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How beneficial are capital inflows for economic catch-up? Lessons from the euro periphery

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How beneficial are capital inflows for economic catch-up? Lessons from the euro periphery

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Abstract:

While the theory of intertemporal trade predicts large benefits for developing countries and emerging markets from opening up their capital account, empirical evidence has remained elusive. A number of authors have tried to explain this fact with insufficient institutional quality or lack of basic human capital in less developed countries. This paper argues that European Monetary Union (EMU) provides a natural experiment to check how relevant these arguments are as EMU countries in global comparison have high institutional standards and high levels of human capital. Looking at the empirics from 1999 to 2009, it is found that there have indeed been large capital inflows from the (developed) core of EMU to the (less developed) periphery of EMU. Nevertheless, capital inflows from the EMU core to the periphery have not yielded the benefits expected from textbook theory. This hints that there might be additional factors lowering potential benefits from capital inflows which might not have yet received sufficient attention.

1 Introduction

One of the most disputed issues in international economics has been the question in how far capital account liberalization and capital inflows are beneficial for emerging markets and developing countries. While many textbooks for a long times have advocated opening up the capital account and importing savings from abroad to increase the capital stock and hence output per capita (Feenstra/Taylor 2007), a number of authors have questioned the benefits of capital inflows to emerging markets. Lately, even the IMF has voiced some careful warnings about excessive capital inflows (Ostry et al. 2010) and has advocated capital controls in selected circumstances.

While empirical evidence for large benefits of capital inflows is scarce (Wei 2008) and sometimes data hints even at possible negative relations of net capital inflows and economic development (Prasad et al. 2007), the reasons are disputed. While some authors argue that this is due to insufficient institutional or financial sector development in host countries or other barriers to capital flows, other authors claim that there are intrinsic problems with international capital flows which make a significant positive impact extremely unlikely.

Against this background, the experience of the poorer periphery countries in the European Monetary Union (EMU) since the late 1990s is a very interesting case study. While EMU has lately been in the news mainly because of the sovereign debt crisis in many member states, the past decade of monetary integration actually provides an almost ideal natural experiment on the benefits of large net capital inflows: Not only were capital market regulations harmonized, EMU also removed exchange rate risks. Moreover, given that the Copenhagen criteria are a prerequisite of joining the European Union (and hence also EMU), euro members can be expected to fulfill rather high governance standards (compared to developing or emerging countries in general).

This paper thus looks at the experiences of the euro periphery with their catch-up process over the past decade up to the spread of the U.S. subprime crisis to the rest of the world and the onset of the Great Recession in 2008. Building on this analysis, it will try to draw some lessons for emerging markets and developing countries and will develop some questions for further research.

This paper is structured as follows: Section 2 reviews briefly the (neoclassical) textbook theory on the link between capital inflows and economic growth. Section 3 gives an overview on empirical observations on global capital flows. Section 4 will turn to the European Monetary Union and describe the experience with capital flows there. Section 5 concludes.

2 The textbook theory of catching-up through capital inflows and intertemporal trade

The basic argument of capital inflows as a means to achieve catch-up growth (as i.e. referred to by Lucas 1990) builds on a neoclassical production function. Output per worker y is given by the capital stock per worker $k = \frac{K}{L}$ and an exogenous level of technology A:

$$y = Ak^{\alpha} \tag{1}$$

Marginal return on capital is thus given as the first derivative and capital exhibits thus a falling marginal rate of return:

$$r = A\alpha \frac{1}{k^{1-\alpha}}$$
\qquad\qquad (2)

Differences between developing and developed countries are here explained through different endowments with capital per worker k. If the capital stock k is bigger in developed countries, output is also higher. In contrast, the return to capital is lower. In autarchy, there is no economic mechanism which would change this configuration.

If now the capital accounts are opened up and capital flows are allowed between rich and poor countries, capital will pour from the developed to the less developed world as investors seek higher returns. As a result, the capital stock per worker will increase in the less developed part of the world, and fall in the more developed part of the world. Marginal return on capital will increase in the developed part of the world and fall in less developed countries. Ideally, in the end, output per worker will have converged. Moreover, total global output will have increased as the capital stock is now used more efficiently. On average, output per worker now is higher than before.

If we describe this mechanism in terms of routinely reported macroeconomic aggregates, during this process, investment in the poor countries will increase and investment in the rich countries will fall. At the same time, the capital flows imply that the current account of the rich countries will be in surplus while the current account of the poorer countries will be in deficit.

