Promoting Financial Stability

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Financial stability is an important public policy objective. It is well established that crises are associated with big economic, social and political costs.[2] Promoting stability requires, among other things, preventing "sudden stops" in capital flows, which are a form of financial whiplash triggered by the unexpected disappearance of foreign financing. This article examines the causes and consequences of sudden stops in capital flows.[3]

My research[4] provides new theoretical and empirical evidence on the causal connection between lack of exposure to commercial trade (i.e., low trade to GDP ratio) and proclivity to sudden stops. Exposure to trade (also known as *de-facto* trade openness) raises the creditworthiness of countries and reduces the probability of sudden stops. There are several mechanisms that could explain the relationship.[5] But there is one that is particularly relevant for emerging markets in Latin America: in relatively closed economies, sudden stops (when they occur) are more harmful, because they require a relatively larger real devaluation to generate the necessary improvement in the current account balance.[6] Since the emerging market crises of 1994-1998, economists have increasingly emphasized the contractionary effects of real devaluations, particularly via the balance sheet effect: if the country's debts are denominated in foreign currency, the balance sheets of the indebted banks and corporations are hit in proportion to the devaluation. If the economy is starting from a high ratio of trade to GDP the necessary devaluation need not be large, and therefore the adverse balance sheet effect need not be large. But if the economy is not very open to trade to begin with, the necessary devaluation, and the resulting balance sheet impact and recession, will all be large. Therefore, we arrive at the result that whether the necessary adjustment will be large and painful depends inversely on trade openness. As the recent experience of Argentina suggests, undergoing long and painful adjustment processes in the aftermath of a sudden stop might raise the attractiveness of the option to default on the inherited debt as a way of mitigating the short-run pain. Whether debt default is a good strategy to mitigate

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[1] The views expressed here are strictly the views of the author and do not necessarily represent the views of the IDB, the board of that institution or the countries they represent, or any other institution.
[2] For a recent study on the impact of different types of crises on long-run growth, see: Cerra, V. and Chaman Saxena, S. (2005). Growth Dynamics: the Myth of Economic Recovery. IMF Working Paper No. 147
[3] Cavallo, Eduardo (2006). Living as a Debtor in a World of Sudden Stops: the roles of openness to trade and commitment. Doctoral dissertation, Harvard University.
[4] Cavallo, Eduardo (2006). Trade, gravity and Sudden Stops: on how commercial trade can increase the stability of capital flows. IDB-Research Department Working Paper 588
[5] See, for example: Rose, A. K. (2002). A Reason Why Countries Pay their Debts: Renegotiation and International Trade. NBER Working Paper No. 8853
[6] In the aftermath of a sudden stop in financing, any outstanding current account deficit that cannot be financed with reserve losses, has to be eliminated.

the costs of a crisis is, of course, very questionable. What is clear is that the option to default on the foreign external debt is more politically appealing than other adjustment options, such as drastic budget deficit cuts.

In summary, countries that are less exposed to trade might be more tempted to default in the aftermath of a liquidity shock because they are forced into more painful adjustment processes. But what is the connection to the ex-ante probability of a sudden stop? Before proceeding, it is important to understand that sudden stops are typically originated on a common systemic shock. That means that many countries are affected simultaneously. The recent Latin American experience is illustrative on this point: as Guillermo Calvo and his coauthors at the IDB have properly documented, the wave of financial crises that spread over Latin America in the late 1990s and early 2000s had its origin in the tight liquidity for emerging markets in the aftermath of the Russian crisis of 1998.[7] The same common underlying shock (i.e., the limited amount that lenders are willing to loan at a point in time) turns into a full-blown crisis depending on the way that different countries accommodate the shock. The inverse relationship between trade exposure and the cost of the adjustment suggests that, conditional on any amount that lenders are willing to loan, decreased exposure to trade increases the likelihood of default and a full blown sudden stop (i.e. complete disappearance of foreign financing). To illustrate this point, take the cases of Argentina and Chile: they were both affected by tight liquidity conditions for emerging markets at approximately the same time (the late 1990's). They both had to adjust their outstanding current account deficits because of limited available financing. Yet the relatively open Chile did not default nor was it completely cut-off from capital markets, while the relatively closed Argentina suffered a full-blown crisis.

