EU) Banking Directives. The study turns to policy in Section V and argues that the CEE countries should adopt more stringent prudential regulatory standards than those contained in the EU Banking Directives; and that the primary policy options are to tighten the series of regulations designed to constrain banks' risktaking, to increase capital adequacy requirements, or both. Some concluding remarks close the paper (Section VI).

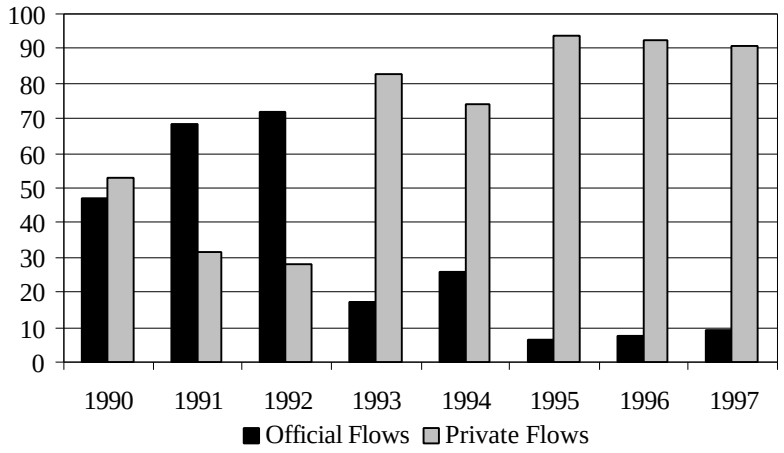
II. The Anatomy of Capital Inflows in Central and Eastern Europe

Although the amount of capital flowing to the CEE is still a small fraction of that entering all developing countries, an estimated 1/15 in 1997, it has nonetheless begun to flow in at rapid rates. Total net flows to these countries have increased from US$1.6 billion in 1990 to $21 billion in 1997, an increase of around 45 percent a year. External finance has certainly provided a positive boost to CEE countries in the transition process, facilitating transformation and enhancing welfare, especially in those cases where domestic saving did not recover sufficiently after the initial shock of transition. However, capital inflows can be a double-edged sword, causing destabilizing effects such as real exchange rate appreciation and making implementation of monetary policy difficult. In many cases the most serious concern is not the flows per se, but the possibility that their reversal would force these economies into a painful and abrupt adjustment.

This section presents a description of the size and composition of capital inflows to CEE countries, highlighting the six main elements that have characterized them since the transition began. First, as structural reforms have advanced, flows from official sources have declined as a share of total capital

flows, and private sources have increasingly dominated external financing in recent years. At the early stage of transition, official funding and guaranteed capital increased sharply, with bilateral and multilateral sources accounting for most of the flows. In 1992, once some of the CEE countries regained access to international credit markets, private capital flows begun to exceed official flows, and by 1996 the former accounted for more than 80 percent of total flows (figure 1). This type of development is not different from what has been observed in other regions (for example, East Asia and Latin America), except that in CEE, the speed at which official-to-private conversion has taken place has been much more rapid.

Figure 1. CEE Countries: Net Capital Flows by Source
(percentage of total)

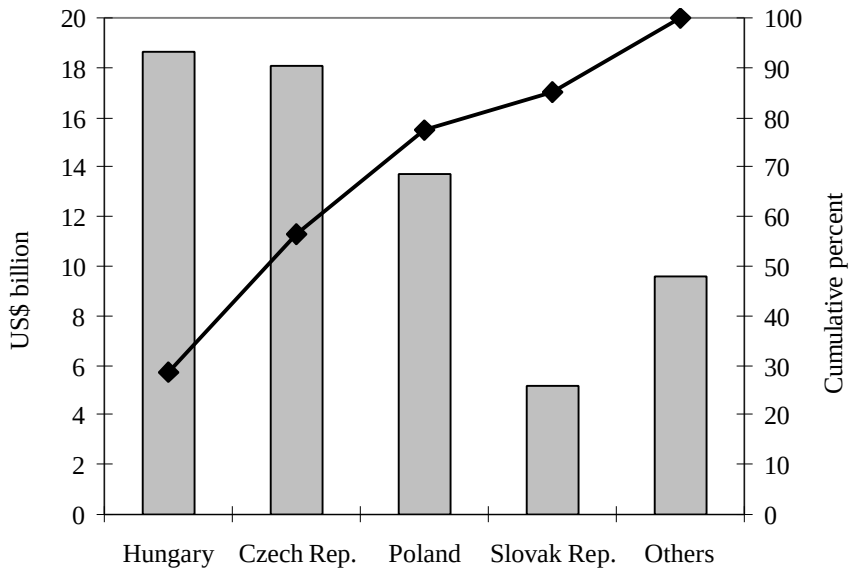


Source: World Bank, *Global Development Finance* 1998.

Second, there is a strong concentration of private capital inflows in a relatively few countries. Hungary, the Czech Republic, and Poland—the earlier and faster reformers among the CEE countries—absorbed the bulk of private capital flows entering the region, accounting for about 80 percent of private capital flows accumulated between 1990 and 1997 (figure 2)[2].

2. A large part of those flows has been strongly related to major privatization initiatives. Sales of government shares in electricity and gas distribution, banking and telecommunications in Hungary (worth some $4.5 billion) and a large Telecom sale in the Czech Republic ($1.5 billion) provided in 1995 a onetime boost to accumulated

Figure 2. CEE: Major Recipients of Private Capital Flows
(Cumulative, 1990–97)



Source: World Bank, *Global Development Finance* 1998.