Figure 1 illustrates this process: Prior to opening up for capital flows, the capital stock per capita in the North is k_{Aut}^{N} and in the South k_{Aut}^{S} and consequently, per capita output in the North is higher than that in the South. The marginal return on capital in the South r_{Aut}^{S} is much higher than in the North r_{Aut}^{N}. As soon as the capital account is opened, capital flows from the North to the South will lead to an increase of the capital stock per worker in the South and a decrease of the capital stock in the North. As a result, both interest rates as well as per capita incomes will have converged.
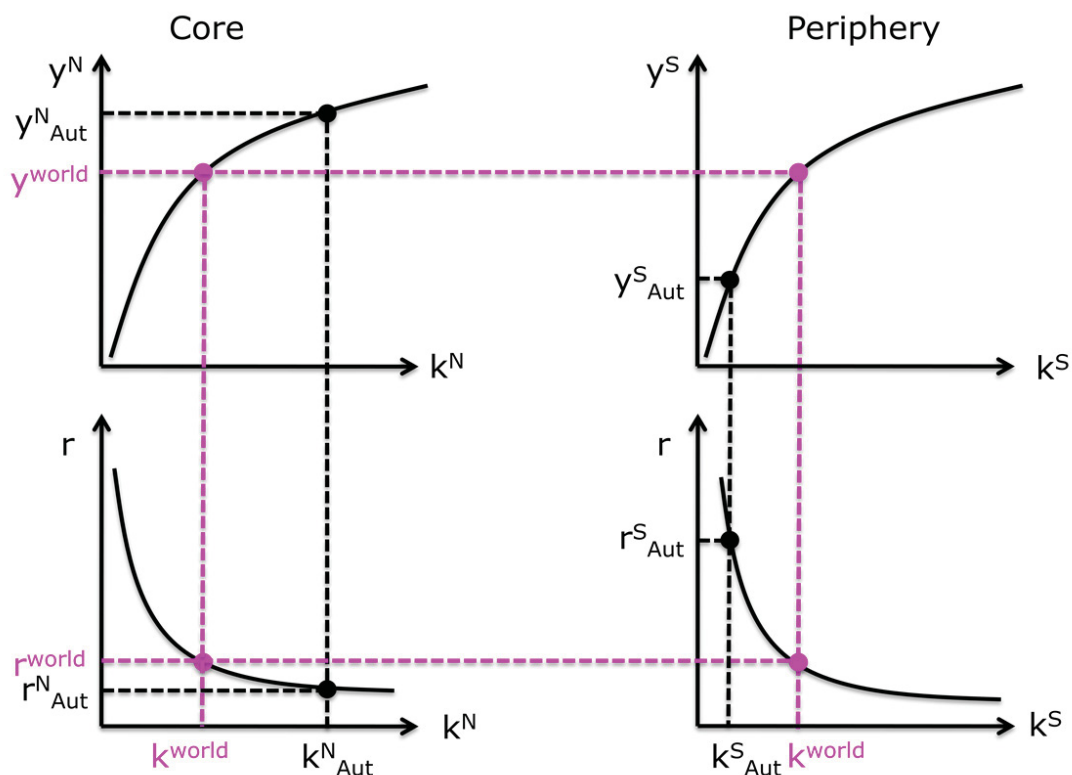
Figure 1: Output and return to capital in autarchy and under free capital flows

In the past two decades or so, this basic argument has been further refined in the models on "intertemporal trade" as pioneered by Obstfeld/Rogoff (1994), building on work by Buiter (1981), Obstfeld (1982), Sachs (1981) and Svensson and Razin (1983). These works have by now became the workhorse approaches to analyse international capital flows and have made it into the textbooks of the field (i.e. Obstfeld/Rogoff 1987; Feenstra/Taylor 2010).

In these works, the economy is modeled as being made up of a number of identical, representative agents with infinite horizons who maximize their utility over their lifetime by choosing the optimal path for consumption and investment. While for a closed economy, current income always has to be completely used for consumption, investment and government expenditure (and the sum of the three is limited by current income), this budget constraint relaxes for an economy with open current and capital accounts: Here, the representative agents can borrow from abroad to increase domestic consumption, investment in the domestic capital stock or government expenditure. This decision to borrow then determines the current account (and by accounting identity also the capital account).

Formally, these models are characterized by the following basic equations: The utility function is given by:

$$U_t = \sum_{s=t}^{\infty} \beta^{s-t} u(C_s) \tag{3}$$

With β being the discount factor and C_s denoting consumption in period s.

Income Y_t is produced given a neoclassical production function and is a function of the capital stock K_t (with labour input assumed to be constant):

$$Y_t = AF(K_t) \tag{4}$$

The current account is defined as the change in foreign debt B_t and is simultaneously the excess of domestic absorption (that is the sum of private consumption C_t, government consumption G_t and investment I_t) and interest payments over income:

$$CA_t = B_{t-1} - B_t = Y_t + rB_t - C_t - G_t - I_t \tag{5}$$

In a closed economy, the current account balance has to be 0 by definition. Hence, the budget constraint here is:

$$Y_t = C_t + I_t + G_t \tag{6}$$

For an open economy, this budget constraint relaxes to an intertemporal budget constraint under which the discounted absorption over the lifetime of the representative agent must not exceed discounted income:

$$\sum_{s=t}^{\infty} \left(\frac{1}{1+r}\right)^{s-t} (C_s + I_s) = (1+r)B_t + \sum_{s=t}^{\infty} \left(\frac{1}{1+r}\right)^{s-t} (Y_s - G_s) \tag{7}$$

While these models are more complicated in the set-up than the simple Lucas model, they come to a number of similar conclusions. First, when the capital account is closed, a less-developed economy with a lower capital stock will see a higher marginal return to capital and hence interest rates than the rest of the world. Second, when opening up the capital account, individuals will start borrowing from abroad. Also similar to the Lucas model, capital inflows will lead to higher investment and hence a higher capital stock in the catching-up economy.

However, in these models, there is the second mechanism which has an effect on macroeconomic aggregates, namely an increase in consumption. The possibility to borrow from abroad at the world interest rate below the current marginal productivity of capital at home allows individuals to increase their lifetime income by borrowing abroad and investing at home. As maximizing lifetime utility implies some kind of consumption smoothing, this means that the individuals will increase consumption already in the present period. Hence, aggregate consumption can be expected to increase and as parts of this increase will be covered by increased imports, the current account deficit will widen even more than in a situation of only looking at investment decisions.

