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FINANCIAL INTEGRATION, GROWTH AND MACROECONOMIC VOLATILITY: EVIDENCE AND INTERPRETATIONS

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Abstract

Has the increased access to capital increased investment? Is increased financial globalization associated with economic growth and macroeconomic stability? This paper reviews the theoretical benefits of financial integration, the "consensus" evidence of its failure to deliver the expected growth and stability, and some alternative interpretations on what is missing to obtain the benefits and avoid the risks.

I HOW FINANCIAL INTEGRATION IS SUPPOSED TO SPUR GROWTH AND REDUCE MACROECONOMIC VOLATILITY

Standard growth theory conceives of investment and the creation of new productive capacity as limited (and basically generated) by the availability and the "quality" of savings[1]. Savings, on the other hand, can accrue domestically and internationally through current account deficits as shown in the standard income identity:

$$(Y_t + r_t A_t) - (C_t + G_t + I_t) \equiv S_t - I_t \equiv$$
$$\equiv CA_t \equiv A_{t+1} - A_t. \qquad (1)$$

National income $Y_t + r_t A_t$ (GNP) less absorption $C_t + G_t + I_t$ (where Y_t is domestic output GDP, r_t is the international interest rate, A_t domestically owned foreign assets, C_t consumption, I_t investment, and G_t government spending) is identical to the saving investment gap $S_t - I_t$ and the current account, CA_t, which measures also the change in foreign assets $A_{t+1} - A_t$, or capital net flows[2].

If there are profitable opportunities abroad for investment (represented by a real profit/interest rate differentials), a country can wisely borrow abroad to invest at home and therefore obtain the needed extra-saving through a current account deficit (a net capital inflow). Actual economies, however, can experience net capital inflows as the consequence of consumption and import booms and debt service payments: a bad export performance can depress production and income and if absorption and outflows of debt service payments are more stable, there can be "unintentional" and "unfavorable" current account deficit/net capital inflows.

Theories on the benefits or dangers of financial integration revolve around this identity, but this identifies different causal relations between income, expenditure components and trade in foreign assets.

a *First order theoretical benefits of financial integration: supply of savings, intertemporal trade and risk sharing*

The traditional case for financial globalization (the integration of different financial systems) is based on the benefits of pooling and allocating savings towards the most productive uses across countries. The principle of comparative advantages and mutual gains from free trade has been extended to trade in financial assets along three main dimensions: countries can benefit from financial integration if (*i*) they have different capital endowments and different risk-free returns to capital and benefit (neoclassical convergence argument), and/or (*ii*) have desired consumption and savings time patterns not "in line" with their available income (intertemporal trade argument) and (*iii*) face different potential fluctuations of production that affects their consumption possibilities (risk-sharing argument)[3].

The standard open economy neoclassical-Solow model has provided the first and the most lasting argument for capital account liberalization and financial integration (Summers (2000) being an example). If technology easily diffuses across countries, with decreasing returns to capital and limited factor mobility given, countries with less (more) of a capital endowment will enjoy higher (lower) risk-adjusted returns to investment. Under financial openness, the real interest rate differential between capital-abundant developed countries and capital-scarce developing economies would generate a spontaneous flow of funds that would provide the additional foreign savings required for new investment and growth. Under financial integration, the natural push of funds from developed countries and pull to developing countries would lead to an "unconditional" convergence in the asset returns, capital intensity, technology and per capita incomes through temporary current account deficits/net capital inflows.

Standard theory, therefore, implies a strong correlation between capital inflows and new productive capacity. Given the absence of any form of relevant uncertainty on the profitability of capital, savings generate their own investment by direct "transmutation," as in the open economy Solow model. Similarly, foreign savings inflows are supposed to reduce the risk-free rate and the equity premium through better risk diversification. Lower cost of *equity capital* would in turn stimulate investment[4]. In both cases financial openness would ease capacity building and growth through capital accumulation.

The debate on the benefits of financial globalization has also been influenced by some critical assumptions that commonly provide the fundamental starting point of most recent mainstream models. The definition of *national welfare* as the utility of the hypothetical "representative" economic actor and the assumptions on its preferences lead economic theory to focus disproportionately on the possibility of reducing the consumption volatility over time and across the "state of nature", compared to any other distributional or even allocational issue.[5] Strong assumptions on the information and rationality of market participants, and the resulting ability of markets to coordinate their actions, lead to the fundamental tenet that the more "frictionless" is the environment the better is the outcome. Consumption and investment decisions take into account all the possible macroeconomic interactions, optimality, which includes full employment, is always achieved unless some *distortion* or *exogenous real income shock* (due to productivity and terms of trade changes, for instance) occurs. Moreover, perfect capital mobility is often assumed even in short-run open economy macro models explaining current account

variations over the cycle. If capital can move instantaneously towards the most profitable investment opportunities, risk-adjusted real rates of return on capital are *continuously* equalized. These latter assumptions have become the standard building blocks of open economy macro models and of the case for capital liberalization.

