Which Types of Capital Inflows Foster Developing-Country Growth?*

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Abstract
As a result of the Asian crisis, both the virtues of domestic savings and the risks of foreign savings have been emphasized in the debate on development finance. In particular, East Asia, with its enviable saving rates, it has been argued by economists such as Joe Stiglitz and Jagdish Bhagwati, does not need foreign funds for investment and growth. This paper explores the benefits of private capital inflows by reviewing the analytical arguments advanced in the literature and by building fresh empirical evidence. Particular attention is given to the independent growth impact of the various broad categories of flows in the recipient emerging markets. The paper provides panel data analysis covering 44 countries over the period 1986–97; correcting for standard growth determinants, it measures the independent growth effect of foreign direct investment, portfolio equity investment, bond flows, as well as short-term and long-term bank lending. The findings suggest that developing countries should not solely rely on national savings, but rather should encourage foreign direct investment and portfolio equity inflows so as to stimulate long-term growth prospects.

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I. Introduction

The Asian crisis in particular has reminded us of the risks of capital flows: the unsettling effects of irrational exuberance, investor panic and financial contagion. As the (mostly temporary) withdrawal of foreign savings induced the great Asian slump in 1997 and thereafter, it has become widely accepted that moral hazard, asymmetric information and adverse selection increase the volatility of global capital flows to developing countries. There have been innumerable conferences and papers on the contagion, prevention and resolution of financial crises, sharpening the awareness of policy makers to the risks of volatile capital flows.

In the aftermath of the Asian crisis, the proponents of open capital markets have been criticized for having offered more ‘banner-waving’ than hard evidence on the benefits that developing countries can derive from free capital flows (Bhagwati 1998). Indeed, unlike the benefits of free trade in goods and services, the empirical evidence that economists have been able to establish on the costs and benefits of foreign savings has been very sketchy and contradictory indeed. That failure can be easily explained: a rigorous attempt to quantify the gains that countries have realized from international capital mobility would require a fully articulated model in which the counterfactual of no capital movements could be simulated. Moreover, the time series for private capital flows to developing countries, except for foreign direct investment (FDI), are not yet long enough to draw strong conclusions, because these flows started in earnest only at the end of the 1980s. Finally, studies which focus on the absence or presence of capital controls cannot allow for varying degrees of intensity in the operation of capital-account restrictions.

This paper aims to balance the debate, both by reviewing the analytical arguments and by building fresh empirical evidence on the growth impact of private capital (in)flows. Some Asian countries have been blamed for discouraging long-term equity inflows and encouraging short-term inflows in the past. Thus, particular effort will be made to provide evidence on the independent growth impact that the various broad categories of net capital inflows are likely to exert.

We proceed in two steps before drawing conclusions. First, we concentrate on collecting arguments which have been advanced in favour of, or against, benefits of four broad categories of inflows: FDI, portfolio equity investment, portfolio bond flows, and bank lending. Second, we formulate hypotheses on the potential growth impact of these four categories and then produce an econometric panel data analysis for the recent period of strong private flows to the emerging markets. Third, we draw conclusions on why it is important to encourage foreign savings to stimulate growth, and which
forms of private flows should be encouraged to maximize the benefits of
financial integration. The insights should provide valuable inputs for the
appropriate macroeconomic and institutional approach towards capital flows.
This paper also warns against relying solely on national savings for financing
development, advice at times advocated to high-saving countries in the wake of
the Asian crisis.