This process is illustrated in figure 2 in a simplified two-period version of the model described above. In autarky, the representative agent maximizes utility by choosing point A on the production possibilities frontier and for her intertemporal consumption decision. Note that there is no possibility for a deviation between the point chosen on the production possibilities frontier and the distribution of consumption between the two periods as the agent cannot lend or borrow (as all individuals are identical, they would all simultaneously borrow or simultaneously lend which is not possible in a closed economy). Consumption here in period one is C_1 and consumption in period two is C_2, the utility level reached U_1.
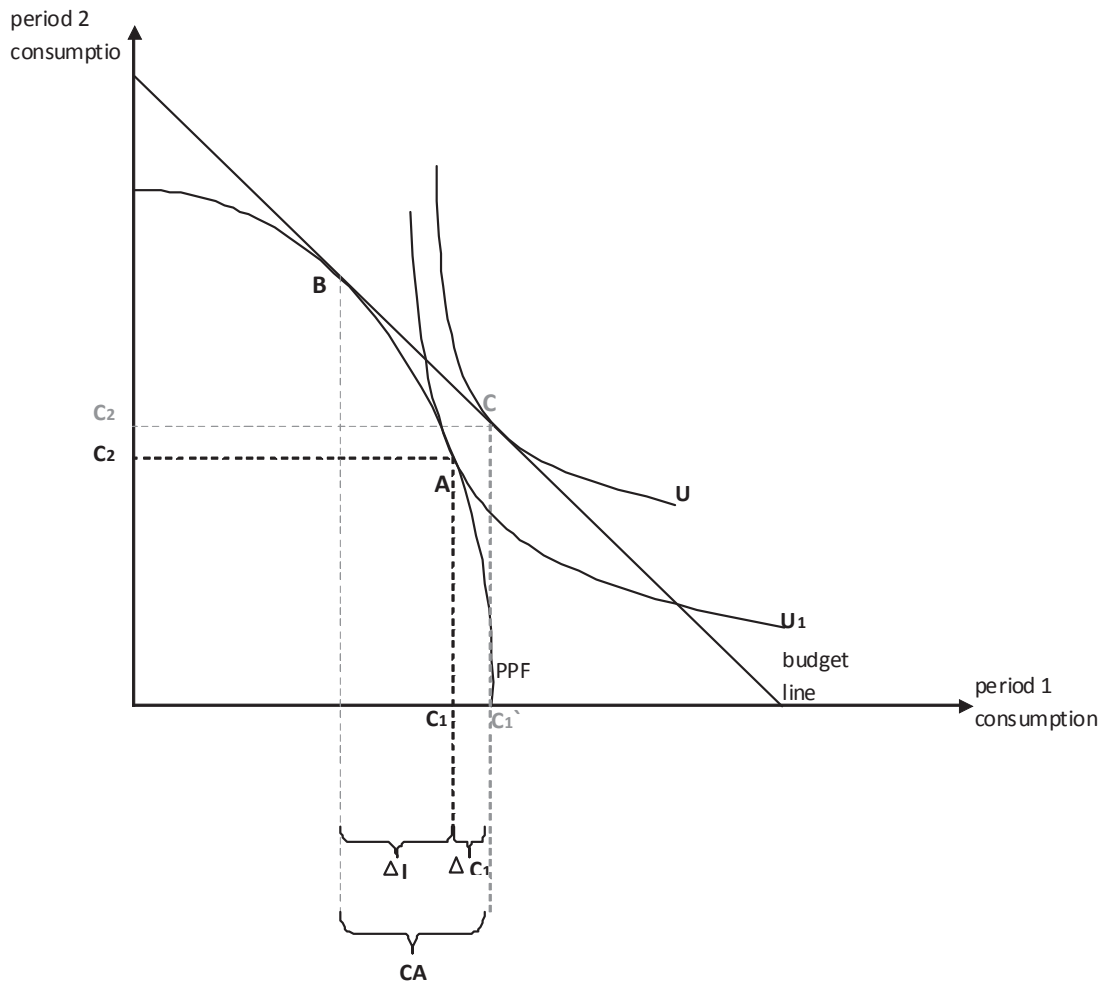
Figure 2: Consumption in period 1 and 2 undere autarchy and with international capital flows

When the capital account of the economy is opened up, the individual agent can borrow abroad. She

can now reach a higher level of utility U_2. To this end, she chooses the point B on the production possibilities frontier by borrowing abroad ΔI in order to increase investment. This increase in the capital stock leads to an increase in period two output and hence productivity measured as output per capita.

As international capital markets are happy to provide her with funds as long as she respects her long-term budget constraint, for consumption she can choose now any point on the budget line which goes through point B. As we see in the graph, as her lifetime income had increased, she also increases consumption in both periods and thus chooses the combination of C_1' and C_2' in point C. The resulting deficit in the current account CA is the sum of the change in investment ΔI and her change of consumption in period 1, ΔC_1.

So, the theory of intertemporal trade would predict the following stylized facts for an economy opening up to international capital flows:

- Strong investment growth
- Strong growth in labor productivity
- Strong output growth
- Strong consumption growth
- Deterioration of the current account

3 Empirical observations on intertemporal trade

While the theoretical approach of these models has widely been accepted over the past decades, the empirical fit has been muss less than perfect. In his famous contribution, Lucas (1990) asks "Why doesn't capital flow from rich to poor countries?", contrasting empirically feeble capital flows with the huge capital flows predicted by the model presented above. From the late 1990s and the early 2000s onwards, the empirical fit on a global scale has even become worse: Capital started to flow "uphill" from poor to rich countries (Prasad et al. 2007 or UNCTAD 2008). Developing countries and emerging markets were increasingly recording current account surpluses (and hence capital outflows) while developed countries such as the United States, the UK and Spain recorded massive current account deficits (and hence capital inflows). On the side of poor countries, this phenomenon was not only confined to China, but could be observed in large parts of Asia, some parts of Latin America and a number of commodity exporting countries.

In addition, overall, it has been difficult to detect positive effects from financial globalization and capital inflows into developing countries. Survey articles such as Kose et al. (2006), Prasad et al. (2003) and Eichengreen (2000) all come to the conclusion that a robust positive causal effect running from financial globalization to economic growth cannot be clearly shown.