Third, easily reversible capital flows (defined as short–term debt and portfolio equity investment) have been increasing steadily, from 7 percent in 1993 to 25 percent in 1997. In addition, there are unresolved questions about the reliability of data that distinguish direct investment from other capital flows, and some research has shown that net foreign direct investment flows are quite volatile too (Dooley, Fernandez-Arias, and Kletzer, 1994).

Fourth, debt-creating flows (lending and bonds) have been a major source of private capital. Since 1993 these types of flows have accounted for about half of the net private flows reaching the CEE (table 1). Moreover, despite its recent relative decline, short-term borrowing still accounts for about a quarter of total debt-creating flows.

Table 1. CEE Countries: Size and Composition of Net Private Capital Inflows
(US$ millions)

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foreign direct investment in these countries. As a consequence, in 1995 the Czech Republic and Hungary registered record private capital inflows of 16 percent and 19.1 percent of GDP, respectively.

	1990	1991	1992	1993	1994	1995	1996	1997 [1]
Debt-creating flows	194	1,779	-5	6,075	5,614	11,288	8,431	11,529
Medium- and long-term debt	974	2,541	1,144	5,703	3,443	7,872	6,356	8,928
o/w Commercial banks	154	-901	-1,894	206	-340	4,638	4,577	4,096
Bonds[2]	273	1,563	1,002	4,066	2,102	2,478	801	1,782
Short-term debt	-781	-762	-1,149	371	2,171	3,416	2,074	2,601
Non-debt creating flows	450	2,246	3,056	5,637	5,567	13,681	12,026	12,464
Foreign direct investment	300	2,246	2,991	5,186	4,707	11,735	9,154	9,125
Equity investment	150	0	65	451	861	1,946	2,873	3,339

1. Estimate
2. 1997 figure includes only international bond issuance.
Source: World Bank, *Global Development Finance* 1998; Bondware Database, *Euromoney*; International Monetary Fund, *International Finance Statistics* (IFS) July 1998; and Bank for International Settlements (BIS).

Fifth, a large part of the total *stock* of debt (around 38 percent in 1997) is owed to commercial banks (albeit proportionately less than in East Asia—55 percent—and Latin America—42 percent; see table 2). More important, the overall maturity of debt owed to commercial banks has been progressively shortening; 40 percent of commercial bank debt now has a maturity of one year or less, compared with about 30 percent in 1994. Judged by other regions' standards, that proportion can be expected to continue to increase.

Finally, compared with East Asia and Latin America, a much greater proportion of the lending by international banks is being borrowed by domestic banks in CEE countries (an average of 50 percent during the period 1994–97, compared with 40 percent in East Asia and 25 percent in Latin America). In the CEE region there has also been a shift in the lending by international commercial banks toward the private nonbank sector, while lending to the public sector has been steadily declining.

Table 2. CEE: Maturity, Sectoral, and Nationality Distribution of International Bank Lending[1]

Position vis-à-vis	Total	Maturity: Short-term	Maturity: Long-term	Sectors: Banks	Sectors: Public sector	Sectors: Nonbank private sector
	US$ billions	*Percentage of total claims*[2]				
Central and Eastern Europe						
End-1994	32.1	31.1	55.6	49.6	26.7	23.4
End-1995	37.1	39.0	50.5	50.1	24.9	24.8
End-1996	44.0	40.7	47.2	48.6	19.7	31.5
End-1997	49.1	40.2	47.9	46.6	13.7	39.7
Asia						
End-1996	367.0	62.3	29.7	43.3	9.0	47.6
End-1997	381.0	60.6	31.9	40.7	7.4	51.8
Latin America						
End-1996	242.4	53.7	37.9	24.2	27.9	47.7
End-1997	283.0	54.8	38.6	26.0	21.2	52.6
Memorandum item	US$ billions					
Total debt stock (1997), CEE	*130.9*					
Total debt stock (1997), Asia	*665.7*					
Total debt stock (1997), Latin America	*677.9*					

1. Consolidated cross-border claims.
2. Percentage shares do not total to 100 because of unallocated claims.
Source: BIS, *Consolidated International Statistics*, several issues.

In summary, private (rather than official) capital flows have become the dominant source of external funding for CEE countries, with those more advanced in the transition process being more successful in mobilizing it. The increase of private capital flows has been concentrated in a small number of countries: Hungary, the Czech Republic, and Poland. Since 1993 “reversible” capital inflows (short-term capital and portfolio equity flows) have been increasing rapidly. By 1997 these types of flows accounted for about a quarter of total net private capital inflows. Debt-creating flows (loans and bonds) remain the key component of the CEE’s external financing, rather than foreign direct investment or equity investment (as observed in other developing regions). Within those debt flows, international commercial banks are the primary suppliers, at increasingly shorter maturities, while domestic banking systems are the main avenue for absorbing that lending.

III. Capital Inflow Reversals, Linkages, and Banking Stability During Transition

The capital inflows currently accruing to CEE countries are fast-growing, mostly private and debt-driven, highly concentrated, primarily intermediated by banks, and, critically, increasingly reversible. This poses a core question: How would the region's banking systems be affected if those capital inflows suddenly turned into outflows?

