

**Comment: When it Rains, It Pours:  
Procyclical Capital flows and Macroeconomic Policies**

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This paper is an extremely nice effort at documenting and contrasting certain features of the business cycle for a large set of countries. The authors focus on the cyclical properties of capital flows, fiscal policy and monetary policy. They contrast the behavior of these variables across groups of countries defined to be OECD, middle-high, middle-low and low income countries. The middle-high income countries are the so called "Emerging Markets" (EM). Based on their analysis, the authors identify a striking feature that appears to characterize EM's. That is, in good times (when output is above trend) EM's receive above average levels of capital flow from the rest of the world at the same time as fiscal and monetary policies are strongly expansionary. This feature, which the authors describe as "When it rains, it pours", is either not true or less true of other countries in the sample. We are then presented with a seemingly unique feature of EM's that seeks an explanation. This paper is a nice source for facts on EM's that will discipline future theoretical research and call for further empirical research on the facts themselves.

In my comments, I will briefly examine and summarize the evidence and then proceed to present a perspective on emerging markets that will help us in interpreting the facts. My main comment will be to emphasize that what we call the "business cycle" in an EM is very different from the cycle in a developed economy. In the case of the latter, we typically think of the output process are characterized by a fairly stable trend and transitory fluctuations around this trend. In the case of EM's, in contrast, the trend is highly volatile and this dominates the volatility of transitory shocks. This characterization captures the frequent switches in regimes EM's endure, often associated with clearly defined changes in government policy, including dramatic changes in monetary, fiscal, and trade policies. There is a large literature on the political economy of emerging markets in general, and the tensions behind the sporadic appearance of pro-growth regimes in particular, that is consistent with a volatile trend (see, for example, Dornbusch and Edwards (1992)). Once we recognize this difference in the business cycle, several features of the

data that this paper document appears to be less puzzling. It also informs our inference of causation between variables. Most of my comments arise from work I have done jointly with Mark Aguiar and the references are listed at the end.

### **1.1 Empirical Findings**

The main empirical findings are the following. Firstly, capital flows into developing countries tend to be more strongly procyclical than in the case of OECD countries. Secondly, several measures of government fiscal policy appear to be markedly procyclical in developing countries as compared to OECD countries. Ideally, one would like to examine *jointly* several measures of fiscal policy to examine the stance of fiscal policy. It is possible, for instance, that even if income tax rates stay unchanged, governments might try harder to fight tax evasion in good times (as a part of reforms) implying a tighter fiscal policy. Further, the only tax measure the authors employ is the inflation tax rate, mainly restricted by data availability. A fruitful exercise will be to put together evidence on other measures of taxation and alternate fiscal instruments.

The third finding is that in the case of EM's the fiscal spending cycle is positively linked to the capital flow cycle. However, the magnitudes of these correlations appear to be sensitive to the filtering procedure used and in some cases are quite small. The last finding relates to monetary policy. As the authors acknowledge, measuring the policy component of monetary aggregates is a tricky problem. The evidence that the authors find is that short term interest rates are negatively correlated with the business cycle in EM's. This contrasts with interest rates in OECD countries that are positively correlated with the cycle. The behavior of domestic interest rates in EM's is strikingly similar to the behavior of interest rates at which EM's borrow from the rest of the world. Neumeyer and Perri (2004) document a strong negative correlation between interest rates on dollar denominated debt and the business cycle in EM's. This behavior of interest rates is consistent with the market response to changing default probabilities over the business cycle. I

will say more about this later. The main point though is that as regard to the evidence on monetary policy more empirical work remains to be done to provide conclusive evidence on the stance of monetary policy.

## 1.2 Emerging Market Business Cycles: The Cycle is the Trend

The question of what is the business cycle in emerging markets is explored here. A standard representation of the production function is

$$Y_t = e^{z_t} K_t^{(1-\alpha)} (\Gamma_t L_t)^{(1-\alpha)}$$

where  $K_t$  is the level of the capital stock and  $L_t$  is the labor input.

$z_t$  represents transitory shocks to productivity and follows an AR(1) process.

$$z_t = \rho_z z_{t-1} + \varepsilon_t^z$$

$$\varepsilon_t^z \sim N(0, \sigma_z^2), \quad |\rho_z| < 1.$$

$\Gamma_t$  represents the stochastic trend productivity.  $g_t$  is the growth rate of trend output.

$$\Gamma_t = g_t \Gamma_{t-1}$$

$$\ln(g_t) = (1 - \rho_g) \ln(\mu_g) + \rho_g \ln(g_{t-1}) + \varepsilon_t^g$$

$$\varepsilon_t^g \sim N(0, \sigma_g^2), \quad |\rho_g| < 1.$$

In Aguiar and Gopinath (2004a) we document that the ratio of volatility of trend shocks to level

shocks,  $\left(\frac{\sigma_g}{\sigma_z}\right)$ , is higher in an EM such as Mexico as compared to a developed small open

economy such as Canada. That is, unlike developed markets, fluctuations at business cycle

frequencies in EM's are driven primarily by trend shocks as opposed to transitory level shocks.