In reaction to these puzzles, a number of possible explanations were brought forward on why capital flows did not behave as predicted by theory. Lucas (1990) himself argued that the effective return on capital in developing countries was much lower than what could be expected given that these countries' institutions and human capital were often of low quality. As property rights were neither clearly defined nor could be relied upon and the rule of law was insufficient as well as workers badly educated, marginal return on fixed capital would be lower than a simple analysis of the capital stock per worker would imply. However, if the effective rate of return on capital in developing would be much lower than originally thought, international capital flows would be much less.

This argument is closely related to Feenstra/Taylor's (2007) hypothesis that investors demand high risk premia for investments in developing countries and emerging markets. In addition to the political risks listed by Feenstra/Taylor, one might want to add here exchange rate risks which cause additional volatility in the return to capital measured in US dollars.

Another argument has been that trade costs such as tariffs or non-tariff barriers make capital goods more expensive in developing countries and hence lowers the return on additional fixed capital formation below what would be expected from the low existing stock of capital stock.

Prasad et al. (2007) in contrast argue that the net capital outflows observed since the turn of the century stem from underdeveloped financial sectors in emerging markets and developing countries. Their argument runs as follows: The fast-growing emerging markets such as China are characterized by a recent acceleration in economic growth and hence incomes. As households at first continue to consume at least partly according to old habits, savings in these countries increase strongly. However, as the financial systems in these countries are badly suited to funnel these savings efficiently into profitable investments at home, capital is exported. This leads to capital outflows and hence current account surpluses.

Finally, on the empirical observation that countries often do not benefit from capital inflows it is argued under the term of "threshold hypothesis" that countries need to have a certain minimum level of institutions and financial sector development in place in order to benefit from capital inflows (Wei 2008). If this precondition is not fulfilled, capital inflows will be squandered or put to unproductive use and might hence actually depress growth and development.

4   European Monetary Union as a natural experiment

As discussed above, there have been a number of cross-country studies trying to find positive effects of financial globalization to little avail. While a number of authors have tried to provide empirical evidence for one or the other of the potential factors, the jury is still out on which is really the decisive factors explaining the deviation of empirically observed capital flows from the model and in how far the arguments brought forward in the literature are relevant in explaining the lack of positive impact found.

To answer these questions, a look at the European Monetary Union (EMU) and the capital flows between its members can be helpful. If we look at the arguments on explaining the failure of textbook models in explaining either empirical capital flows or their empirical impact on economic growth, we see that none of them really holds for EMU. Thus, if any of these theories were decisive, capital flows within EMU should show the directions and macroeconomic effects predicted by the textbook models.

Let us first go through the integration process of EMU and have a look in how far the above presented theories could still be relevant for EMU. With the introduction of the euro in 11 of the countries of the European Union in 1999,[1] the European Monetary Union finalized a process of broad

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[1] 1999 refers to the year of the introduction of the euro as a virtual currency. Notes and coins were introduced two years later, when also Greece joined. Further small countries joined in 2007, 2008, 2009 and 2011. However, the performance of these member states which joined from 2007 onwards has not been analysed in depth in this paper as their accession coincided with the global financial and economic crisis and hence capital flows might have been strongly distorted.

integration of goods markets as well as financial markets. Prior to introducing a common currency, there had been a long process of creating a "single market" which was finalized in 1992. By this time, a free movement of goods, capital and people had been achieved, with common standards, significant liberalization of the financial sector and common standards for government procurement. Moreover, the Maastricht treaty of 1992 and the Copenhagen criteria of 1993 define a set of institutional standards members of the European Union have to fulfill, including standards on the absence of corruption, democratic processes and the rule of law. The introduction of the euro in 1999 finalized this project in the sense that it removed exchange rate risks between its members and therefore further lowered barriers to capital flows.

Thus, one can argue that most of the factors possibly explaining a lack of large capital flows and positive impact of capital flows on the global level were widely absent at the European level. Political risk was overly perceived to be very low, institutional quality was reasonably high, at least when it comes to the factors relevant for investors such as the protection of property rights and the rule of law. While human capital endowments were certainly different between Portugal and Germany, it would be difficult to argue that Portugal's human capital level was below a threshold that would enable the country to benefit from capital inflows (as this would exclude most countries on the globe from being able to benefit from capital flows). The financial systems in all of the EMU countries were reasonably well developed. Trade barriers and trade costs were almost absent so that the price of capital goods could be expected to be almost similar across the EU. Exchange rate risk was absent and so risk premia for poorer countries were low.[2]

At the same time, differences in per capita incomes as well as capital stocks were still quite significant in 1999 as can be seen in figure 3. Greece and Portugal had per capita income levels of only about half of those in Germany or the Netherlands, Spain of around 60 percent of those in the richer countries. For these countries, based on the model of intertemporal trade, one would thus expect strong net capital inflows (and hence growing current account deficits), a strong increase in investment, a strong increase in production, a strong increase in productivity and an increase in consumption.