In general, large-scale capital outflows affect the financial condition of banks in a twostep process. First, the outflows tend to produce deterioration in the macroeconomy and result in significant changes in certain key financial market prices. Second, some of these changes in the macroeconomy and financial market prices tend to inflict losses on the banks—for example, through increased credit losses and a decline in the market value of the long-term debt instruments and equities held by banks. This section reviews these effects, or linkages; illustrates them through actual recent crises; and assesses their a priori strength in the context of transition.

a) Effects on the Macroeconomy and Financial Market Prices

Large-scale capital outflows tend to have at least six major effects on the macroeconomy and financial market prices. First, short of government intervention, capital outflows result in a depreciation of the domestic currency as both foreign investors and domestic entities rush to convert assets denominated in domestic currency into assets denominated in foreign currency. In many cases the decline in the nominal exchange rate is very large and continues over a number of months. For example, in the 1994-95 Mexican currency crisis, the value of the Mexican peso fell by almost half against the U.S. dollar between November 1994 and March 1995 (IMF 1998). Likewise, as indicated in table 3, Thailand, Indonesia, and Korea—the three countries most involved in the recent Asia currency crisis—have experienced drastic declines in their exchange rates.

Table 3. Foreign Exchange Rates: End of Period
(US$)

Country	June 1997	September 1997	December 1997	January 1998
Thailand[1]	25.79	36.52	47.25	54.92
Indonesia[2]	2,450	3,275	4,650	10,375
Korea[2]	888	915	1,396	1,573

1/ Official rate.
2/ Market rate.
Source. IMF, *IFS*, May 1998.

Second, capital outflows typically cause domestic interest rates to rise. One reason is that investors fleeing the local currency sell domestic debt instruments, thereby forcing up domestic interest rates. A second reason is that the central bank, in an effort to stem the deterioration of the domestic currency, may purposely drive up interest rates in order to make the holding of domestic debt instruments more attractive. In the Mexican currency crisis, money market rates, which had averaged 17 percent a year in November 1994, soared to 83 percent in March 1995, before retreating to a still extremely high rate of 47 percent in June 1995 (IMF 1998). In the Asian currency crisis, money market rates in Indonesia rose from an average of 12 percent a year in the first quarter of 1997 (before the crisis began) to 41 percent in the fourth quarter, and then to 57 percent during January 1998. Money market rates in Korea rose less drastically, but still significantly for local standards—from an average of 12 percent in the first quarter of 1997 to 16 percent in the fourth quarter, and then to 26 percent in January 1998 (IMF 1998).

Third, domestic equity prices typically decline during a currency crisis, often dramatically. The decline occurs partly because of a general loss of investor confidence and partly because interest rates on debt instruments—an alternative asset for investors to hold—tend to rise. During the Mexican crisis, the stock market index (the *Bolsa Mexicana de Valores*) fell from 2,591 in November 1994 to a low of 1,550 in February 1995, a decline of about 40 percent (World Bank 1995, 1996). Likewise, between July 1997 and May 1998, stock market indices fell over 40 percent in both Thailand and Indonesia, and over 50 percent in Korea (Bloomberg Financial Markets, 1998).

Fourth, currency crises normally lead to a decline in a country's economic growth rate. This decline is caused by higher interest rates, as well as an erosion in public confidence and spending that

typically accompanies capital flight. One factor that usually acts to lessen the decline in economic activity is an increase in exports, reflecting the improved short-term competitive position of the country due to the depreciation of its currency. In the Mexican currency crisis, GDP, which had risen 3.5 percent in 1994, fell 6.2 percent in 1995. In the recent Asian crisis, Korea's estimated growth rate in 1997 was 5.5 percent, but is currently forecast to be a negative 3-4 percent in 1998. Indonesia's growth rate is now forecast to go from an estimated 7.0 percent in 1997 to a negative 10.0 percent in 1998, and Thailand's from 0.5 percent to a negative 4.2 percent (J.P. Morgan 1998).

Fifth, currency crises often result in an increase in domestic prices, in part because of the rise in import prices caused by the depreciation of the domestic currency. In Mexico, the consumer price index, which had risen at a moderate 7 percent in 1994, soared to 35 percent in 1995 (J.P. Morgan 1998). In the Asia crisis, Thailand, Indonesia, and Korea all had mid-range single digit rates of inflation in 1997 but seem likely to have inflation rates well into the double digits in 1998.[3]

Sixth, it is common for a currency crisis to result in a decline (often sharp) in real estate prices. This decline reflects both the fall in the level of economic activity and the rise in interest rates that typically accompany a currency crisis.

b) Effects on the Financial Conditions of Banks

The macroeconomic and financial market effects discussed above can have several harmful effects on the financial condition of the banking system. This point is best illustrated by reference to the serious adverse effects that the Mexican currency crisis of 1994–95 had on the Mexican banking system.[4] First, it is highly probable that banks will experience a decline in the quality of their loan portfolios. This deterioration results from a general slowdown in the economy, a rise in interest rates that increases the

3. For example, J. P. Morgan has forecast Thailand's inflation rate for 1998 at 15 percent, Indonesia's at 60 percent, and Korea's at 12.5 percent (J. .P. Morgan 1998).

4. Material for these illustrations is derived from Sachs, Tornell, and Velasco (1996); Truman (1996); and internal World Bank documents.

debt-servicing burden of borrowers, and the depreciation of the domestic currency that increases borrowers' import costs, as well as the debt-servicing burden of borrowers who have debt denominated in foreign currency. In the Mexican crisis, banks had a relatively high level of problem loans even before the crisis began, in part reflecting unduly rapid growth in their loan portfolios that far exceeded the growth of the economy. The peso crisis exacerbated this situation, increasing the level of problem loans by 30 percent during the first two months of the crisis.

Banks also tend to experience a decline in the value of their investment portfolios. The rise in interest rates causes a decline in the value of banks' debt securities, with the amount of the decline depending on the maturity of these securities. The decline in equity prices, which is often large during a crisis of confidence, also produces losses for banks. In the case of Mexico, banks initially held equity investments that amounted to about 27 percent of their equity capital. Given this exposure, the 40 percent decline in Mexican equity prices during the crisis eroded about 10 percent of the banks' capital.