Figure 1 plots log GDP for three small open economies (SOE) --- Canada, Mexico, and

Argentina. The plot for each economy includes the log level of GDP (where we have extracted

any significant seasonal component) and the stochastic trend. The latter was calculated using the

methodology of King, Plosser, Stock and Watson (1991). To be precise, the trend is obtained by

setting the transitory shocks to zero and feeding only the permanent shock through the system. This should not be confused with equating the trend to the random walk component a la Beveridge and Nelson (1981). Casual observation of the plots suggests that Canada, our benchmark developed SOE, experiences relatively small fluctuations around a stable trend. On the other hand, Mexico and particularly Argentina display a volatile trend that mirrors movements in GDP at high frequencies. We find that at business cycle frequencies (12 quarters), the fraction of output variance explained by permanent shocks in the case of Canada is around 50%, while the same number for Mexico is 82% supporting the view that the “cycle is the trend” for these markets. (FIGURE 1 here)

### **1.3 Capital Flows, Interest Rates and Macroeconomic Policies**

The first empirical finding in the paper that capital flows (current accounts) are more strongly procyclical (countercyclical) in EM's is then a natural implication of a standard real business cycle model wherein the stochastic trend is the main shock. The current account (negative of capital flows) is the difference between national saving and national investment. In response to a positive transitory shock to productivity ( $z$ ), investment rises. All else equal, this will cause the current account to worsen. However, in response to a transitory shock, savings also rise since agents wish to smooth consumption. The savings effect then counters the investment effect and the current account is less countercyclical or acyclical. For developed markets, where we view the trend to be stable, one would expect little cyclical of the current account. On the other hand, the response to a positive trend shock,  $g$ , will be for savings to fall on impact. Agents experience higher income following this shock but expect income to even higher in the future (as they enter a new growth regime). Consequently, savings will fall on impact. Now, the current account will be more strongly countercyclical as the authors find in this paper for EM's. Figure 2 plots the current account against the standard deviation of the growth rate of real GDP for 28 small open economies. There is a clear negative relation between the trade balance (as a ratio of GDP) and

the volatility of the growth rate. Countries with more volatile growth rates (in the group of middle and high income small open economies), the EM's, tend to have more countercyclical trade balances. (FIGURE 2 here)

Our view on the role of the trend in EM's also resonates in evidence that this paper documents on the behavior of international credit ratings in Tables 6 and 7. The authors find that it is precisely the middle income countries that experience the biggest swings in ratings across good and bad states of nature. Since credit ratings incorporate the probability of default, a switch from a high growth regime to a low growth regime will have dramatic negative effects on the countries ability to repay and consequently should affect ratings more substantially as compared to transitory shocks.

The question then is what underlies the regime switches we observe in EM's. One can argue for the role of government policy here. Argentina's adoption of the currency board at the start of 1990 that brought an end to years of hyperinflation in the economy is one such regime switch. In this case, interpreting any causal link running from capital flows to fiscal policy becomes tricky. The finding that inflation tax rates are countercyclical (Table 9) could precisely be the regime change that then attracts capital flows into the economy. The negative correlation between capital flows and inflation tax for EM's is consistent with this. Other forms of regime switches involve privatizations and nationalizations that can dramatically affect productivity. For instance, Restuccia and Schmitz (2004) provide evidence of a 50% drop in productivity in the petroleum industry in Venezuela within five years of its nationalization in 1975. Similarly, Schmitz and Teixeira (2004) document almost a doubling of productivity in the Brazilian Iron-Ore Industry following its privatization in 1991.

Lastly, I will comment on the countercyclicality of interest rates and the positive correlation between interest rates and the current account. As mentioned earlier, there is strong evidence of the countercyclicality of dollar interest rates at which EM's borrow from the rest of the world. This same literature documents that dollar interest rates and the current account are positively correlated. That is EM's borrow more in good times and at lower interest rates. In Aguiar and Gopinath (2004b) we describe a model of sovereign default and show that this relation between interest rates, current account and GDP follows directly when an economy is subject to trend shocks. Put simply, in a high growth regime agents wish to borrow (as they face an upward sloping income profile). All else equal this should raise interest rates since higher levels of debt raise the probability of default. However, in an economy subject to trend shocks, the positive trend shock has the effect of lowering interest rates at all levels of debt. Consequently, it is possible that the economy pays a lower interest rate on its borrowing. We show that this is a more likely scenario in an economy subject primarily to trend shocks as opposed to transitory shocks around a stable trend.