II. Specific Types of Capital Flows: Benefits versus Risks

A statement, as common as it is trivial, is that capital flows 'carry' benefits as
well as risks. But can we establish something close to a 'pecking order' for the
broad categories of capital flows in view of their inherent benefits and risks for
the capital-importing countries? This requires looking at the channels through
which these benefits and risks operate. Economic theory suggests how foreign
savings can be beneficial:

• By adding to domestic savings – rather than crowding them out –
stimulating capital accumulation
• By raising the recipient economy’s efficiency, e.g. through improving
resource allocation, intensifying domestic competition, interacting with
human capital, deepening domestic financial markets or reducing capital
costs for local entrepreneurs
• By lowering consumption risks over various states of nature through
enlarging choices for portfolio diversification, but also through appropri-
ately sharing risks between capital exporters and importers (Reisen 1998)

The risks to specific types of capital flows operate through two major
channels:

• By magnifying welfare losses due to distorted consumption and
production patterns
• By generating bankruptcies and output losses due to abrupt reversibility

Models of 'immiserizing' inflows – see, for example, Brecher and Diaz-
Alejandro (1977) – have shown that countries will be worse off if the foreign
savings are attracted into protected sectors, as long as foreign capital receives
the full value of its marginal product. While trade liberalization and structural
reform in most capital-importing countries have made the 'immiserizing
inflow' argument less relevant today in its original presentation, ill-regulated
financial sectors or implicit credit guarantees have often created credit boom
distortions that foreign flows have magnified (McKinnon and Pill 1997).
The second risk attached to foreign savings is that they can be suddenly withdrawn. Because the withdrawal causes a slump, it also acts to reduce national savings, given the fact that growth has been shown to precede and cause savings (Carroll and Weil 1993). The bankers’ adage that ‘it is not speed that hurts, but the sudden stop’, was more than validated in Asia. High pre-crisis per capita growth turned to a severe slump in 1998. Guillermo Calvo (1998), analysing the mechanics of sudden stops in international capital flows, emphasizes that negative swings in foreign savings may result in widespread bankruptcies, destroy local credit channels and make human capital obsolete. Assuming that consumption is more intensive in non-tradables than investment, Calvo argues that the negative output effects of a cut in capital inflows are stronger, the higher the share of consumption in a country’s aggregate demand. To the extent that cuts in domestic absorption are focused on tradables, there is less need for a lower real exchange rate to restore payments equilibrium. The larger the real devaluation, the deeper will be the ensuing financial turmoil. For the same reason, Rodrik and Velasco (1999) maintain that greater short-term debt exposure is associated with more severe crises when capital flows reverse.

How then do these benefit and risk channels relate to specific types of capital flows? It is often maintained that distinguishing between types of flows generates little policy insight, for essentially two reasons. First, capital flows are said to be fungible. That would imply, for example, that we cannot discern a differentiated impact of FDI or short-term debt flows on private or government consumption. Second, it has been argued that capital-flow labels have become meaningless in the presence of derivatives or efforts to circumvent capital controls. These claims, however, ignore a large body of empirical and analytical evidence.

First, while there is ample evidence (Masson et al. 1995) that the offset coefficient between foreign savings and domestic savings is generally around one half, the offset coefficient hides strongly different consumption responses to FDI flows versus debt-creating flows. For a sample of 34 developing debtor countries that benefited from renewed access to foreign bank credit in the 1970s, Cohen (1993) finds that capital accumulation was less than for countries with no access to foreign credit. This observation was not explained by endogenous factors – the initial output per capita and the initial stock of capital. Rather, much of the debt-creating flows had leaked into consumption. FDI flows, in contrast to debt-creating flows, have been found to stimulate domestic investment, rather than crowding it out by competing in domestic product markets or financial markets. The complementarity of FDI and domestic investment is explained by linkages in local production and by positive technology spillovers (Boarsztein et al. 1998).
The second claim, namely that capital-account labels do not reveal useful information for policy purposes, is based on an influential paper by Claessens et al. (1995). Using quarterly data for changes in net claims of FDI, portfolio equity, and ‘long-term’ and ‘short-term’ debt flows, they find that labels do not provide any information about the volatility of the flow. The paper, however, does not address reversals of foreign savings on a large magnitude. Moreover, while FDI once made is hard to reverse because of its sunk cost nature, the resulting time series for FDI flows will appear to be temporary as it comes in large chunks and is often discretionary. Sarno and Taylor (1999) measure the relative size and statistical significance of permanent and temporary components of various categories of capital flows to a large group of Latin-American and Asian countries during the period 1988–97. They find relatively low permanent components in bond flows, equity flows and official finance, while commercial bank credit flows appear to contain quite large permanent components and FDI flows are almost entirely permanent. If a large portion of the variation in the time series is explained by movements in the temporary components, then the flows under consideration indicate a higher degree of potential reversibility.