For all of the aforementioned reasons, I conclude that more open economies are less prone to full-blown financial crisis. This proposition is validated empirically: controlling for other crisis determinants, countries that trade more are less likely to suffer a sudden stop. The evaluation of causal effects of exposure to trade, however, is a difficult task as the trade/GDP ratio (the conventional measure of exposure to trade) might be affected by the probability of sudden stops (i.e., it is endogenous). One way in which this measure of trade openness could be endogenous is via income: richer countries tend to liberalize trade barriers -- in part because their mode of public finance shifts from tariff revenue to income or VAT taxes. A second way is that trade liberalization could be part of a more general reform strategy driven by a pro-globalization philosophy or "Washington Consensus" forces. Other aspects of such a reform program, such as privatization, financial liberalization, or macroeconomic stabilization might affect the probability of crises, and yet an ordinary least squares regression analysis might inappropriately attribute the effect to trade. A third way that trade openness could be endogenous is that experience with crises -- the dependent variable -- may itself cause liberalization, via an IMF program. Or it might have the opposite effect, if a country's response to a crash is disenchantment with globalization and the Washington Consensus. A fourth way in which trade openness could be endogenous is through the feedbacks between trade and financial openness as more commercial openness increases the effective cost of

[7] See, for example: Calvo, G.A., Izquierdo A., and Talvi E. (2003). Sudden Stops, the Real Exchange Rate and Fiscal Sustainability: Argentina's Lessons, in Alexander V., Mélitz J., von Furstenberg G.M. (Eds.), Monetary Unions and Hard Pegs; Oxford University. Press, Oxford, UK, pp. 150--181.

enforcing financial repression, rendering financial openness a by-product of greater trade integration.[8]

To address this identification problem, what is needed is a good instrument: something that is correlated to exposure to trade, but that is not affected by the probability of a crisis, and affects the probability of sudden stops only through its effect on trade. The so-called "gravity estimates" provide that instrument. These estimates are the "predicted" trade/GDP ratios of every country, where the prediction consists of aggregating up across a country's partners the fitted-value of an equation that explains bilateral trade flows with distance, population, language, land-border, land-area, and landlocked status. As all the explanatory variables included in the first-stage regressions are based on geographical characteristics of countries, they are plausibly exogenous (i.e., not affected by the probability of sudden stops). Yet, the resulting "predicted" trade/GDP ratios are highly correlated with the true trade/GDP ratios. Thus, gravity estimates fulfill all the requirements of a good instrumental variable.[9]

Controlling for endogeneity using gravity estimates, the results indicate that, all else equal, a 10 percentage point decrease in the trade to GDP ratio increases the probability of a sudden stop between 30% and 40%. That is, a country that trades 10% less of GDP (i.e., Argentina vis-à-vis Australia) is, ceteris paribus, 42% more likely to be hit by a sudden stop. The policy implications are unambiguous: increasing the tradable component of a country's GDP will, in all likelihood, reduce the vulnerability of that country to these crises.

Sudden stops are typically accompanied by sharp output contractions followed by recoveries.[10] Therefore, these crises are associated with an increase in output volatility. If exposure to trade reduces the probability of sudden stops, it should mitigate output volatility through this route. This opens a new line of research because the prevailing view among economists is that openness to trade raises output volatility as it exposes countries to terms-of-trade shocks.[11]

In a recent paper[12] I test the net effect of exposure to trade on output volatility when both effects are accounted for. I present new empirical evidence suggesting that the net effect is stabilizing: countries that are more exposed to trade are, on net, more stable. While the results confirm that exposure to trade raises output volatility through the terms-of-trade channel, this effect is counteracted by a quantitatively larger stabilizing effect that had been previously ignored. The methodology employed in this paper also seeks to correct for the likely endogeneity of trade by using "gravity estimates" as instrumental variables for trade quantities. Additional evidence is presented showing that the stabilizing effect of exposure to trade comes (at least in part) through the aforementioned financial stability channel: splitting the sample into countries that are more exposed to capital flows and

[8] On this issue see: Aizenman, J. (2003). On the Hidden Links Between Financial and Trade Opening. NBER Working Paper No. 9906.
[9] On the topic of gravity estimates as instrumental variables for trade openness, see: Frankel, Jeffrey (1997). "Regional Trading Blocks". Institute for International Economics. Washington, DC.
[10] See: Calvo, G.A., Izquierdo A., and Talvi E. (2006). Phoenix Miracles in Emerging Markets: Recovering without Credit from Systemic Financial Crises. NBER Working Paper No. 12101.
[11] See, for example: Easterly, W., R.Islam and J. Stiglitz (2001), Shaken and Stirred: Explaining Growth Volatility. Annual World Bank Conference on Development Economics, edited by B. Plesokovic and N. Stern.
[12] Cavallo, Eduardo (2006). Trade Openness and Output Volatility: a reassessment. Mimeos. Harvard University.

countries that are less exposed, it is shown that the stabilizing effect of commercial trade predominates in the first sub-sample.