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[2] Of course, risk premia started to increase again during the euro crisis which started in 2010. However, as this analysis is about capital flows after the introduction of EMU (and not after the onset of the crisis), this development is irrelevant here.
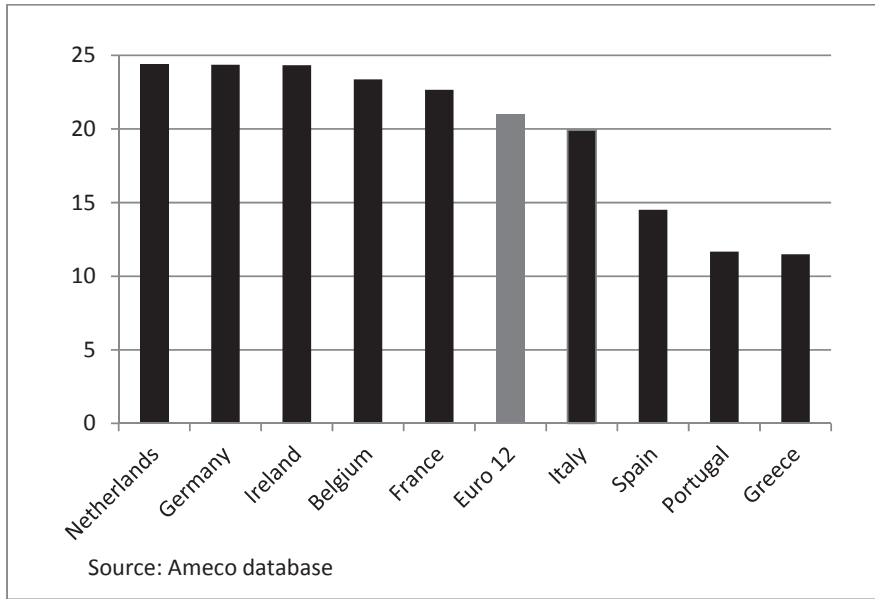
Source: Ameco database

Figure 3: GDP per capita in 1999, in thousand €

In fact, a number of these predictions have materialized in the years after the introduction of the euro: As can be seen in figure Figure 4, the current account balance of the countries with below-average starting per capita incomes actually deteriorated, meaning that these countries recorded massive net capital inflows. In some cases, current account deficits reached more than 10 percent of GDP, levels deemed impossible before. In general, these capital inflows have been financed by capital outflows from countries with initial above average per capita incomes, namely Germany, the Netherlands and Austria (figure Figure 5). However, this pattern is not true for all countries: Ireland, a country with above-average per-capita incomes in 1999 recorded a strong deterioration of its current account and hence capital inflows. Yet, Ireland might here be a special case and the GDP of the country might well be distorted by its role as a location for corporate headquarters through which recorded profits might be inflated due to transfer pricing of multi-national enterprises. Thus, in general, overall capital flows in EMU were very much in line with the textbook models' predictions.
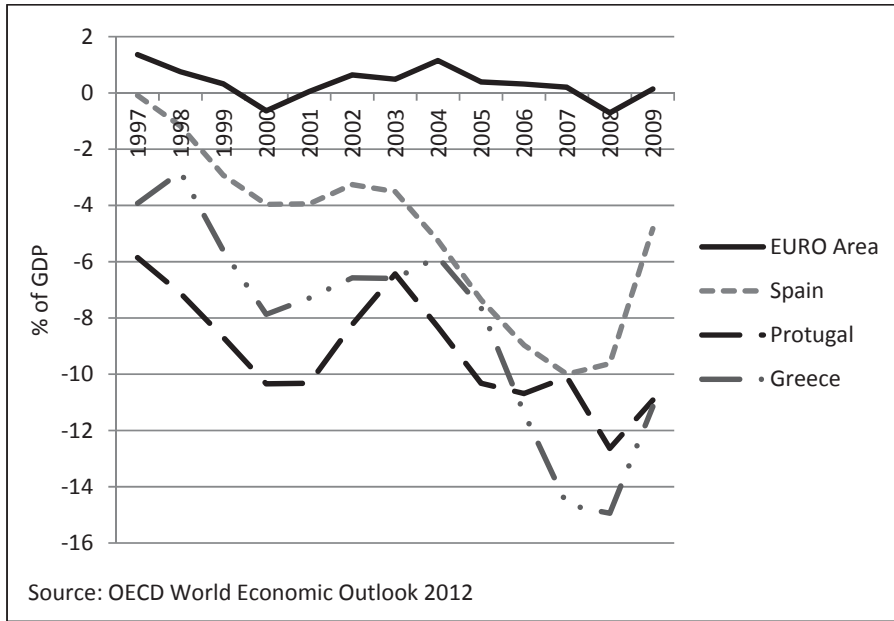
Figure 4: current account balances in % of GDP for Spain, Portugal and Greece
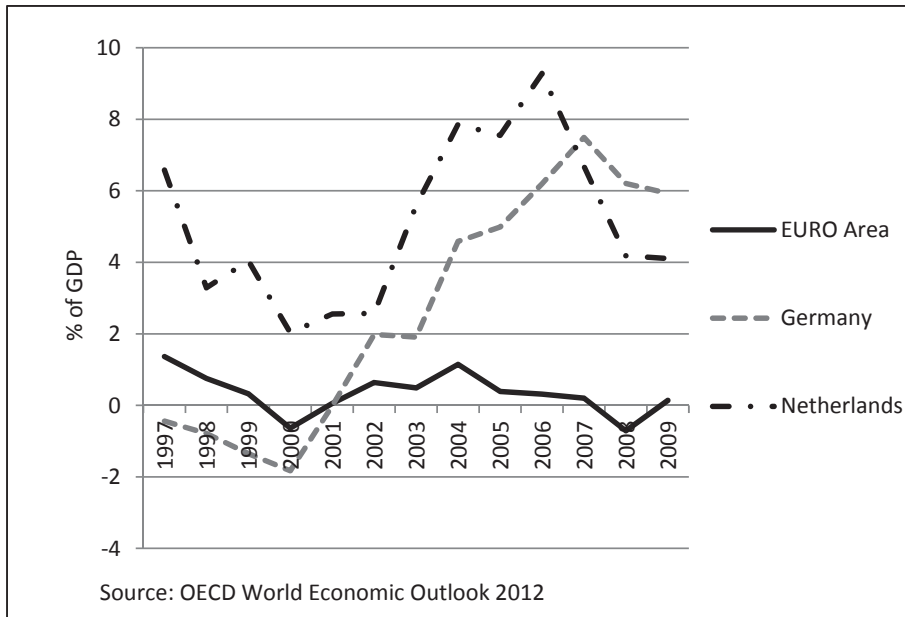

Figure 5: current account balances in % of GDP for Germany and the Netherlands

Consumption is another macroeconomic aggregate for which the model of intertemporal trade seems to have made good predictions: From 1998 to 2007, total consumption (private consumption and final consumption by the general government) has increased faster than GDP in Portugal, Greece and Ireland and has stayed behind in Germany, the Netherlands and Austria. However, for Spain, the model's predictive power here seems slightly limited. Total consumption as a share of GDP actually fell slightly in Spain.