To conclude, this paper presents us with interesting business cycle features of EM's that tend to contrast with the experience of developed markets. While this paper significantly enhances our knowledge of the fiscal and monetary cycles in countries, more empirical work remains to be done in further documenting these facts. Lastly, in interpreting these facts, it is important to bear in mind that the underlying income process in EM's and developed markets are quite different. Once this is taken into account contrasting features of EM's appear to be less puzzling.

## **1.5 References**

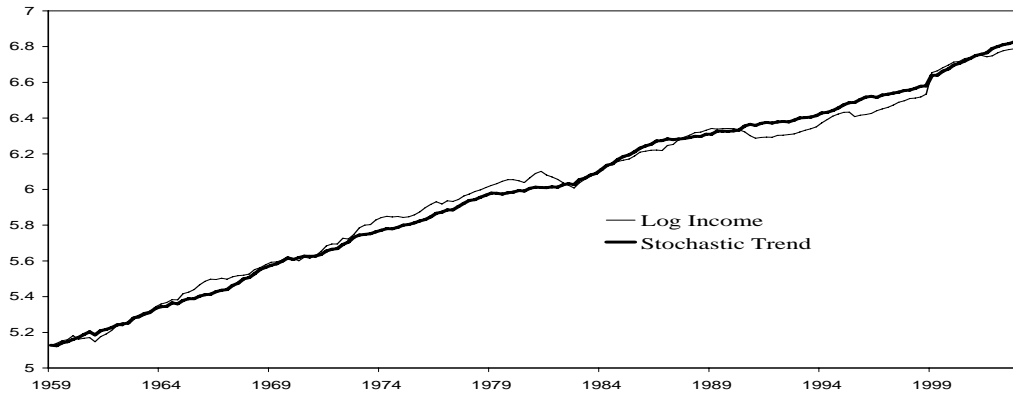
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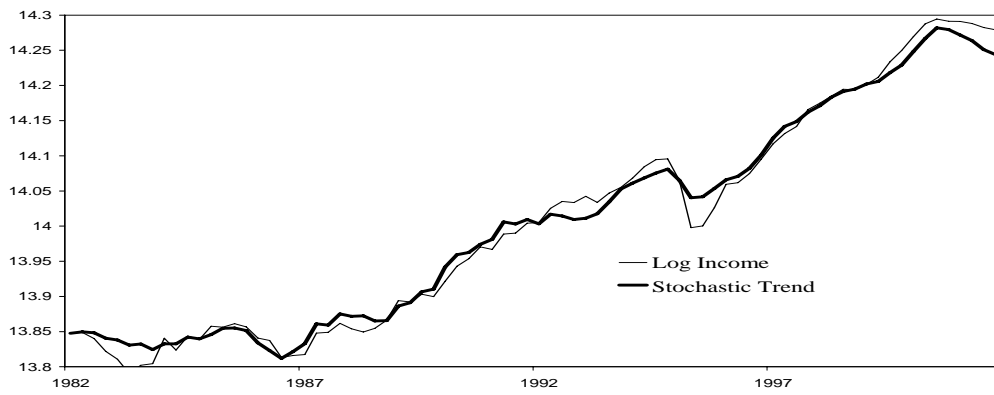


**Figure 2: Stochastic Trends estimated using the KPSW (1991) methodology**

**Canada: Stochastic Trend**



**Mexico: Stochastic Trend**



**Argentina: Stochastic Trend**

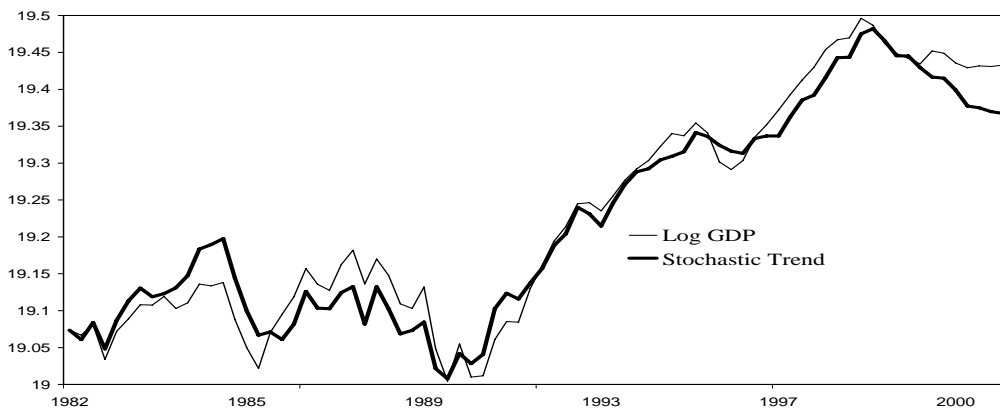


Figure 2