In the intertemporal approach to the current account (popularized by Obstfeld and Rogoff (1995) and (1996)) free trade in commodities and in financial assets are the most efficient way to "buffer" expected and unexpected income variations and "smooth" consumption by net lending or borrowing between countries. Trade in foreign assets and the consequent current account variations are the means for distributing desired consumption levels over time. Free capital flows, in this framework, not only permit better productive allocation of financial wealth but also a reduction of the effect of real shocks on consumption and therefore improve overall aggregate welfare. A well-known and empirically controversial corollary of the theory is that changes in savings ratios cannot be correlated with changes in the investment ratios, but only with current account changes: investment decisions are taken on the basis of the world interest rate, ${}_{w}r_{t}$, solely, while savings, by responding to income shocks and misalignments between returns and preferences, β , drive the current account and foreign assets accumulation:

$$S_t(r_t^w, Y_t; \beta) - I_t(r_t^w) = CA_t \equiv A_{t+1} - A_t . \quad (2)$$

In the neoclassical model, high saving countries would lend abroad, for they easily extinguish their investment possibilities, while borrowing countries are supposed to be those with more investment opportunities than saving capacity. In the intertemporal model, capital mobility equalizes risk-adjusted rates so that consumption gains a centre stage together with income variability and intertemporal preferences.

Global financial integration would also allow countries to share the production risk associated with exogenous idiosyncratic shocks. Countries with different production structures, which are therefore subject to uncorrelated shocks in production, can improve their national welfare by trading assets, reducing the asset return volatility and consequently reducing the volatility of their consumption levels. The "risk sharing" argument in international finance is basically a global scale extension of the well-known portfolio allocation theory: national productive capital is conceived of as a risky asset whose return depends on volatile production that can be sold abroad in the form of shares of domestic firms. Any country can diversify its portfolio and reduce its GNP risk by selling part of its GDP in the form of shares of productive capital and buying parts of other economies' GDPs through capital outflows. The assets' extra-returns would offset each other so that bad production years in one country are compensated by good "harvests" in the others. The strongest theoretical implication of the risk-sharing argument is that if risk is perfectly shared among economies, any country's GNP is uncorrelated to its GDP and depends only on the global production[6]. Under perfect risk sharing, consumption growth rates are correlated across countries and less volatile than domestic output. If output volatility becomes irrelevant for welfare, national production can even become more specialized and benefit from scale economies and comparative advantages. Developing countries could be advised to further reduce their production diversification in order to increase and stabilize their consumption levels.

b *Second order arguments: spillovers, improvements in the domestic financial sector and discipline*

The main argument for financial integration is therefore based on the efficiency gains in the allocation of savings and on welfare improvements of smoothing consumption over time and in face of uncertain output fluctuations.

There are other less direct channels through which integration and capital inflows are supposed to stimulate growth: the technological spillovers generated by FDIs, the positive influence of openness in the development of domestic financial markets through competition, enhanced liquidity and introduction of new forms of financial intermediation, and the discipline (a "tie your hands" policy) that markets would impose to a *lax* public sector.

The literature that focuses on technological generation and diffusion distinguishes between different kinds of flows, which can be broadly classified into bank lending, portfolio flows and FDIs. Foreign direct investment typically imply a stronger commitment for investors and are undertaken after a more informed evaluation of the intrinsic profitability of the investment and partly bypass the domestic financial system of the recipient country. They are naturally more directly related to capacity building and growth and supposed to enhance productivity through technology spillovers. This, however, does not need to be always the case: it has been pointed out that FDI can be associated with crowding out of "domestic" private investment, while human capital and knowledge accumulation through FDIs spillovers can be of a second order magnitude. Indirect negative effect on investment can be also generated by the current account difficulties a country may incur by the repatriation of profits and intermediate imports associated with the FDIs.