At first sight, also the trends for fixed capital formation are close to the model's predictions, at least for some countries: Fixed capital formation increased strongly in Spain, an economy with catching-up

potential and fell in Germany, one of the richer countries. However, fixed capital formation in Portugal, Greece and Ireland actually contradicted the model's predictions: Fixed capital formation even fell in Portugal, roughly stagnated in Greece and increased strongly in Ireland (see figures 6 and 7.
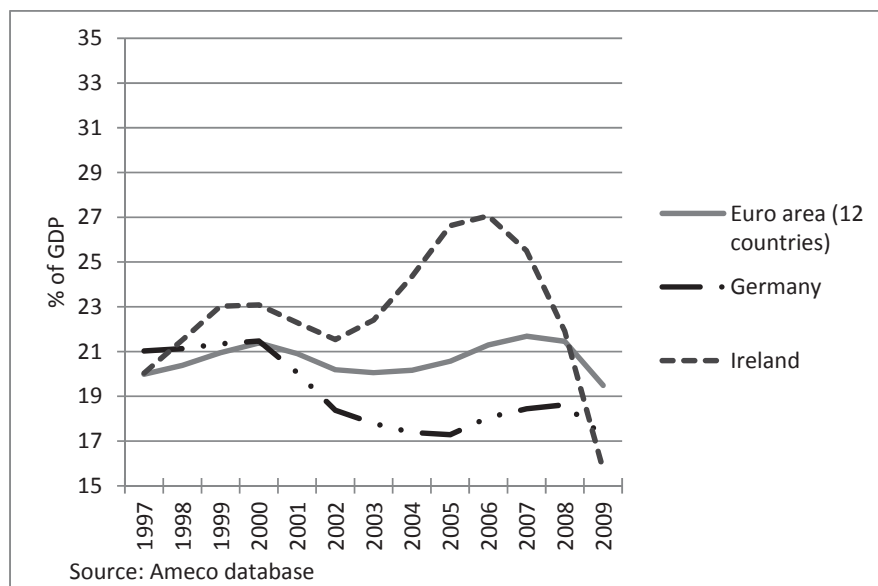

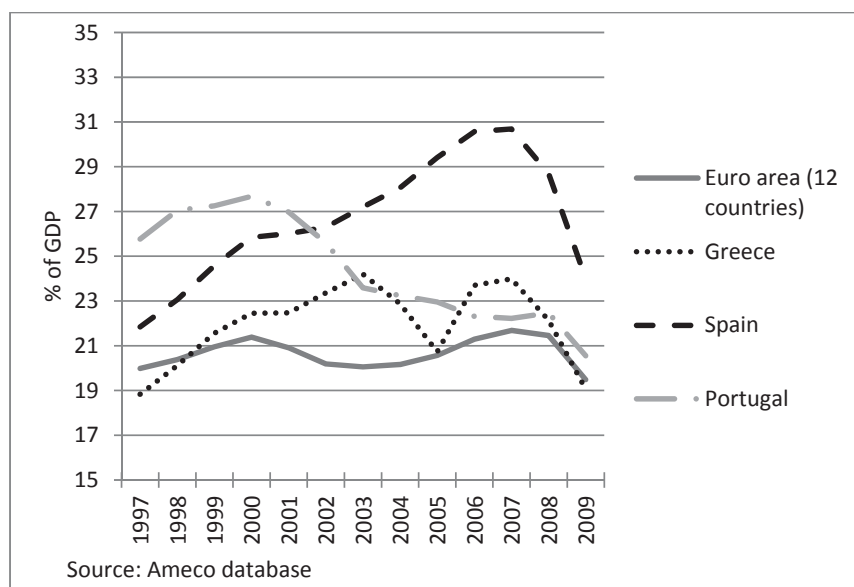**Figure 6: Gross fixed capital formation in % of GDP, Germany and Ireland**

Figure 7: Gross fixed capital formation in % of GDP, Greece, Spain, Portugal

However, when it comes to productivity (Figure 8), the results are much less in line with what the theory would predict. Relative GDP per employee (compared to the rest of the euro area) has remained basically flat in Portugal and Spain (and even slightly downward trending in the later with a

recovery only in the crisis of 2008/9) and only increased in Greece until the early 2000s, and remained flat afterwards.
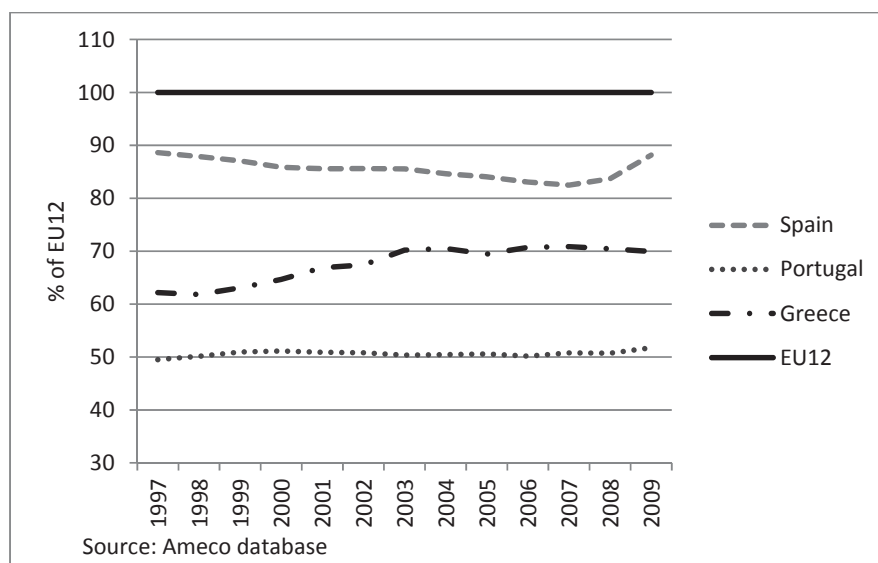