Thus, if individual countries want to take advantage of open capital markets while reducing the risk of sudden stops and mitigating their adverse consequences, they should remain open to commercial trade. Yet, there is still an important element of exogeneity from the point of view of individual countries, associated with these events. Sudden stops are initiated by a common systemic shock (i.e., tight liquidity across the world) that affects several countries at the same time. There is virtually nothing that individual countries can do to avoid periods of tight global liquidity, and during particularly bad times, even countries that trade a lot might not be able to avoid the ensuing crises. This implies that, to the extent that the common systemic shocks remain unavoidable, open capital markets create risks to individual economies that might have an effect on the countries' incentives to undertake reforms that facilitate and deepen financial integration. The most likely reason is that "deeper" financial integration would, by definition, leave countries more exposed to sanctions in the aftermath of default.

In a joint paper with Andrés Velasco,[13] we explore the effect of sudden stops on debtor countries' incentives for institutional reform to deepen financial integration.[14] Countries wanting to develop are told time and again to "fix your institutions" and "protect property rights." The two are related, for one main task of good institutions is to keep property rights from being violated. If countries follow this advice, then presumably traders and investors carry out profitable trades and projects and the country prospers. International borrowing and lending provides a concrete application of this general advice. Countries can guarantee repayment by entering into binding international agreements, designing rules or institutions that make non-payment costly or making themselves vulnerable to international sanctions. If they do, then capital inflows pick up, profitable projects are financed and opportunities for international risk-sharing do not go to waste. We call this the "tie your hands and prosper" strategy, or THAP. We argue that when applied to international borrowing and lending, the THAP strategy may well be incorrect. Or, more precisely, that it is correct under very narrow and specific circumstances. Under other conditions, which are more prevalent in today's financial markets, the advice "build institutions to secure repayment at all costs" may be very bad advice indeed.

Tying your hands as much as possible, or making yourself extremely vulnerable to sanctions may well decrease rather than increase expected country welfare. The reason is that in a world of sudden stops, which can be thought of as crises that are triggered by lenders who unexpectedly stop lending to a debtor country, borrowers might want to default on the inherited debt to alleviate the short-run pain of the adjustment process. If they choose to default, sanctions follow. By making itself vulnerable to sanctions in the aftermath of default, the country is giving-away to lenders a greater share of output in the event of a crisis. This is not the case in the canonical models of international finance, where debt defaults are prevented through the design of suitable incentive-compatible contracts. Without debt defaults, the would-be sanctions don't matter (they only have the positive effect of increasing the country's credibility to repay).

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[13] Cavallo, E., and Velasco, A. (2006). Quid Pro Quo: National Institutions and Sudden Stops in International Capital Movements. IDB-Research Department Working Paper No. 587

[14] The model is based on the canonical model of Obstfeld, M. and Rogoff, K. (1996). Foundations of International Macroeconomics. Cambridge, MA: The MIT Press.

The extended model also yields a theory of the optimal size of international debt. In standard models (i.e., models without sudden stops) the size of debt is irrelevant. Here, that is not the case. The size of debt matters: with larger debt, the country gets more relief from non-payment. And that relief may be necessary if in equilibrium lenders do not make the net transfers they were supposed to make under the contract. We find that the optimal debt stock depends, among other things, on the perceived risk of sudden stops. If borrowers expect that the lenders will not make the promised transfers, they will want to have more defaultable debt to cushion the adverse consequences of sudden stops.

In conclusion: countries that trade more are safer, since they are less prone to the financial instability associated to sudden stops in capital flows, and they benefit from the reduced volatility associated with these events. But given that there is an exogenous common element at the outset of these crises, even extremely open economies are not always safe. This has an effect on countries' incentives to undertake reforms that, without sudden stops could benefit them, but with sudden stops can hurt them. We do not claim that institutional reform to secure property rights, or prudent debt management policies are undesirable objectives. On the contrary, we show that borrowers' would be interested in pursuing those policies, which we call THAP, but not under the conditions prevalent in today's international financial markets. Instead, a more stable international lending environment would go a long way towards promoting the correct incentives for countries to undertake THAP policies. The corollary of this is that domestic and international reform must be undertaken jointly: a better international lending environment, with fewer sudden stops in capital movements, makes it more likely that nations will undertake institutional reforms at home.