The rise in interest rates can either increase or decrease banks' net interest margin, depending on the repricing intervals of their assets relative to their liabilities. If the average repricing interval of assets exceeds the average repricing interval of liabilities, the banks would suffer shrinkage in their net interest margin.

Depreciation of the domestic currency can result in either foreign currency gains or losses, depending on the initial foreign currency position of the banks. If a bank had foreign currency liabilities that exceeded its foreign currency assets (and this open position was not fully hedged by forward contracts), the bank would suffer a foreign currency loss. In the case of Mexico, the depreciation of the peso resulted in sizable foreign currency losses, amounting to more than 10 percent of the banks' capital. The reason is that Mexican banks were relying heavily on foreign-currency-denominated deposits to fund their operations. In October 1994, dollar-denominated bank deposits accounted for about a quarter of the banking system's total deposits. It is interesting that, shortly after the crisis began, Mexican banks

switched to a net long foreign currency position, thereby positioning themselves to benefit from any further depreciation of the peso.

The fall in real estate prices that typically accompanies a currency crisis tends to adversely affect banks in two ways. First, most banks make sizable amounts of mortgage loans, and the decline in real estate prices reduces the value of the collateral supporting these loans. Second, banks frequently own a certain amount of real estate consisting of the bank's headquarters building and any branch offices that the bank may have.

Finally, it is possible that banks might experience significant liquidity pressures, particularly if they incur sizeable losses from some of the factors discussed above. This was the case in Mexico, where banks lacked alternative sources of funding to replace maturing foreign-currency-denominated deposits, a significant portion of which were not renewed. Even when funding sources could be found, the banks had to pay a significantly higher risk premium than they had paid in the period before the crisis.

c) The Linkages of Reversals in the Context of Transition

Many of the effects of capital inflow reversals described above could be considerably amplified in the CEE transitional economies, both at the macroeconomic and at the banking sector levels. First, as indicated in Section II, a disproportionately large part of the region's capital inflows are "easily reversible" and are intermediated by banks.

Second, key market-supporting institutions are not yet fully developed in the CEE countries. Four such institutions are particularly important in terms of banking sector vulnerability to external shocks:

- *Inadequate accounting and auditing*. This deficiency makes it difficult for investors to properly evaluate enterprises and banks. In the absence of information in which they can have a high level of confidence, investors are apt to assume the worst during a crisis.
- *Deficient legal frameworks*. Reflecting their relatively recent emergence from central planning, CEE countries still exhibit significant shortcomings in the legal infrastructure that

supports the banking industry, especially in terms of property rights protection, company law, contract law, bankruptcy law, and collateral law and registration (Gray 1993 and Dittus 1994). The effect of these shortcomings is compounded by weak judicial institutions and processes that frequently result in long delays in settling court actions. In aggregate, these deficiencies make doing business in CEE countries significantly more risky than in more mature market economies.

- *Poor corporate governance*. CEE countries do not have fully developed tools and procedures to ensure that there are adequate "checks and balances" on enterprise and bank management, and that managers consistently seek to maximize company equity value, or even follow applicable laws in their decision-making process (Frydman, Gray and Rapaczynski 1996; and Phelps and others 1993). This naturally tends to erode investor confidence, particularly in a period of crisis.
- *Weak bank supervision*. The supervision and regulation of banks is a relatively new activity for governments in the CEE countries. Consequently, although significant progress has been made in recent years, these countries still lag well behind developed countries in such areas as bank examination, offsite surveillance and effective enforcement actions (Lindgren, Garcia, and Saal 1996). Investors are aware of these weaknesses and tend to view banks as more risky than they would if strong supervision and regulation were in place.

IV. The Role of Prudential Regulation: Theory and Practice in CEE Countries

External financing positions that are highly vulnerable to capital inflow reversals and market-supporting institutions that are still in the making render the prudential regulation of banks of critical importance for policymakers in CEE countries. This section assesses the main prudential regulations currently in force in those countries and compares them with parallel regulations in the EU's Banking

Directives (table 4).[5] Our emphasis is on those key prudential regulations that are designed to *limit banks' risktaking*, and on bank capital adequacy provisions that are designed to ensure that banks maintain an adequate "cushion" against possible losses. The prudential regulations discussed in this section constitute only part of the full range of public policies and procedures for effectively regulating and supervising a banking system.[6] Moreover, the discussion in this section does not attempt to evaluate how well the CEE countries are actually *enforcing* their prudential regulations (an otherwise important, country-specific undertaking).[7]

a) Limitations on Credit Risk Exposures

Of all of the risks that banks face, the one that is probably most responsible for banking distress and bank failures is credit risk. One way that governments attempt to constrain credit risk is to prevent undue credit concentrations. First, policymakers typically limit a bank's credit and off-balance-sheet exposures to any single party (and entities that are related to that single party) to some specified percentage of the bank's capital. As indicated in table 4, all of the CEE countries in our sample have single exposure limits. There is some variation in the limits, but the most common is 25 percent of a bank's capital, which parallels the EU limit.

5. The EU's Banking Directives have been selected for comparison because, as part of their quest to join the EU, the CEE countries have tended to align their bank regulatory systems to those directives.

6. Policies not addressed in this paper include bank licensing requirements, bank examinations and reporting, supervisory enforcement actions, transparent bank accounting, lender of last resort, prompt closure procedures, bank restructuring, and deposit insurance. For further reading on these, see Borish, Ding, and Noel (1996).