Source: Ameco database

Figure 8: Real GDP per employee, relative to EU12

A reason for this seems to be the fact that a lot of the fixed capital formation actually took place not in capital goods in the productive sector (where actually an increase in future GDP and future productivity could be triggered), but in the housing sector. Figures 9 and 10 illustrate this development: Relative to Germany,[3] investment in equipment actually fell in Portugal and Spain and only increased marginally in Greece while investment in dwellings strongly increased (figures 11 and 12). Moreover, the investment in dwelling might not show the whole magnitude of capital having moved into housing: Especially in Spain, a lot of new houses were constructed in new residential developments which most likely have triggered the construction of new streets, playgrounds and sewers which turn up in the national accounts in fixed capital formation, but not in investment in dwellings.

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[3] A relative comparison is used here to control for variations over the business cycle.
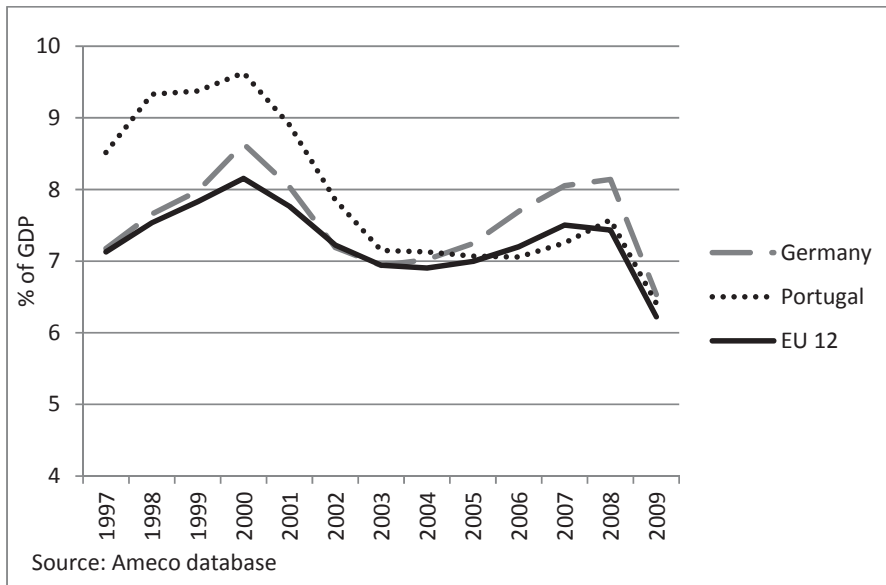
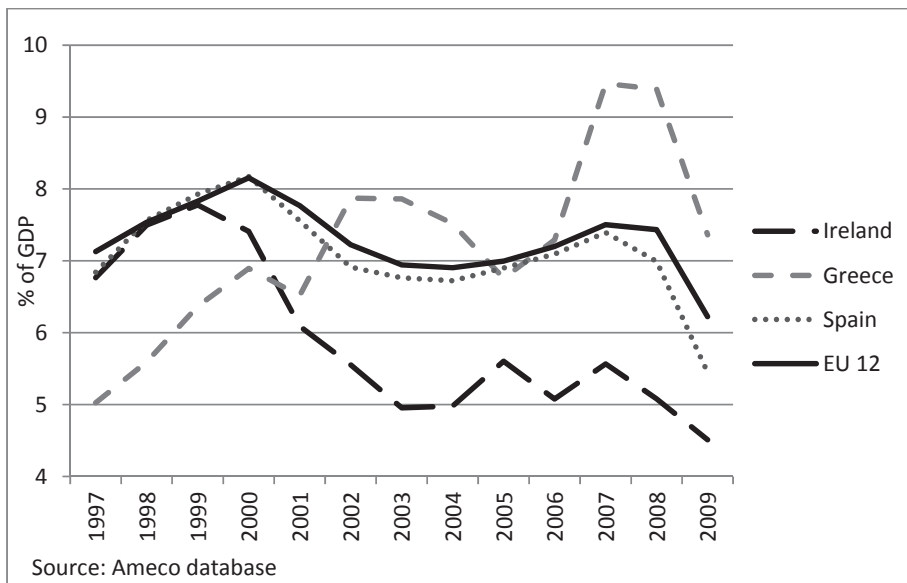**Figure 9: Gross fixed capital formation, equipment, in % of GDP, Germany and Portugal**

