

Hot Money and Sudden Stops

“Hot money,” also known as mobile capital, refers to short-term private capital that flows across borders into different markets in search of higher returns and can be easily reversed. Hot money consequently makes a country susceptible to “sudden stops”. The sudden stop problem, first emphasized by Calvo (1998), refers to the abrupt cessation in foreign capital inflows and/or the sharp capital outflow, concurrent with a currency/balance-of-payment crisis. More than 120 sudden stops in capital inflows have been identified since the early 1980s, with an average output loss of almost 10 percent of GDP. Notable episodes of sudden stop crises are the financial crises that hit Mexico in 1994, Thailand and Korea in 1997, Indonesia, Malaysia and Russia in 1998, and Argentina in 2001.

There is a growing body of literature that attempts to define and measure sudden stops. One definition of sudden stops is any episode in which two conditions are met: (1) there is a significant reversal of capital inflows (a decrease in the financial account of at least 2 standard deviations below the country-specific sample mean), and (2) the current account deficit is reduced in either year t or in $t+1$ (Calvo, Izquierdo and Talvi, 2006). Another definition of a sudden stop is an event in which a currency crisis and a current account reversal (an increase in the current account surplus of more than 3% of GDP) occur simultaneously (Hutchison and Noy, 2006).

What leads to a sudden stop? Even after accounting for all macroeconomic fundamentals that may cause a capital outflow, a large unexplained component remains, which has been linked to herding behavior (Chari and Kehoe, 2003).

Sudden stops and Output contractions

Regardless of the exact definition, sudden stops lead to a large, though short-lived, negative impact on output growth that is substantially greater than the impact associated with a currency or financial crisis without a sudden stop. This abrupt reversal in foreign credit inflows, in conjunction with a realignment of the exchange rate, typically causes a sharp drop in domestic investment, domestic production and employment. The recovery from these types of crises seems to be rapid, though it is usually not accompanied by full resurgence in capital inflows or by a recovery of domestic investment. There is evidence that sudden stops generally have a larger adverse impact on output in countries relatively closed to trade and with greater exchange rate fixity (Edwards, 2004).

The question that follows is: what are the exact mechanics by which mobile capital leads to a financial crisis? The crisis-inducing nature of bank loans/debts is based on an open economy version of the bank panic model (Diamond and Dybvig, 1983). Following some negative shock, depositors, concerned about the safety of their savings, attempt to withdraw *en masse* (which occurs given the “first-come-first-served” rule of deposit withdrawals). Since the banks’ liquid asset/reserves are often less than their potential obligations, they are forced into the premature liquidation of long-term investments. Given the partial irreversibility of investments, they obtain a lower return on liquidation. In the open economy, if the foreign currency revenues obtainable in the short-term are less than the corresponding short-term potential foreign currency obligations, the banks are “internationally illiquid” (Chang and Velasco, 1999), while creditors, such as foreign banks, are unwilling to roll over short-

term inter-bank loans especially for emerging markets. The sudden termination of bank finance that follows, forces the abandonment of potentially solvent investment projects. This consequent decline in capital formation - indeed, capital destruction - leads to a sudden output/economic collapse .

While the maturity mismatch story leading to a possible bad equilibrium in the event of a bank panic is well known, there are many other possible channels of output contraction as well. Another prominent explanation relies on a “Fisherian” debt-deflation channel (Fisher, 1933). In these models, a deflation, triggered by an endogenous occurrence of a sudden stop when credit constraints become binding in high-debt states, leads to lower marginal product of factors of production; this leads, through a debt-deflation amplification process, to a large decline in economic activity. The debt-deflation multiplier can be even more severe: firm bankruptcies may cause banks to become ever more cautious, reducing lending to other firms, and thus inducing a further fall in credit (Mendoza, 2006; also see debt-deflation).

Adverse balance sheet effects due to a combination of currency depreciation following a reversal in hot money and unhedged foreign borrowing is another channel through which sudden stops could adversely impact the real sector (Rajan and Shen, 2006; also see balance sheet effects/approach).