Short-term foreign debt in relation to official foreign exchange reserves has been identified as the single most important precursor of financial crises triggered by capital-flow reversals (Rodrik and Velasco 1999). As the level of international trade does not seem to have any relationship with the level of short-term debt, short-term trade credit seems to play an insignificant role in driving short-term flows.

The upshot of these studies is that FDI, long-term bank lending – often long-term project loans in syndicated lending – and short-term trade credits are less reversible than portfolio and short-term bank credit flows. Moreover, the more stable flows are mostly tied to particular investments and users. Short-term bank lending and portfolio flows, by contrast, constitute only an indirect link between foreign savings and domestic investment.

A cost–benefit analysis on specific types of capital flows from the perspective of the recipient developing countries should consider the following elements:

- FDI has been found to stimulate investment and to raise the recipient economy’s efficiency (under certain conditions); as it tends to keep flowing to countries during financial crises, it helps to smooth intertemporal consumption levels. Borensztein et al. (1998), in their study on the growth effects of FDI, explain the complementarity of FDI and domestic investment by the complementarity in production and by positive technology spillovers. However, the technology spillover requires a sufficient level of human capital in the host economy. FDI displays little reversibility.
and even acts as the predominant form of foreign savings to liquidity-constrained developing countries during financial crises due to its higher share of sunk cost (Sarno and Taylor 1999) and because the problem of asymmetric information between borrowers and lenders is lower than for other forms of capital flows (Razin et al. 1999).

- **Portfolio equity flows** have played an important role for external firm finance in developing countries. The static benefits of portfolio equity flows have been documented in numerous studies; Claessens et al. (1995) and Stultz (1999a), for example, find that increases in equity flows have been associated with significantly lower cost of equity capital by reducing the discount rate on future cash flows and by decreasing agency costs through improved corporate governance. Increasingly, in view of recent US and European experience, it is argued that deep stock markets facilitate capital reallocation from low-return to high-return activities and the incubation of new start-ups. Higher equity flows may be associated with asset price volatility as a result of the imbalance between a small domestic asset supply and a large global asset demand potential; however, higher liquidity and strong international integration of stock markets should dampen asset price volatility. Stultz (1999b) finds no evidence that portfolio flows increase the volatility of equity returns, lead to excessive co-movement of a country’s equity returns with world equity returns, or destabilize securities markets. High liquidity and low transaction costs – the outcome of higher stock market integration – suggest, however, a high degree of reversibility of portfolio equity flows.

- **Debt flows**: There is very little literature which emphasizes the benefits of debt-creating flows (essentially portfolio bond flows, long-term and short-term bank credit). The theory of sovereign lending (Eaton and Gersovitz 1981; Cline 1995) has focused on the benefits of consumption smoothing to shock-prone countries. However, debt is serviced independent of the borrower’s income stream, while equity finance participates in the borrower’s earnings on investment. It can thus be argued that equity finance provides the benefits of lower fluctuation in the borrower’s consumption, but that the potential incentive for borrowers to invest – rather than consume – is higher under debt- than under equity-financed transfers (Corsepius et al. 1989). Short-term debt, except for trade credit, can be particularly inspired by consumption smoothing, although weakening the case for the higher incentive compatibility of debt finance.