Figure 10: Gross fixed capital formation, equipment, in % of GDP, Ireland, Greece and Spain
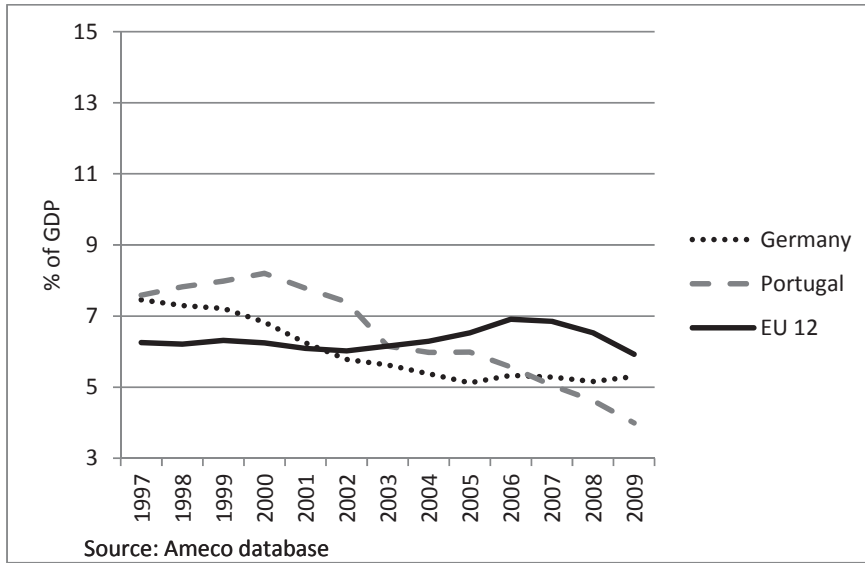
Figure 11: Gross fixed capital formation, dwellings, in % of GDP, Germany and Portugal
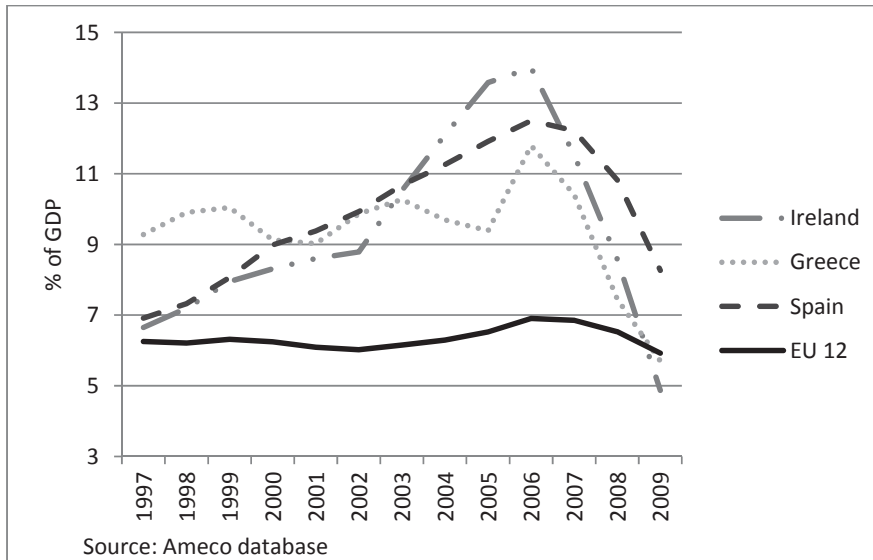
Figure 12: Gross fixed capital formation, dwellings, in % of GDP, Ireland, Greece and Spain

Thus, while capital inflows, consumption and housing construction strongly increased for the poorer countries in EMU, a real catch-up process as predicted by the model of intertemporal trade has not been triggered. Moreover, as became evident with the onset of the euro crisis, private sectors in the countries concerned are now highly indebted with net foreign asset positions of Greece, Portugal and Spain reaching roughly 100 percent of their respective GDP even prior to the euro crisis. It thus seems that most of the capital inflows have been used directly for consumption or the increase of the housing stock, but not for an improvement of productive structures.

5 Conclusion: Lessons for emerging markets and developing countries

This result is quite important for developing countries and emerging markets: Even if institutions are of a decent quality, if property rights are respected and rule of law is followed, if human capital is good, if there are no trade barriers for capital goods and if the financial sector is reasonably well developed, the benefits of capital inflows might well prove to be elusive or might even not exist at all. Given that the level of institutional and human capital development of (even the poorer) EMU countries is something most emerging markets and developing countries are still aspiring at and given that any shortcoming in the fields of institutions, trade liberalization, human capital endowment or the development of the financial sector might additionally further lower the expected net benefits from capital inflow, there are many more reasons to expect that theoretically predicted benefits of capital inflows will not materialize in the average emerging market or developing country.

An immediate question which follows is of course why capital inflows were not used in the way the model for intertemporal trade predicts. One possible answer here is that large capital inflows might have some kind of negative external effects on the underlying catch-up process and hence medium-term economic growth. One possibility here could be that these capital inflows might lead to a real appreciation and might thus have detrimental effects on growth of the manufacturing sector. This idea of a growth-depressing real exchange rate appreciation by capital inflows has already been floated framework) by Prasad et al. (2007), but has been treated slightly dismissively by the authors themselves and not received much attention since. The underlying mechanism would be as follows: When the capital account is opened for capital inflows, in anticipation for future growth, individuals start borrowing to increase their consumption. If now consumption increases initially faster than GDP (which is to be expected by the model, at least if there are some adjustment costs to the capital stock), this can only work if a larger share of consumption is satisfied with imported goods. Assuming that the share of tradables and non-tradables in consumption remains roughly constant, this must lead to a shift in the domestic production structure away from tradables towards non-tradables and an increase of the price of non-tradables relative to tradables. If we further assume that most technological progress is made through learning-by-doing or spill-over effects through international production networks in the tradable sector, then such a shift in the production structure might lead to a lower medium-term growth rate. In short, this would mean that capital inflows potentially have a similar effect as those described by Cordon/Neary (1982) for countries which have discovered natural resources and which has been popularly known under the term "Dutch disease".

However, this mechanism would imply deviations from rational expectations of the individuals. Here, individuals would not entirely understand the process described above. Given the initial positive effect of capital inflows on the non-tradable sector (and hence probably employment opportunities and wages), they would extrapolate a continued higher growth path into the future. While this is clearly not in line with the basic assumption, there is a lot of literature showing now that individuals in reality often use heuristics and rules-of-thumb to make decisions. However, clearly more research is needed on what really is behind the reason for the disappointing performance of capital flows for catching-up processes.

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