Domestic financial markets can also benefit from openness to foreign competition, which improves the efficiency of the banking sector and its supervision, and spurs the introduction of new financial instruments that improve financial intermediation. Similarly, domestic policies become more constrained, but more oriented towards monetary discipline and investment friendly tax reforms. The two last arguments share the same logic that external competitive pressures can discipline and improve the efficiency of institutions and policies and that the efficiency gains will largely offset any eventual adjustment costs.

II CONSENSUS ON EMPIRICAL EVIDENCE

In an extensive and complete review of the existing empirical literature on the relationship between capital inflows and macroeconomic growth and stability, Prasad, Rogoff, Wei, and Kose (2003) sum up by saying: "…an objective reading of the result of the vast research effort undertaken to date suggests that there is no strong, robust, and uniform support for the theoretical argument that financial globalization per se delivers a higher rate of economic growth…[and] the volatility of consumption growth has, on average, *increased* for emerging market economies in the 1990's" (Prasad et al. (2003) p. 3) so that "… while there is no proof in the data that financial globalization has benefited growth, there is some evidence that some countries may have experienced greater consumption volatility as a result" (ibid., p. 1)[7].

Therefore, despite the strong theoretical case, there is no definite supporting evidence that financial integration can spur growth. A weak association of better growth performance with financial openness between groups of countries (industrialized compared to developing and more financially open developing countries compared to less open countries) does not provide any causal relation between integration and growth, nor does the former seem to be a sufficient condition (as in the case of Venezuela South Africa, Jordan and Peru) or even a necessary condition for the latter (as in the case of China and India). Financial openness could be an advantage for mature or already sound and stable economies. Prasad et al. show that even correcting for initial income, schooling, average investment-to-GDP ratio, policy instability and regional location there is basically no association between capital account openness and growth rates.

Earlier literature simply acknowledged the inability of the standard neoclassical model to account for productivity and growth differences even under the assumption of perfect capital mobility (Lucas (1990)). Under neoclassical assumptions, risk-free real rates would be so large that capital should be poured into developing countries and lead to large and fast increases in investment, productivity, and overall growth. The identification and measurement of the incidence of factors (such as human capital, and those knowledge spillovers and other externalities which cannot be transferred with capital) that could prevent the equalization of productivity and income (Romer (1994) for a brief overview) has been a major issue in the development of the endogenous growth literature.

Conversely, the evidence from some other cross-country studies on technological spillovers, which seems to be limited to foreign direct investment in selected countries, would provide a strong case for free capital flows. Bosworth and Collins (1999), for instance, find a strong correlation between FDIs and domestic investment but no significant impact of portfolio flows. According to Mody and Murshid (2002), "…the weakening, over time, of the relationship between aggregate capital flows and investment is consistent with an increase in the share of portfolio flows in long-term capital…[and] 'merger and acquisitions' – as distinct from the traditional 'Greenfield' foreign investments - have become more prominent, implying that more of the foreign capital is being used to purchase assets rather than finance new investments." (Mody and Murshid (2002) p. 5). However, a positive association of FDI and *growth* cannot be taken for granted: it has been pointed out that FDI can be associated with crowding out of "domestic" private investment, while human capital and knowledge accumulation through FDI spillovers can be of a second order magnitude. Indirect negative effects on investment can also be generated by the current account difficulties a country may incur by the repatriation of profits and intermediate input imports associated with the FDI (UNCTAD, 2003).

A large body of evidence also finds an increase in macroeconomic volatility, which is, therefore, a failure of the risk-sharing effect of global diversification from financial integration. Developing countries would benefit from risk diversification given their specialized production structure. Under perfect risk-sharing, domestic consumption levels should be correlated with global output and not domestic production: two economies (a developed and a developing, for instance) should enjoy the same consumption changes over time, even when output fluctuations diverge significantly. Yet the implications of the theory have never found support in the data, giving rise to another "puzzle" in international finance: there is a higher correlation of aggregate consumption to domestic

output than to global production and consumption, while national outputs also tend to commove (Tesar and Werner (1995) Backus, Kehoe, and Kydland (1992) Obstfeld (1994)). Moreover, Kose, Prasad and Terrones (2003) show that the volatility of consumption relative to output increases with financial integration, while O'Donnel (2001), using data ranging between 1971-94, finds that OECD countries seem to benefit from further integration while non-OECD countries experience a higher output volatility. Output and consumption volatility measures are also affected by the episodes of banking and financial crises of the 1990s that hit relatively more financially open economies. Those crises, generated in the banking sector, which then degenerated into currency crises, led to large and persistent output and consumption contractions (Calvo and Reinart (2002)).