Table 1 provides a summary of the above discussion on potential benefits and risks, giving some priors to the empirical analysis provided in the following section.
Evidence on the growth effect in developing countries of specific types of private capital inflows exists mainly for FDI. For instance, Balasubramanyam et al. (1996) show that FDI has been more effective in promoting growth in export-oriented developing countries than in countries promoting import-substitution strategies. Borensztein et al. (1998) find that FDI positively affects growth only in those poor countries which have accumulated a critical threshold of human capital. De Mello (1999) finds a positive impact of FDI on output growth: in OECD countries the positive impact is largely due to higher efficiency (total factor productivity), while, in non-OECD countries, it is the effect of FDI on capital accumulation rather than on efficiency which drives the positive output response. All these studies are based on the Summers–Heston data set and thus do not go beyond observations after 1990. However, the world is now operating under sharply different global financial conditions than those prevailing before the end of the 1980s. Only since then have the emerging markets really been integrated into the global (private) financial markets. Figure 1 shows the strong rise of FDI and portfolio flows to these countries from negligible levels since the late 1980s. The period coincides with the resolution of the Latin-American debt crisis through the Brady bond deals and with the effective opening of Asian and Latin-American capital markets.

Another reason to explore the flow–growth nexus over a more recent observation period is the importance and reversibility of short-term bank credit flows (which were crucial in triggering the Asian crisis). Short-term bank
credit has often been underreported when based on debtor reports, for example in the World Bank data sources. Data published by the Bank for International Settlements (BIS), by contrast, are based on creditor sources, and generally held to provide the most reliable data set. The BIS series on short-term bank credit flows start only in 1985, hence constraining the observation period.

This section explores the growth effect of various categories of private capital flows in a sample covering 44 countries over the period 1986–97. The country choice was dictated by data availability for OECD non-members in 1986 – except for Turkey, which was included as an emerging market for its low per capita income level. Roughly half the countries in the sample belong to the middle-income developing-country group (in the World Bank classification), a third to the middle–upper-income group, one to the high-income group, the rest to the low-income group. The results are thus not applicable to OECD countries or to very poor countries.

Adopting a standard approach in growth empirics, we estimate the following basic relationship in a panel data set for 44 countries for twelve years each (1986–97):

\[ y_{it} - y_{it-1} = \alpha y_{it-1} + \beta X_{it-1} + \gamma_i + \tau_t + \epsilon_{it} \]  

(1)

where \( y_{it} \) is the logarithm of income per capita in country \( i \) during period \( t \), \( X_{it-1} \) is a vector of determinants of the steady-state level at date \( t - 1 \) with
associated parameter $\beta$, $\nu_i$ is a country-specific effect, $\tau_i$ is a period-specific effect common to all countries, and $\varepsilon_{it}$ is a residual. The hypothesis of conditional income convergence dictates that, for given determinants of the steady state, richer countries should show lower growth rates than poorer countries, hence the parameter $\alpha$ should be negative. However, each country has its specific income level in steady-state, which depends on a set of factors contained in the variable $X$. Indeed, ignoring country-specific and period-specific effects $\nu_i$ and $\tau_i$, we can rearrange equation (1) to show that the steady-state income level is

$$y_i = \frac{-X_i\beta}{\alpha}$$

(1′)

The income level to which each economy converges will thus depend on its specific set of values $X$ which may vary over time. For the estimation of steady-state levels of income, good empirical performances have been obtained by including the country’s investment rate, government consumption (as a proxy for the degree of public interference), the degree of openness to international trade, and the terms of trade. The inclusion of this last variable is especially important in the context of a growth regression based on a short time span, since it takes time to adapt a country’s production structure to the conditions dictated by international prices. Thus, the evolution of terms of trade may not be neutral in a country’s growth within the horizon of a decade. Other explanatory variables, like the population’s growth rate or the depreciation rate, are not included since they are more pertinent in the estimation of Solow-type models. In addition, these variables display little variation within a country during the period studied.