Importance of Financing via Foreign Direct Investment (FDI)

Given the deleterious effects of sudden stops, economies that finance their current account deficits mainly through foreign direct investment (FDI) generally are less susceptible to a sudden stop. Thus, Hausmann and Fernández-Arias (2000) refer to short-

term debt as “bad cholesterol” as it is motivated by “speculative considerations” such as exchange rate expectations. This type of financing is the first to exit in times of trouble. The resulting boom-bust cycle of capital flows in the 1990s having inflicted great damage to many emerging economies.

Of course, short-term debt is not the only form of liquid liability. An alternative and more complete measure of the illiquidity is given by “mobile capital” or international capital markets, which refers to short-term bank loans plus portfolio investment in the form of equity and bond issues in offshore markets. Equity investment at least shares in the risk of falling market values, while long-term bond issues are less liquid. But it is FDI that is seen as “good cholesterol” since it is bolted down and is relatively irreversible in the short-run. It flows in because it is attracted by the long-term prospects; it enhances the productive capacity of the country and produces the revenue streams necessary to cover future capital outflows (if they occur) without increasing the overall indebtedness of the economy.

Available summary statistics of private capital flows to developing economies suggest, consistent with conventional wisdom, that direct investment has been the most resilient form of external financing (for instance, see Chuhan et al., 1996 and Sarno and Taylor, 1999). Empirical analysis suggests that emerging economies most prone to currency crashes tend to have a relatively smaller share of FDI in total capital inflows and a relatively higher share of short term external debt (Frankel and Rose, 1996). Other studies have confirmed that short-term indebtedness is a robust predictor of financial crises (Rodrik and Velasco, 1999).

A potential criticism of the conventional view regarding differing degrees of

stability of various capital flows is that complex interactions between FDI and other flows are not taken into account. Therefore examining each flow individually, particularly during short periods of time (such as year-to-year variations) may not be a reliable indicator of the degree of risk of various classes of flows at best, and could be highly misleading at worst (see Bird and Rajan, 2002 and references cited within).

Contrary to popular belief, FDI itself, which is a form of external finance, is not “bolted down”, though the physical assets it finances are. Foreign investors could use the physical assets as collateral to obtain a loan from banks and place the funds abroad. In other words, the foreign direct investor may hedge the firm’s FDI exposure by borrowing domestically and taking short-term capital out of the country. Hence a firm may be doing one thing with its assets and a completely different thing with the manner it finances them. This appears consistent with the Malaysian capital flows data during the crisis where, as noted, portfolio outflows in 1997 sharply outweighed the cumulative inflows between 1980 and 1996. Apparently the portfolio outflows must have entered from some other account (such as FDI or bank loans) (Bird and Rajan, 2002). Indeed, the distinction between portfolio and FDI flows in the balance of payments can be somewhat arbitrary and the proportion of FDI flows in aggregate capital flows may be overstated. Small differences in equity ownership are unlikely to represent substantially different investment horizons.

All of this suggests that the casual presumption that the switch from hot money to FDI alone will automatically safeguard a country against sudden stops and output contractions should be viewed with a degree of caution.

See also: Balance of payments account, Balance sheet approach / effects, Bank runs, Bubbles, Capital controls, Current account sustainability, Currency Crisis, Debt-deflation, Financial Crisis, Foreign direct investment (FDI), Hedge, Interest parity conditions, International capital markets, Speculation, Spillovers.

Further Readings:

Bird, Graham and Ramkishan S. Rajan (2002). “Does FDI Guarantee the Stability of International Capital Flows? Evidence from Malaysia”, *Development Policy Review*, 20 (2), 2002, pp.191-202. Examines the links between FDI and currency crisis with particular reference to Malaysia in 1997-98.

Caballero, Ricardo and Arvind Krishnamurthy (2004). “Smoothing sudden stops.” *Journal of Economic Theory* 119(1): 104–127. Describes various financial policies that can potentially prevent the occurrence of sudden stops.

Calvo, Guillermo (1998). “Capital Flows and Capital-Market Crises: The simple economics of sudden stops.” *Journal of Applied Economics* 1(1): 35–54. The seminal work in the economic literature that describes sudden stop crises from a theoretical perspective.