7. For a general review of the prudential regulation and supervision of banks, see Polizatto in Vittas (1992).

Governments also try to constrain credit risk by placing a limit (as a percent of capital) on a bank's exposures to connected parties ("insiders"). This limitation recognizes that such exposures involve "non-arms-length" transactions that are subject to conflict of interest. Connected parties usually include a bank's large shareholders, its directors and senior managers, and those entities and persons that

Table 4. EU and CEE countries: Main Banking Prudential Regulations

EU or country	Maximum single exposure	Connected exposure limit	Aggregate large exposure limit	Open foreign exchange exposure limit	Investment in enterprises limit
EU	25% of capital	20% of capital for exposures to parent company and subsidiaries	800% of capital	No standard	15% of capital in single firm; 60% for firms in aggregate
Czech Republic	25% of capital to nonbanks; 125% of capital for banks in country or OECD	20% of capital	800% of capital	15% of capital	20% of capital
Hungary	25% of capital to one party or group of related parties	15% of adjusted capital	800% of adjusted capital	Net foreign exchange liability limited to 30% of capital	15% of adjusted capital for single nonbank enterprise (except financial institutions); 100% for all enterprises combined
Slovak Republic	25% of capital for nonbanks; 80% for banks	25% of capital	800% of capital	Total net of foreign exchange liability of 25% of capital; 7–10% limits on individual currencies	25% of capital for non-banks
Poland	10% of capital for a single entity and 15% for a connected group	15% of capital	Informally expected not to exceed 800% of capital	Aggregate oneway exposure of 40% of capital; net exposure of 30% of capital; maximum open exposure in one currency of 15% capital	25% of capital in single group of non-financial entitites, but 50% with approval of supervisor
Slovenia	25% of capital; an exposure of 10% requires approval by Supervisory Council	5% of capital, and exposures require consent of all members of Supervisory Council	800% of capital	As prescribed by supervisor	100% of capital for land, buildings, business equity, and shares of non-financial organizations

Source: EU Banking Directives; national central banks.

are related to these insiders. Limits are frequently placed on both a bank's exposure to any single connected party and on its aggregate exposures to all connected parties. In addition, some countries require that all connected-party transactions be carried out on market terms. As indicated in Table 4, there is considerable variation in the manner in which the CEE countries deal with connected exposures. Slovenia places a limit on single connected exposures at 5 percent of a bank's capital, while the Slovak Republic sets the limit at 25 percent of capital. The EU has a 20 percent limit on a bank's exposure to any parent company and subsidiaries of this parent.

Finally, to promote the diversification of bank loan portfolios, many governments place a limit on a bank's aggregate large exposures. A large exposure is usually defined as any exposure that exceeds 10 percent of a bank's capital. The EU Banking Directives set a limit on a bank's aggregate large exposures at eight times the bank's capital. This 800 percent limitation has been followed by all of the CEE countries, although Poland's limitation is advisory in nature.

b) Limitations on Foreign Exchange Risk Exposures

Many banks in developing countries take positions in foreign currency—mostly in connection with providing deposit and lending services to their customers, but also from participating in foreign currency trading. In undertaking these transactions, banks encounter potential foreign exchange risk—the risk of loss owing to changes in the value of foreign currencies relative to the domestic currency. The most widely used measure of a bank's foreign currency exposure is its open position—that is, the amount that the bank's foreign-currency-denominated assets and asset-like off-balance-sheet commitments differs from its foreign currency-denominated liabilities and liability-like off-balance-sheet commitments. If the bank has more of the former than the latter, the bank is said to have a "long" position. In the opposite case, the bank is said to have a "short" position.

To constrain the foreign currency risk of banks, many governments impose limits on the amount of a bank's open position in any single foreign currency and the amount of the bank's net aggregate open

position (where long positions in one foreign currency are offset against a short position in another currency). These limitations on open positions typically are expressed as a percentage of a bank's capital. The more volatile a country's foreign exchange rate, the more restrictive the limitation should be. Consequently, limitations on open positions should generally be more restrictive in developing countries than in industrial countries, which tend to have more stable exchange rates.

As indicated in table 4, there is significant variation in the foreign currency restrictions among the CEE countries, both with respect to the form and level of the limitation. For example, the Czech Republic places a limit of 15 percent of capital on a bank's total net open foreign exchange position (and also limits total net open positions in nonconvertible currencies to 4 percent of a bank's capital). By contrast, the Slovak Republic places a limit of 25 percent of capital on a bank's total net foreign exchange position.

To monitor compliance with banks' open foreign currency positions, the supervisory authorities require banks to submit periodic reports. In the Czech Republic, banks are required to report their open positions on a daily basis. In Poland, banks submit reports on their open foreign currency positions in individual currencies every month and on their aggregate open position every ten days (Group of Banking Supervisors from the Central and Eastern European Countries 1995).

c) Limitations on Interest Rate Risk Exposures

Banks assume interest rate risk when they have gaps in the repricing intervals of their assets and liabilities. For example, if a bank within the next 90 days has more liabilities than assets that will be repriced (either because they will mature or have a variable rate), and if interest rates rise, the bank would suffer a decline in its net interest margin and earnings. In extreme cases, where banks have very large gaps in their asset and liability repricing intervals and interest rates move sharply in the "wrong" direction, banks can be driven into insolvency.