The direct estimation of equation (1) poses a number of econometric problems, mostly related to the problem of endogeneity of the determinants and to the large number of parameters $\nu_i$ and $\tau_i$ to be estimated. To reduce these problems, we first eliminate the time effect by subtracting from each variable the mean over all countries in each year. The resulting expression is then converted into differences to the previous year. Rearranging terms this procedure yields

$$y_{it} - y_{it-1} = (\alpha + 1)(y_{it-1} - y_{it-2}) + (X_{it-1} - X_{it-2})\beta + \eta_{it}$$

(2)

where variables in italics correspond to deviations from their period mean and $\eta_{it} = \varepsilon_{it} - \varepsilon_{it-1}$. Moreover, GMM (generalized method of moments) estimators are used to deal with the problem of simultaneous causation between growth and capital flows by taking the lagged values of the explanatory variables as instruments; this standard procedure was first introduced by
Arellano and Bond (1991). Note that, in addition to the use of instrumental variables, the explanatory variables are lagged by one period. The test values show that the instruments used are independent of the error term and hence suitable for the estimation. For a detailed description of the econometric test, see Soto (2000).

How, then, do foreign savings enter in equation (2)? As already mentioned, the investment rate is, by definition, financed by and equal to the sum of national savings and foreign savings (the current account of the balance of payments). Capital inflows plus national savings can thus replace the investment rate in estimating the growth equation.

Table 2 summarizes the main results, showing highly significant estimates for the parameter values of the various capital-account items and of the traditional growth determinants (recall Table 1). As expected, FDI – with a lag of one year – exerts a positive, significant effect of per capita income growth in the recipient economy. However, the positive impact is somewhat lower than indicated by earlier studies, such as de Mello (1999) and Borensztein et al. (1998). To raise short-term per capita income growth by 1% would require a ten percentage point in the FDI–GNP ratio. In addition, it can be computed from equation (1’) that a ten percentage point rise in the FDI–GNP ratio would increase the long-run steady-state income level by 3%.

The most important growth impact, according to our results, comes from portfolio equity flows. Bonds and official flows, by contrast, did not produce any significant impact on growth. It cannot be totally excluded that the highly positive parameter value associated to portfolio equity flows is due to their superior predictive power as these flows try to exploit anticipated developments in the real economy. But the positive growth impact of equity flows can be explained. These flows loosen constraints imposed by local financial conditions, which may spur growth in the presence of high productive capacity in fast-growing industries. Equity flows also stimulate the liquidity of domestic stock markets, easing allocation from low- to high-growth industries and lowering capital cost for firms.

In contrast to the positive growth impact of foreign direct and portfolio equity flows, we find that current foreign bank lending – both short- and long-term – is negatively associated with future per capita income growth in the recipient country, except where local banks are sufficiently capitalized. This result confirms both theory and prior evidence: undercapitalized banks tend either to engage in excessive risk taking in a gamble to earn their way out of difficulties or to increase their exposure to government liabilities so as to stem the decline in risk-weighted capital ratios. Good risks, by contrast, remain underfinanced and growth prospects undermined. As shown by McKinnon and Pill (1997), foreign bank lending intensifies these distortions. In a downturn, the resulting misallocation of resources and weak bank
Table 2: Income Growth and Capital Flows