There is a general consensus that push factors such as domestic business cycles, aging population and the needs of institutional investors (mutual, hedge, pension funds, and insurance company) to place growing savings of industrialized economies exceeded the pull of developing countries' profitable financial and real investments (partly spurred by liberalization and privatizations) and that the composition of flows at least matters for the macroeconomic stability. A subsequent point is that domestic institutions and policies affect the impact of financial flows (Mody and Murshid (2002) and Prasad et al. (2003)).

III ALTERNATIVE INTERPRETATIONS

The most common interpretation of the weak association between growth and openness focuses on the irrelevance of physical capital building in modern production and the already mentioned increasing role of "soft" factors such as human capital accumulation, financial sector development and technology spillovers that would enhance technological knowledge in production. The basic argument is the analog to the critique of the convergence prediction of the neoclassical model and the existence of large total factor productivity growth (TFPG) differentials that cannot be explained by capital accumulation along a given set of production possibilities. Under the neoclassical interpretation, in fact, capital inflows can only account for "mere capital deepening". However, the extra savings obtained through capital inflows are sterile if not coupled with the institutions and policies that favor the use and adoption of technological improvements. The international allocation of savings would not only improve the global efficiency across countries, but would also generate productivity gains at the national level through *adoption of new processes* and improvement in the *domestic allocative efficiency* in the use of the resources[8].

Human capital accumulation is both the outcome of an efficient school system connected to the production system and the learning by producing and investing. Domestic financial market development allows to channel portfolio flows and bank lending to the better productive uses. Technological changes, on the other hand, driven by the technological spillovers, would accrue mainly through direct foreign investments so that the composition of the capital flows a country is able to attract would matter not only in terms of the volatility but also for the conduciveness of growth.

All these factors, however, seem to be both the outcome and the precondition for financial integration within the virtuous circle of growth, institutional development and integration. The relative evidence that the group of industrialized economies benefit more from integration, while the most integrated and more industrialized developing

economies had better growth performance, although suffered from more volatility, lead to the widespread view that domestic conditions matters in the way inflows are received. A form of "absorptive capacity," that is the ability to channel flows into better uses, is naturally associated with more financially and industrially developed systems. An increasing emphasis is given to the "quality" of the flow as an outcome of proper institutions and correct policies such as FDI oriented measures, financial supervisions and transparency, and reduction of corruption. No evidence, however, can be provided on the causal links between openness and the development of institutions and capabilities to turn developed countries financial flows into productive investment.

The "absorptive capacity argument" has been coupled with the lack of investment demand (or lack of shortage of capital) argument. There is increasing acknowledgment that the transformation of flows of financial wealth into productive investment requires not only a domestically stable and receptive macro environment but also an actual demand for investment and actual shortfall in domestic savings. Under perfect financial integration, the supply of funds is perfectly elastic, investment settles to its "natural" level and extra savings are not invested but consumed unless there are some shocks in the investment demand: extra capital flows are diverted to nonproductive uses (Mody and Murshid (2002)). In a general equilibrium context, however, capital flows are never "unjustified": shocks in lending countries, such as an intertemporal preference changes or a positive output shock leading to a fall of the world interest rate and to an optimal consumption boom in borrowing countries, whose response is optimal under the prevailing world conditions and allows them to get indebted and safely benefit from an higher level of consumption.

The frictionless neoclassical paradigm, more than being an approximation of the long run spontaneous dynamics of world capital towards its best use, has led to an underestimation of the impact of financial flows on production, on investment demand and consumption and the role of *uncertainty* in affecting macro aggregates. Some *rational* explanations of the imperfection of capital markets that are traditionally given are such as asymmetric information, the currency mismatch in short- and long-term liabilities and assets, herding behavior leading to excessive lending, bank and currency runs, volatility and contagion, respectively (Rodrik, (1998)).

An imperfect and inefficient, or even *irrational*, capital market can sever the saving-investment causal relation and exclude the possibility to reduce volatility by international trade in assets. There are indeed other driving forces than just those of equation (2) that can take on the burden of the adjustment of the income/stock-flow identity (1).

A missing element in the mainstream argument is often the exchange rate effect on the trade balance and the nexus between capital flows, the nominal exchange rate and the terms of trade. The exchange rate would not matter much if (*i*) it could be easily pegged and the resulting reserve variability would not imply any painful real adjustment or (*ii*) if it could be left to a free float following its fundamentals. Standard general equilibrium theory predicts fast international price equalization, real adjustment and therefore little or no role for the exchange rate on trade pattern (equation (2)).