To monitor banks' exposure to interest rate risk, many bank supervisors require periodic "gap reports" from the banks. These reports show the amount of a bank's assets and liabilities that will be

repriced within various future time intervals—for example, within 30 days, from 30 to 90 days, from 90 to 180 days, and so forth. On the basis of these reports, supervisors can form judgments about the degree of interest rate risk exposure that a bank is assuming and, where necessary, can call for or take corrective actions ranging from the use of moral suasion to "cease and desist" actions. The supervision of interest rate risk, however, is essentially qualitative and judgmental in nature, both in the CEE and elsewhere, and includes consideration of the likelihood of sizable changes in the level of interest rates or sharp shifts in the shape of the yield curve.

d) Limitations on Market-Risk Exposures

Market risk relates to a potential decline in the value of a bank's investments and trading account securities as the result of a decline in market prices. For instance, debt securities are vulnerable to a rise in interest rates, with the degree of vulnerability a function of the maturity of the debt. Equities are vulnerable to a general decline in equity prices or developments that adversely affect the specific shares held by the bank.

Governments tend to view the equity holdings of banks as particularly risky. Thus, most policymakers place tight limits on a bank's equity holdings, either through provisions in the banking law or through prudential regulations. These limitations are usually expressed as a percentage of the bank's capital. A few countries, such as the United States, go even further and essentially prohibit banks from holding equities of nonfinancial companies. In addition to concern about market risk, some governments also seek to maintain a clear separation between banking and commerce in the economy. Table 4 contains a list of current limitations placed on banks' equity holdings in selected CEE countries. As indicated, there is significant variation among these countries both in the form and the level of the limitations, and most them have somewhat more restrictive provisions than those contained in the EU Banking Directives. Hungary, however, appears to be less restrictive, allowing a bank to hold equities in an amount up to 100 percent of its capital (compared with 60 percent in the EU Directives).

Governments typically do not place specific quantitative limitations on the amount of a bank's debt securities. However, supervisors do monitor a bank's debt security holdings and are usually prepared to take supervisory action in those cases where the bank takes excessive market risk. Moreover, where debt securities are actively traded and have reliable market prices, supervisors frequently require banks to carry certain securities at market value, rather than historical cost. This procedure creates an incentive for banks to manage their debt security portfolios more prudently than otherwise might be the case.

e) Limitations on Liquidity-Risk Exposures

Liquidity risk relates to the potential inability of banks to honor their contractual obligations on time. The most common form of illiquidity is the inability to meet deposit withdrawals or maturing debt obligations. Liquidity is probably the most difficult type of bank risk for governments to regulate. In normal times, most banks have large cash inflows from new deposits, interest payments on loans and investments, and maturing short-term loans. Consequently, illiquidity is not a major threat. When illiquidity becomes a threat is during a crisis—either for a specific bank or the entire banking system.

Since policymakers typically have little ability to forecast the occurrence or the extent of a liquidity crisis, they usually do not employ quantitative limitations to constrain banks' liquidity risk (except perhaps for limiting the amount of funding that a bank can obtain from any single funding source). Instead, supervisors monitor the liquidity position of banks and take action when banks clearly have an excessive concentration of funding sources or inadequate liquid assets to meet their liquidity needs during a period of stress. In Poland, for example, the central bank collects and analyzes monthly returns that banks are required to submit in a standardized form. These forms provide information on short-, medium- and long-term liquidity in domestic, convertible and non-convertible currencies and include maturity dates for both balance sheet and off-balance-sheet items.

f) Capital Adequacy Requirements

The basic purpose of capital is to serve as a cushion—that is, to allow banks to absorb losses and remain solvent and in operation. The primary problem that governments face in regulating bank capital is judging the potential size of future bank losses.

In July 1988, the Basle Committee, which includes bank supervisory representatives from the major industrial countries, developed the so-called Basle Capital Accord (Basle Committee on Banking Regulations and Supervisory Practices 1988). This accord set forth a procedure for determining the amount of capital that individual banks should possess. According to the Basle standard, a bank should have total capital of at least 8 percent of its risk-weighted assets and off-balance-sheet exposures.[8] In calculating the denominator of the capital adequacy ratio, the bank's assets and off-balance-sheet items are divided into various risk categories and assigned risk-weighted coefficients that range from zero to 100 percent (with zero assigned to riskless exposures).

The Basle capital standards are now used by all EU members, as well as by some 80 other countries throughout the world. Although the original Basle approach was designed to capture only credit risk and off-balance-sheet risk, it has since been modified to incorporate market risk. Moreover, it is likely that other forms of bank risk will be incorporated in the standard in future years.

As shown in table 4, all of the selected CEE countries have adopted the basic Basle framework and have set the minimum capital standard at 8 percent. In the early 1990s, several CEE countries temporarily set the percentage somewhat lower because many (or most) of their banks were significantly below the 8 percent level. However, these banks were put on alert that 8 percent would become the standard in the medium term.[9]

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8. Total capital under the Basle standard consists of Tier I and Tier II capital. Tier I capital includes such items as paid-up common stock, noncumulative preferred stock, and retained earnings. Tier I capital is the highest quality of capital and should amount to at least 50 percent of total capital. Tier II capital includes such items as general loan loss reserves, subordinated term debt, and conservatively valued revaluation reserves.

9. The Czech Republic initially mandated that banks reach a minimum capital ratio of 6.25 percent by year-end 1993, and then the target ratio of 8 percent by year-end 1996. In the Slovak Republic, banks were initially required to achieve a minimum ratio of 6.75 percent by year-end 1994, 7.25 percent by year-end 1995, and 8 percent by year-end 1996.

