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Review paper

Cross-country causes and consequences of the crisis: An update

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ABSTRACT

We update Rose and Spiegel (forthcoming, 2010) and search for simple quantitative models of macroeconomic and financial indicators of the "Great Recession" of 2008–09. We use a cross-country approach and examine a number of potential causes that have been found to be successful indicators of crisis intensity by other scholars. We check a number of different indicators of crisis intensity, and a variety of different country samples. While countries with higher income and looser credit market regulation seemed to suffer worse crises, we find few clear reliable indicators in the pre-crisis data of the incidence of the Great Recession. Countries with current account surpluses seemed better insulated from slowdowns.

1. Introduction

In the Spring of 2009, we collected a cross-country data set that we used for a number of purposes in Rose and Spiegel (forthcoming, 2010), hereafter "RS"). We were primarily interested in seeing which of the many possible causes of the "Great Recession" of 2008–09 could be linked empirically to the actual crisis. A large number of causes had been suggested as potential fundamental reasons for the global crisis which broke out in 2008. Our approach was purely cross-sectional; any plausible theory of the crisis should at least be able to explain its incidence across countries (we think of understanding the *timing* of the crisis as a substantially more difficult exercise). We considered the cross-country exercise to be intrinsically interesting, since there was no consensus at the time on the cause(s) of the crisis. Our reasoning was that if, for example, excessive house-price appreciation was the "fundamental" cause of the crisis (feel free to substitute

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financial leverage, credit growth, current account imbalance, or whatever), it should explain the incidence and severity of the crisis in a number of different countries, not just one. Determining the fundamental causes of the crisis would also be valuable in building a quantitative "early warning system" (EWS) of the sort that the G-20 had advocated. In the large, our analysis failed; we were essentially unable to find an empirical model of the crisis that could link any plausible set of potential causes of the crisis to its manifestations. We found that richer countries had systematically worse experiences, as did countries which experienced a sharper rise in the stock market in the years before the crisis. There was also some weak evidence that countries with closer trade linkages to the United States experienced less severe crises.

More recently, a number of studies have emerged that use different methodologies and newer data, and purport to identify stronger linkages between commonly cited causal variables and economic performance. This has led to some speculation that the results in our earlier paper were attributable to the fact that the study was conducted while the crisis was still in progress, and that examining a sample that included a greater portion of the crisis period might yield different results.

In this paper, we update our analysis and check to see if our conclusions are robust to the arrival of more recent information. We use two types of new information: updated data and, more importantly, the emerging literature of relevance.

2. The data set

The analysis we report below is conducted on the same broad cross-section of countries as RS. In particular, we examine all countries/territories with real GDP per capita of at least $10,000 in 2003, as well as those with real GDP per capita of at least $4000 and a population of at least 1 million. This leaves us with 107 countries; the precise sample is tabulated in Appendix Table A1.[3] While 107 independent observations could in principle be a large number of observations, missing data and cross-sectional dependencies will often reduce the effective sample size considerably in our statistical analysis below. This is potentially a serious problem, and one for which there is no obvious fix; it affects any researcher attempting a cross-country exercise like ours.

We begin by re-estimating the key results of our original work with updated data.

3. Updating the MIMIC model

In RS we used a non-structural Multiple Indicator Multiple Cause (MIMIC) model of the crisis. This model uses different manifestations of the severity of the crisis across countries, each of which is viewed as an imperfect proxy for crisis intensity. Real GDP growth in 2008 was an obvious indicator of the crisis, and we used the forecasts (technically, backcasts) for 2008 real GDP growth that were available in early March 2009 from the *Economist Intelligence Unit.* Since financial variables are intrinsically forward-looking and the crisis was financial in nature, we also used three different manifestations from different financial markets. In particular, we used 2008 changes in: (a) the national stock market (measured in local currency, from national sources), and (b) the multilateral (SDR) exchange rate (from the IMF's *International Financial Statistics*), as well as (c) the difference in country credit ratings between March 2008 and March 2009 as measured by *Institutional Investor*. The latter are ratings created by *Institutional Investor* that rank over 170 countries on a scale between 0 and 100 where 100 represents the least likelihood of default (in March 2010, Norway, Luxembourg and Switzerland had scores over 90, while Haiti scored less than 20).[4] These four variables collectively seem to deliver a reasonable view of the countries most affected by the 2008 crisis. For instance, Iceland always appears as the country most dramatically affected by the crisis, along with countries like Ukraine, Estonia, Latvia, Ireland and the UK.

In RS, we also considered a host of potential causes of the crisis, all dated 2006 and earlier. Our reasoning was that this would be a data frequency of interest to policy-makers, since higher-frequency early warning systems may not provide enough time for policy to respond appropriately. Using 2006 data to measure potential causes also allows one to escape much of the endogeneity bias that might result from using later data, since policy authorities responded forcefully to the crisis. In RS, we considered both *national* causes of the crisis and a larger number of *international linkages* between countries and the countries that could plausibly be considered as the epicenters of the crisis. For example, in trying to determine why Iceland experienced a 90% drop in both its stock market and exchange rate in 2008 (as well as a substantial drop in its country credit rating and a domestic recession), we considered both national features of Iceland's economy (e.g., its credit/GDP rating) and international linkages between Iceland and say the United States, a plausible epicenter of the crisis (e.g., the share of 2006 Icelandic external assets held in America and the share of Icelandic exports going to the US). However we found only two reasonably robust positive results. We found that richer countries experienced more dramatic crises, as did countries with a larger run-up in the stock market (measured relative to output) before the crisis. We also found weaker evidence that countries with closer trade linkages to the United States also experienced somewhat milder crises. In the analysis that follows, we consider all three of these potential causes of the crisis.

[3] We note in passing that the number of observations we have is small. This is not because we are taking a small sample from a large population, but because the population itself is small.

[4] *Institutional Investor* states that their ratings "… are based on information provided by senior economists and sovereign-risk analysts at leading global banks and money management and securities firm"; further details are available at: http://www.iimagazinerankings.com/rankingsRankCCMaGlobal09/methodology.asp.