Another element is the role for an independent demand for investment goods, which is the vehicle for the adoption of new technologies and determines productivity growth and higher levels of income.[9] Intuitively, this demand responds not only to the cost of capital

but also to the uncertain profitability of investment under unpredictable exchange rates or liquidity changes. Investment and (domestic plus foreign) savings settle to the same level, but the adjustment may obviously run from investment, competitiveness and export performance to output and then savings. Since in principle any amount of savings can be generated by economic activity and national income, domestic savings may fall short of investment if other factors prevent a sufficient output level, in this case *net capital inflows* (current account deficit) can provide the foreign savings to fill the gap. *Gross capital inflows* on the other hand can alter the liquidity of the financial sector, the exchange rate level and therefore affect trade, consumption and investment and then output. In the "gap models," for instance, shortage of reserves, originally due to import substituting industrialization generating a need for imported capital goods and intermediate inputs under relatively closed capital account, constitutes a binding constraint that can lead to "external strangulation": capital flows can allow but do not automatically lead to further investment and growth.

The puzzling evidence of the volatility of consumption and output is instead easily explained in terms of the pro-cyclical nature of capital flows with the nominal and then real exchange rates being the main channels. Capital inflows can be "banked" through reserve accumulation and then "wrongly" spent. Both reserves and liquidity increase under a pegged exchange rate or if, facing a flush of capital flows in the domestic financial system, the monetary authority intervenes in the currency market to prevent excessive appreciation. When capital inflows generate appreciation, even if partly offset by reserve accumulation, interest rates increase to support further debt rollover so that a spiraling appreciation and higher interest rates can be set off (Eatwell and Taylor (2002)). Reserve increases and appreciation, on the other hand, stimulate a consumption boom of non-tradables and (given the change in the real exchange rate) of cheaper imports. The competitiveness of production and current account is weakened and the borrowing risk increased, until a "sudden stop" of flows and devaluation become inevitable.

Cycles of credit boom fostered by capital inflows are indeed more likely in less developed financial markets, but the nature of the flows and capacity to absorb and channel them cannot be separated by the actual need of extra savings, which are determined by the real production structure of the economy, the export capacity and competitiveness. The nominal and real exchange rates are the key variables in the adjustment process and are strongly affected by capital flows; on the other hand investment responds to cost of capital (which may or may not fall with capital inflows and rising indebtedness) but also on the profitability of production and the exchange rate induced competitiveness.

Experience seems to prove that opening up to flows do not help building the institutions and setting the right policies that lead to a better use of the incoming flows. Reforming the international and domestic financial system and increasing the absorptive capacity (which include the exchange rate regime choice, crisis prevention mechanism, etc.) can reduce the destabilizing impact of *pushing* flows. It is the demand for funds for new investment, which only possibly may require temporary trade imbalances, which would eventually *pull* resources and lead to further growth.

END NOTES

1 More specifically, savings are the supply of new loanable funds and are generated by thrift and desire to allocate consumption over time. They adjust to the investment demand induced by the profitability of additional productive capital through real interest rate adjustment. This implies that the extra savings obtained through capital inflows reduce the cost of capital by lowering the interest rate. However, if a production function exists where the investment profitability is the marginal productivity of the additional savings, this is equivalent to saying that savings create their own investment.

2 We keep as implicit the revaluation of assets for simplicity.

3 Economists such as Bhagwati (1998) and Rodrik (1998) have criticized this naïve analogy arguing that while free trade in commodities is naturally beneficial, free trade in capital is inherently unstable and prone to crises.

4 See Fischer (1998) and Henry (2003).

5 Changes in the aggregate consumption level is not affected by redistribution or changes in the composition of goods, but only by changes in the expectation of future flows of income.

6 For an analysis of the risk-sharing opportunities in international finance see Lucas (1982) and Obstfeld and Rogoff (1996).

7 As most of the latest studies have been carried out by IMF research staff, we have called it "consensus" on empirical evidence.

8 Gourinchas and Jeanne (2003) argue that financial integration can lock-in countries into domestic reforms: this would improve this *domestic efficiency* and eliminate the distortions that prevent the allocation of inflows into the most efficient uses.

9 Independent means that are not derived by existing technological possibilities (a production function) but determines them.

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