V. Adjusting Regulation to Minimize Banking Vulnerability in Central and Eastern Europe

There are two preeminent policy issues relating to the prudential regulations now in effect in the CEE countries. Are these regulations, which largely parallel (and in some cases are essentially the same as) those contained in the EU Banking Directives, appropriate to minimize banking vulnerability, in particular vis-à-vis capital inflow reversals? If not appropriate, how should these regulations be tightened?

a) The Case for Tighter Prudential Regulations

There is a compelling case for the CEE countries to have tighter prudential regulations than those contained in the EU Banking Directives. First, CEE banks are far more vulnerable to endogenous and exogenous shocks than banks in those Western European countries that are governed (and originally targeted) by the EU Banking Directives. In Section II, this paper focused particular attention on one form of exogenous shock—potential capital inflow reversals—and has concluded that the CEE countries are disproportionately vulnerable, even compared with other emerging market regions. But the CEE countries are also exposed to other (and possibly even more serious) potential shocks, such as macroeconomic instability. Further, these countries understandably are far less experienced than the Western European countries in developing effective policies to minimize the adverse effects of shocks to the economy and the banking and financial sectors.

Second, as discussed in Section III, key institutional frameworks are not yet fully developed in the CEE countries, and this has heightened banking risk. These factors include inadequate accounting and auditing, deficiencies in the legal framework, shortcomings in corporate governance, and relatively inexperienced bank management and bank supervisors. [10] These deficiencies are likely to be particularly damaging during a crisis by contributing to greater uncertainty and pessimism among market participants.

10. In general, the entry of foreign banks into individual CEE countries has tended to reduce some of these shortcomings by introducing "good bank standards" into these countries.

As noted earlier, deficiencies in accounting and auditing are likely to result in market participants assuming the worst during a crisis.

Finally, and most important, there is persuasive empirical evidence indicating that the banking systems in the CEE countries have been highly unstable during the transition to a market economy, clearly much more unstable than their EU counterparts. Box 1 summarizes information from Lindgren, Garcia, and Saal (1996) that vividly documents the serious banking problems experienced by the CEE countries in recent years. As evidence that these problems have been endemic to transitional economies in general, box 2 presents similar information for the former Soviet Union.

Box 1. Recent Banking Problems in Selected CEE Countries

Bulgaria (1991-present). About 75 percent of non-government loans were nonperforming in 1995, leaving many banks insolvent. Runs on banks have been reflected in pressure on reserve money and a queue of unsettled interbank payments.

Czech Republic (1991- present. In 1993-94, 38 percent of bank loans were nonperforming. Three small banks were closed in 1993-94, one failed in 1995, and another in 1996.

Hungary (1987-present). Eight banks accounting for 25 percent of financial system assets became insolvent. At the end of 1993, 23 percent of total loans were problematic. There have been two depositor runs.

Poland (1991-present). Sixteen percent of loans were classified as losses, 22 percent as doubtful, and 24 percent as substandard in 1991.

Romania (1990-present). Five major state-owned banks had 35 percent of their accrued interest overdue as of June 30, 1994.

Slovak Republic (1991-95). Loans classified as nonstandard were high at the end of August 1995. There were no runs or major bank closures, but all five major state banks required government-sponsored restructuring operations.

Slovenia (1992-94). Three banks, with two thirds of the banking system's assets, were restructured during this period. The percentage of bad loans is not known. Bank rehabilitation was completed in 1995.

Source: Lindgren, Carl-Johan, Gillian Garcia and Matthew I. Saal. 1996, *Bank Soundness and Macroeconomic Policy*, International Monetary Fund.

Based on the evidence above, it appears inappropriate to employ prudential regulations that have been designed for the relatively stable, mature banking systems of Western Europe to the relatively unstable, immature banking systems of the CEE countries. Although the need for tighter prudential regulations in CEE countries seems clear, however, it is not clear *to what extent* these regulations should

Box 2. Recent Banking Problems in Selected Countries of the Former Soviet Union

Armenia (1994-present). The central bank has closed half of the active banks since August 1994, but the nonperforming asset problem of the large banks remains to be tackled. The Savings Bank has negligible capital.

Azerbajian (1995-present). One large state-owned bank is facing a serious liquidity problem, and new management has been appointed. Twelve private banks have been closed owing to noncompliance with regulations; three large state-owned banks will be insolvent if loan losses are written off.

Belarus (1995-present). Many banks are undercapitalized; forced mergers have burdened some banks with poor loan portfolios; the regulatory environment is uncertain.

Estonia (1992-95). Insolvent banks held 41 percent of banking system assets. The licenses of five banks (one large) have been revoked, two major banks were merged and nationalized, and two large banks were merged and converted to a loan recovery agency.

Georgia (1991-present). About a third of banks' outstanding loans are nonperforming. Most large banks would be insolvent if adequate provisions were made for all nonperforming loans.

Kazakhstan (1991-95). Forty percent of assets are to be written off; 80 percent of banks would be insolvent if all bad loans were written off.

Kyrgyz Republic (ongoing). Eighty to 90 percent of all loans are doubtful. Four small commercial banks were closed, and two large state banks are facing problems.

Latvia (1995-present). Two-thirds of audited banks recorded losses in 1994. Eight bank licenses were revoked in 1994 and 15 more were revoked during the first seven months of 1995. The subsequent closure of the largest bank (with 30 percent of deposits) and two other major banks triggered a banking crisis in the spring of 1995.

Lithuania (1995-present). Of 25 banks, 12 small ones are being liquidated, and four larger ones did not meet the capital adequacy requirements. The fourth-largest bank was closed. The operations of two banks, which accounted for 15 percent of deposits, were supported in 1995. There were large-scale deposit withdrawals at the end of 1995 and the beginning of 1996. A restructuring plan is under implementation.

