Comment on "Shaken and Stirred: Explaining Growth Volatility," by William Easterly, Roumeen Islam, and Joseph E. Stiglitz, and "Creative Destruction and Development: Institutions, Crises, and Restructuring," by Ricardo J. Caballero and Mohamad L. Hammour

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The titles of these two articles obscure the similarity of their basic messages: that economies that have poor property rights protection and, more generally, weak capital market institutions tend to be more volatile. Ricardo Caballero and Mohamad Hammour provide a set of arguments, based on their important previous work, on why negative shocks (crises) would be expected to have particularly damaging effects in such economies.[1] William Easterly, Roumeen Islam, and Joseph Stiglitz pull together a range of interesting cross-country data to show that there is a strong positive correlation between various indicators of weak capital market institutions and volatility in growth.

A Puzzle

At first glance, the positive correlation between weak capital market institutions and volatility is puzzling. A simple intuitive argument would go as follows: Economies with good capital markets are best able to take advantage of positive productivity shocks (new innovations, terms of trade shocks). Therefore, by symmetry, they will be the ones most damaged by negative productivity shocks. For example, an economy in which capital is very mobile will grow very fast when it receives a positive growth shock, but for exactly that reason its growth will slow the most when the positive growth shock fails to arrive.

My aim is to understand the basis of this correlation and its implications. I begin by briefly examining some potential data problems and some potential explanations.

Explanation 1: Spurious Correlation

Economies with excellent capital market institutions are likely to be richer and, for the usual convergence reasons, may be expected to have a lower marginal product of capital than economies with weak capital market institutions. As a result, shocks that induce marginal firms to shut down may have a smaller effect in economies with good capital

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markets. There may therefore be a spurious correlation between the quality of capital markets and growth volatility that results from omitting the marginal product of capital. The results of Easterly, Islam, and Stiglitz do hold even after linearly controlling for per capita GDP, but the authors may not have controlled for enough. Moreover, the effect of a shock on growth volatility may depend on the level of the growth rate (for which they do not control), and economies with better capital markets may grow more slowly for the usual convergence reasons.

This point is worth investigating further, but my sense is that this source of spurious correlation is not especially compelling. The problem is that there is little evidence for unconditional convergence.[2] Moreover, to the extent that Easterly, Islam, and Stiglitz find any effect of per capita GDP on growth volatility, the measured effect is positive, implying that richer countries are more volatile.

The labor market is another potential source of omitted variables. If labor market rigidity is correlated with capital market failures, measures of the quality of the capital market could be picking up labor market characteristics. Easterly, Islam, and Stiglitz argue against this possibility and, more generally, against the view that labor market rigidities are the source of volatility. Their evidence is that real wage flexibility, as measured by the standard deviation of real wages and the standard deviation of real wage changes, is higher in developing countries and, moreover, almost uncorrelated with growth volatility.

I am less persuaded by this evidence. The problem is that the standard deviation of real wages (or of real wage changes) does not measure labor market flexibility very well. An economy that has very flexible nominal wages may have completely stable real wages if the only source of shocks is the money supply. An economy that has rigid nominal wages but relatively flexible prices (as many formerly socialist economies undergoing liberalization do) will show large variations in real wages. In this case the standard deviation of real wages will reflect rigidity in the labor market rather than flexibility.

Another problem with this measure becomes apparent if we compare an economy in which real wages adjust instantaneously to productivity shocks with one in which there is no adjustment until real wages are far enough from the market equilibrium wages. The first will have many small adjustments, the second occasional large changes. The second, which clearly has the more rigid labor market, could easily have a higher standard deviation of real wages and real wage changes.

I am nevertheless willing to accept their conclusion. The microeconomic evidence from developing countries seems to support the view that these countries have relatively flexible labor markets, at least outside the relatively small formal sector (see, for example, Rosenzweig 1988). Labor market inflexibility is therefore unlikely to be a big part of the story.

Explanation 2: Stabilizing Capital Flows

The conventional explanation of why good capital market institutions have a stabilizing effect comes from the idea that such institutions allow countries better access to world capital markets, enabling them to smooth consumption and investment by

borrowing abroad. If foreign capital helps to reduce volatility in GDP growth, it must be the case that savings drop sharply in a crisis but investment does not. The folk wisdom seems to be that it is investment that typically responds more sharply to a shock in most developing countries, and, in fact, Easterly, Islam, and Stiglitz find no effect of foreign capital flows on volatility. Nevertheless, it may be worth using data on investment and savings volatility outcomes to investigate this explanation.

Explanation 3: Balance Sheet Effects

The basic explanation that Easterly, Islam, and Stiglitz offer for their results relies on balance sheet effects of shocks. Their basic idea, as I understand it, is that firms in economies with weak capital market institutions depend heavily on cash flow to finance production and investment, so that shocks to their balance sheet have strong effects on output and growth.

The problem with this version of the argument is that it does not distinguish sharply enough between levels and changes. It is true that firms in economies with weak capital market institutions finance a larger share of their outlay from internal sources. Put another way, these firms are less able to leverage their internal resources into additional funds than are their counterparts in more developed capital markets. This does imply that the level of output in these economies will be lower. But it does not necessarily imply that their output will be more responsive to changes in cash flow.