Calvo, Guillermo A., Alejandro Izquierdo, and Ernesto Talvi, 2006. “Sudden stops and Phoenix Miracles in Emerging Markets.” *American Economic Review*, 96(2): 405–410. An empirical examination of the regularities of sudden stops, according to which gross domestic product typically recovers quickly following the crisis; this recovery, however, is not accompanied by resurgence of capital flows.

Chang, R. and A. Velasco (1999). “Liquidity Crises in Emerging Markets: Theory and

Policy”, in B. Bernanke and J. Rotemberg (eds.), *NBER Macroeconomics Annual 1999*, Cambridge, MA: MIT Press, pp.11-78. Develops a simple model to explain how short-term debt can lead to currency crisis.

Chari, V.V. and Patrick J. Kehoe .2003. “Hot Money.” *Journal of Political Economy* 111, 6, 1262-1292. Develops a model of herd-behavior to explain volatile capital flows.

Chuhan, P., G. Perez-Quiros and H. Popper (1996). “International Capital Flows: Do Short-term Investment and Direct Investment Differ?”, *Policy Research Working Paper No.1507*, World Bank. Examines whether there are differences in FDI and short-term capital flows.

Diamond, P. and P. Dybvig (1983). “Bank Runs, Deposit Insurance, and Liquidity”, *Journal of Political Economy*, 91, pp.401-419. Develops a bank-based model on liquidity crises.

Edison, Hali and Carmen Reinhart. 2001. Stopping Hot Money: On the Use of Capital Controls During Financial Crises, *Journal of Development Economics*, 66, pp.533-553. Evaluates the effectiveness of capital controls in preventing speculative reversal of hot money in emerging economies.

Edwards, Sebastian (2004). Thirty Years of Current Account Imbalances, Current Account Reversals and Sudden Stops.” NBER Working Paper # 10276. Examines the empirical evidence relating to sudden stops.

Fisher, Irving, (1933). The Debt-Deflation Theory of Great Depressions. *Econometrica* 1(4), 337-357.

Frankel, J. and A. Rose (1996). “Currency Crisis in Emerging Markets: Empirical Indicators”, *Journal of International Economics*, 41, pp.351-368.

Hausmann, R. and E. Fernández-Arias (2000). “Is FDI a Safer Form of Financing?”

Working Paper No.416, Inter-American Development Bank. Critically examines whether FDI is in fact a stable and safe source of financing.

Hutchison, Michael and Ilan Noy (2006). “sudden stops and the Mexican Wave:

Currency Crises, Capital Flow Reversals and Output Loss in Emerging Markets.

Journal of Development Economics 79(1): 225–248. Empirically defines what sudden stops are and measures the depth of the recessions that typically follow these crises.

Mendoza, Enrique G. 2006. Lessons from the Debt-Deflation Theory of sudden stops.

American Economic Review 96(2): 411–416. Describes a set of dynamic, stochastic general equilibrium economic models which replicate many of the defining characteristics of sudden stop crises.

Rajan, Ramkishan S. and Shen Chung-Hua (2006). “Why are Crisis-Induced

Devaluations Contractionary?: Exploring Alternative Hypotheses”, *Journal of Economic Integration*, 18 (1), pp.1-24. Empirical investigation of the various factors that might lead to a currency depreciation to be contractary rather than expansionary.

Rodrik, D. and A. Velasco (1999). “Short-term Capital Flows”, *Working Paper No.7364*,

NBER. Examines the impact of short-term capital flows on currency crisis.

Sarno, L. and M. Taylor (1999). “Hot Money, Accounting Labels and the Permanence of

Capital Flows to Developing Countries: An Empirical Investigation, *Journal of Development Economics*, 59, pp.337-64. Examines the permanence/durability of various types of capital inflows.

Williamson, John, 2005. *Curbing the Boom-Bust Cycle: Stabilizing Capital Flows to Emerging Markets*. Washington D.C.: Institute for International Economics. This policy brief addresses many of the possible policy solutions to the sudden stop problem that has plagued financial markets in emerging markets for the past two decades.

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