Russia (1992-present). Over 2,500 banks have been established since 1992. In 1994, 110 banks were closed, and 96 were closed in the first eight months of 1995. Official estimates of loan arrears were 40 percent of total credit to the private sector at the end of 1995.

Tajikistan (ongoing). One of the largest banks is insolvent. One small bank has been closed, and another (out of 17) is in the process of liquidation .

Ukraine (1994-present). In 1994, many banks did not meet capital and other prudential regulations. Audits indicated that one of the five largest banks was insolvent. Approximately 30 percent of loans outstanding were in arrears. The authorities intervened in 20 small- and medium-sized banks in 1995.

Uzbekistan (1993-present). Almost 10 percent of loans were reported to be overdue in October 1995.

Source: Lindgren, Carl-Johan, Gillian Garcia and Matthew I. Saal. 1996. *Bank Soundness and Macroeconomic Policy*. International Monetary Fund. Washington, D.C

be tightened. It is probable that the right amount of regulatory tightening would vary among CEE countries, depending on their exposure to endogenous and exogenous shocks and on the progress that each country has made in developing banking and supervisory skills and an effective legal and institutional framework for operating the banking system. For some (or even all) of the CEE countries, the amount of

needed regulatory tightening may, however, be quite sizable. If so, it would probably be necessary to phase in the tighter regulations over time (say several years) in order to avoid undue dislocations in the banking and financial systems, and a contraction of the economy. There are numerous precedents for giving banking systems time to adjust to tighter regulations, including the implementation throughout the EU of the Basle capital adequacy guidelines in the late 1980s.

It is reasonable to assume that over time the CEE countries and their banking systems will become more stable. If and when this occurs, the tighter prudential regulations could be eased somewhat, with the goal of eventually bringing these regulations into full alignment with those in the EU Banking Directives.

b) The Form of Tighter Prudential Regulations

If CEE countries are to be subjected to tighter prudential regulations than those applying to Western European countries, what form should this tightening take? Should it involve higher capital adequacy requirements, tougher prudential regulations designed to constrain specific types of banks' risktaking (such as credit risk), or both?

Three main considerations should weigh in the answer to those questions. First, what factors appear to be the primary causes of banking instability in each country? If the major causes are insider lending, credit concentrations, and foreign exchange losses, then a good case could be made for tightening the limits on insider lending, single exposures, aggregate large exposures and open foreign currency positions. In contrast, if the causes of banking problems appear to be more general and dispersed, as is the case when capital inflow reversals occur, the best policy might be to increase capital adequacy requirements, thereby forcing banks to have greater "cushions" to absorb all types of losses. [11]

11. In a number of Latin American countries, the supervisory authorities have set minimum capital to risk-weighted assets requirements that are higher than the 8 percent Basle minimum in recognition of the more volatile environment in these countries. For example, the requirement is 11.5 percent in Argentina, 9 percent in Ecuador, and 11 percent in Peru. Moreover, the present 10 percent requirement in Brazil will be increased to 11 percent in November 1998.

Second, policymakers should identify and carefully evaluate the economic and financial market effects of alternative forms of regulatory tightening. For instance, although raising capital adequacy requirements would strengthen the banking system, it would also lead to reduced financial intermediation and higher prices for that system's services. Similarly, tightening existing limits on connected lending, single exposures, and aggregate large exposures would tend to reduce bank credit risk, but this policy could also result in some creditworthy borrowers losing access to credit. Yet, tightening these limits could have the effect of promoting the development of syndicated lending and of improving allocative efficiency by forcing more bank transactions into the marketplace where they would have to pass an "arms-length" test—both desirable effects for CEE economies in transition.

Third, most (or all) of the CEE countries seek to accede to the EU. In doing so, these countries will have to conform to the many rules and institutional arrangements required of all EU members—including those contained in the Banking Directives. Therefore, any policy actions to tighten prudential regulations should take into consideration the implications for attaining EU membership. In some cases, tightening prudential regulations may not be a problem. For example, the Banking Directives specify that all member countries must require their banks to maintain capital of *at least* 8 percent of risk-weighted assets, but also provide that members have the flexibility to set *higher* capital requirements, if deemed desirable.

VI. Conclusions

This paper has shown that the structure of capital inflows into CEE countries is particularly vulnerable to reversals (predominantly private, debt-driven, and increasingly supplied by banks on a shortening maturity). It has also shown that the region's banking systems are disproportionately exposed to those reversals (they absorb the lion's share of the bank-supplied inflows). The main linkages for

transmission of external financial turbulence to the domestic banking industry were analyzed, and the particular strength of those linkages was assessed in the context of transition.

Although mechanisms for prudential regulation are in place in the region, and by and large mimic the standards directed by the EU, this paper has argued that such standards are insufficient for CEE countries. The argument was made not on the basis of weaknesses in actual enforcement (a genuine concern whose elaboration would call for separate, country-specific studies) but on the basis that the EU Banking Directives have been designed for economies that are much more stable and for banking systems that are much less vulnerable to capital inflow reversals. A strong case exists for CEE countries to overshoot those directives, at least until the transition process is completed.

Much like the bank supervision function itself, the suggestion for further regulatory tightening in CEE countries' banking sectors is based on qualitative judgment rather than quantitative certainty. Moreover, the implementation of that additional regulatory tightening, in itself, raises important policy issues that can be dealt with only at the individual country level (e.g., the likelihood of different types of external and internal shocks; the welfare cost of reduced financial intermediation; and the like). This highlights the need for theoretical modeling of optimal bank regulation burdens in varying economy-wide scenarios—an area of promise for further research, especially in the context of volatility-prone CEE economies in transition.

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