There are at least two conflicting effects here. First, a one-unit fall in a firm's cash flow will reduce the total resources available to the firm by more where the capital markets function better (that is, where the firm gets more leverage). The resulting fall in output is therefore likely to be greater where capital markets are better. Second, the better the capital market, the more likely it is that the firm has not already borrowed up to its maximum, which may exceed its needs under normal conditions. This will make the firm's outlays less responsive to short-term changes in cash flow. The net effect is ambiguous, though in some plausible scenarios it can be shown to have an inverted U-shape—that is, an improvement in the capital market first increases volatility and then reduces it (see, for example, Aghion, Banerjee, and Piketty 1999 and Aghion, Bacchetta, and Banerjee 1999).

That the direction of the correlation between the quality of capital markets and growth volatility is unclear does not of course rule out the possibility that it is positive. But it does raise the possibility that the positive correlation is driven by the fact that the data are restricted to a sample of relatively rich countries.[3]

Explanation 4: Sclerosis and Scrambling

Caballero and Hammour propose another explanation based on the idea that both positive and negative shocks are, in their own way, opportunities. The best way to take advantage of good times is to move capital fast into whatever is hot. The way to benefit from bad times is to move capital out of what has become unproductive in order to make away for what is to come—in other words, creative destruction. In

economies with weak capital market institutions, capital is much too slow both to move in and to move out. This is what Caballero and Hammour call *sclerosis.* Moreover, when capital does move out, it might move in the wrong direction: firms with deep pockets may outlive the most productive firms. In Caballero and Hammour's words, this is a *scrambling* of the natural order of things.

What distinguishes Caballero and Hammour's work from much of the literature on imperfect capital markets is its emphasis on the interaction of such markets with firm-level heterogeneity and the resulting patterns of capital movement. In this view a negative shock becomes an occasion for a certain type of reallocation rather than simply an overall contraction. Countries where such reallocation takes place efficiently can therefore withstand the shock without a substantial drop in their growth rates.

Is the relative immobility of capital resulting from imperfect capital markets large enough to warrant taking Caballero and Hammour's view seriously? While there is no direct evidence, a recent study of the knitted garment industry in Tirupur, in Southern India, provides some indirect support (Banerjee and Munshi 2000).[4] Tirupur produces 70 percent of the knitted garment exports from India, a major exporter in this category. Tirupur has two communities of producers: Gounders, linked by community ties with a rich local agricultural community, and Outsiders, a motley crew of businessmen from all over India. They produce exactly the same goods, yet use radically different technologies. Gounders invest much more than Outsiders at all levels of experience, both in absolute terms and relative to output. Average capital-output ratios for Gounders can be three times those for Outsiders and are typically twice as large. But all the evidence points to the Outsiders being more able: they enjoy faster output growth, and their output outstrips that of the Gounders after a few years. In other words, the more able invest less in this industry.[5]

The reason, it appears, is that the Gounders have a lot of investible funds that they cannot profitably lend out because capital markets in India function poorly. Instead, they set up garment firms or lend to friends and family in the garment business. Since the firms are set up as a conduit for the surplus capital, they are not required to be particularly productive. The Outsiders, by contrast, come from traditional entrepreneurial communities and their capital probably has many alternative uses. So when they invest in Tirupur, it is not because they lack other choices. This makes them more likely to be productive but also less willing to invest a lot.

What is striking about these results is the extent of scrambling. Gounders can invest almost twice as much and still fall behind in all measures of output. Capital seems to be extremely slow to move to its best users. It is thus possible that a theory like that suggested by Caballero and Hammour could explain the observed correlation between weak capital markets and growth volatility, though we have no direct evidence that it does.

Conclusion

The strong association between weak capital markets and growth volatility in the data needs careful interpretation. While there is good reason to believe that mal-

functioning capital markets have large consequences for growth and stability, little is known about the channel that links them. This is important, as the optimal policy response depends on the exact nature of that channel. In Easterly, Islam, and Stiglitz's world the best policy might be to weaken the link between cash flow and investment. In Caballero and Hammour's world it might be to increase the mobility of capital, perhaps by reducing the costs of firing workers. We clearly need more detailed evidence on how capital markets function in the developing world.

Notes

1. This is not all they do, but given space restrictions I focus on this aspect of their results.

2. Since Easterly, Islam, and Stiglitz do not control for the savings rate and the human capital investment rate in their regressions, the correct comparison is with models of unconditional convergence.

3. This is what would follow if the relationship had an inverted U-shape.

4. The study is based on panel data collected from about 600 garment producers in 1995.

5. This is also consistent with capital and ability being substitutes, but Banerjee and Munshi (2000) show other evidence supporting the more standard view that capital and ability are complements.

References

Aghion, Philippe, Philippe Bacchetta, and Abhijit Banerjee. 1999. "Capital Markets and the Instability of Open Economies." Massachusetts Institute of Technology, Department of Economics, Cambridge, Mass.

Aghion, Philippe, Abhijit Banerjee, and Thomas Piketty. 1999. "Dualism and Macroeconomic Volatility." *Quarterly Journal of Economics* 114 (4): 1359–97.

Banerjee, Abhijit, and Kaivan Munshi. 2000. "Networks, Migration and Investment: Insiders and Outsiders in Tirupur's Production Cluster." Massachusetts Institute of Technology, Department of Economics, Cambridge, Mass.

Rosenzweig, Mark R. 1988. "Labor Markets in Low-Income Countries." In Hollis Chenery and T. N. Srinivasan, eds., *Handbook of Development Economics.* New York: Elsevier Science Pub. Co.