<table>
<thead>
<tr>
<th>Explaining variables (change in)</th>
<th>Regression (Standard errors in parenthesis)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td><strong>Capital flow variables</strong></td>
<td></td>
</tr>
<tr>
<td>Foreign direct investment</td>
<td>0.094***</td>
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<tr>
<td></td>
<td>(0.030)</td>
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<tr>
<td>Portfolio equity flows</td>
<td>0.475***</td>
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<tr>
<td></td>
<td>(0.074)</td>
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<tr>
<td>Portfolio bond flows</td>
<td>–0.028</td>
</tr>
<tr>
<td></td>
<td>(0.082)</td>
</tr>
<tr>
<td>Long-term bank credits (LTBIS)</td>
<td>–0.148***</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
</tr>
<tr>
<td>Short-term bank credits (STBIS)</td>
<td>–0.134***</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
</tr>
<tr>
<td>LTBIS × bank capitalization</td>
<td>0.708***</td>
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<tr>
<td></td>
<td>(0.250)</td>
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<tr>
<td>STBIS × bank capitalization</td>
<td>0.956***</td>
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<tr>
<td></td>
<td>(0.308)</td>
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<tr>
<td>Official flows</td>
<td>–0.033</td>
</tr>
<tr>
<td></td>
<td>(0.037)</td>
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<tr>
<td><strong>Other explanatory variables</strong></td>
<td></td>
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<tr>
<td>Lagged GNP</td>
<td>0.660***</td>
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<tr>
<td></td>
<td>(0.019)</td>
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<tr>
<td>National saving</td>
<td>0.144**</td>
</tr>
<tr>
<td></td>
<td>(0.056)</td>
</tr>
<tr>
<td>Squared (national saving)</td>
<td>–0.83***</td>
</tr>
<tr>
<td></td>
<td>(0.108)</td>
</tr>
<tr>
<td>(Exports + imports)</td>
<td>0.052***</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
</tr>
<tr>
<td>Government consumption</td>
<td>–0.205***</td>
</tr>
<tr>
<td></td>
<td>(0.040)</td>
</tr>
<tr>
<td>Log (terms of trade)</td>
<td>0.072***</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
</tr>
<tr>
<td>Efficient-saving threshold</td>
<td>0.173</td>
</tr>
<tr>
<td>Explained variance</td>
<td>0.485</td>
</tr>
<tr>
<td>Sargan test (prob. value)</td>
<td>0.999</td>
</tr>
<tr>
<td>Arellano–Bond test (prob. value)</td>
<td>0.649</td>
</tr>
</tbody>
</table>

Dependent variable is real annual growth of GNP per capita.
All the variables are taken in differences and lagged one period.
Capital flows, national saving, exports plus imports and government consumption are all measured as a ratio to GNP.
The explained variance is the ratio of the fitted value’s variance to the dependent variable’s variance.
The Sargan statistic tests the null hypothesis of no correlation between the instruments and the residual.
The Arellano–Bond statistic tests the null hypothesis that the residuals are not second-order correlated.
**, *** The coefficient is significant at a 5% and 1% level, respectively.
balance sheets will intensify credit slumps and bankruptcies. However, the growth impact of foreign bank lending turns positive once the local bank capitalization ratio (bank capital as a percentage of bank claims) reaches a certain threshold: 21% and 14% for long-term and short-term bank credit flows, respectively.

Whereas much of Asia has been praised in the past for its outstanding saving performance, the findings also suggest that higher national savings are not uniformly associated with higher growth. Above a certain threshold, national savings cease to contribute to growth as the local absorption capacity for productive investment is limited. This result would hold, in particular, where domestic localization requirements prevent domestic savings from being invested abroad.

IV. Conclusions

Which flows should developing countries encourage so as to maximize the net benefits of foreign savings? Essentially, these net benefits can be derived by subtracting the risks connected to foreign flows – reversibility and amplified misallocation of resources in the presence of domestic distortions – from the benefits that the flows carry: capital deepening, efficiency enhancement and consumption smoothing. Recent evidence on the reversibility of various types of capital flows and new evidence presented here on the specific growth effects of these flow items lead to the conclusion that authorities are right to prioritize the encouragement of capital inflows.

Equity investment is to be preferred over debt instruments. Both FDI and portfolio equity investment have been found to exert a significant impact on growth. This does not imply that developing countries should raise fiscal and other incentives or lower labour and environmental standards to attract FDI. Avoiding protracted import substitution, educating people and reducing distortions have been shown to maximize the benefits from FDI. Moreover, FDI flows raise relatively little macroeconomic policy concerns as their reversibility is low.

Abolishing foreign ownership limits and caps on minority shareholder rights, raising accounting and disclosure standards, and establishing instruments for hedging foreign exchange risks will also help to stimulate portfolio equity inflows. As portfolio equity flows can add to asset price inflation, they require more regulatory attention than FDI flows, in particular for bank system exposure to stocks, liquidity requirements for market makers, as well as corporate disclosure and accounting standards. Finally, foreign savings in the form of foreign bank lending has been shown to contribute to growth only if
the banking system is well-capitalized; otherwise ‘good’ risks will be underfinanced and ‘bad’ risks overfinanced.

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