

The balance of payments stages ‘hypothesis’: A reappraisal

Brahim Razgallah¹

Abstract:

The aim of this paper is to demonstrate that the evolution of countries’ balance of payments is linked to the level of economic development. For this purpose, the balance of payments stages hypothesis will be considered. The theory states that the current account evolve according to a cycle and that capital flows move essentially from developed to underdeveloped countries. It will be concluded that this conclusion contradicts with one of the hypotheses of the optimum currency areas theory.

Key words: Balance of payments, Cycles, Real exchange rate, Probit model.

JEL classification: C23, E32, F31, F32.

¹ C.E.R.S.E.I.-3 D.I University Panthéon-Assas (Paris II). 1 rue d’Ulm 75005 Paris. Phone: +33-1-44418994. brazgallah@etu.u-paris2.fr

I would like to thank Gérard Lafay for his helpful comments and suggestions. I also thank the participants of the workshops 3 D.I at the University Panthéon-Assas (Paris II), TEAM at the University Panthéon-Sorbonne (Paris I) and *Internationale Wirtschaftsbeziehungen* at the University of Goettingen. I remain however responsible for any remaining errors.

1. Introduction

Since the introduction of the Euro in January 1999, large movements were observed against the US dollar. These ones have denied the predictions of some fluent economists, who argued that the euro would be a strong currency. This was based on equilibrium real exchange rate models that knew a renewal of interest the last decades.

The word equilibrium is usually interpreted as the realization of the internal and external balance. This idea, which was launched by Nurkse in 1945, severely criticize the Casselian theory of purchasing power parities.

It should be noticed that capital movements could affect the equilibrium. Capital inflows increase the demand for nontraded goods, which cause a deviation from the path to equilibrium. A difficulty stands then in the distinction between capital movements of the short and the long run. Most of the models have to face this major difficulty when they try to determine the sustainable level of capital inflows.

The Fundamental Equilibrium Exchange Rate (FEER) proposed by Williamson [1994] does not escape the arbitrary calculation of the sustainable level of capital movements. On the one hand, long run capital movements may include speculative movements. On the other hand, short-term loans could be renewed systematically, which make difficult the distinction between capital flows. To estimate the external balance, Williamson departs from the savings-investments identity ($X-M = I-S$). He first calculates the sustainable level of capital movements and then estimates the current account balance target for each country. The fundamental equilibrium exchange rate is that, which balances the deficit or the excess of the current account not covered by sustainable capital flows.

The methodology of Williamson rests on a problem of financial balance. In other words, the current account target depends by the opportunities of investment and the behavior of domestic savings. However, capital flows depend also by the level of the real exchange rate, which affects the marginal productivity of capital [Lafay, 1996]. Otherwise, the approach of Williamson is essentially addressed to developed countries.

Some models such as that of El Badawi [1994], are more directed to developing countries. The author faces however the same difficulty when estimating the sustainable level of capital movements. In fact, this model rests also on the saving-investment identity. In a world of imperfect competition where purchasing power parity does not hold, countries that have a lower level of the real exchange rate will attract capital. In this model the sustainable level of capital movements is estimated with the past values of these ones. So, the author does not consider the role of the RER to attract capital flows.

The natural exchange rate of J. Stein (NATREX) does not account for the normative approach of the other models. The difficulty to estimate capital flows remains however, because the author departs from the identity of domestic savings. Also, the positive character of the model cannot claim to fix a reference for economic policies.

In this paper the link between capital movements and the differences in the level of economic development will be examined. The balance of payments stages hypothesis could

be considered here as an interesting benchmark for analysis. Contrarily to the previous models of the RER, capital flows are supposed to move essentially from developed to developing countries. It will be argued that the theory could improve the estimations of the sustainable level of capital movements.

2. The current account and capital flows

The increasing financial liberalization of the last decades has produced capital movements to exceed the flows of goods and services. In a world of globalization where countries have become closely interdependent, the internal and external balance approach loses of its meaning. In fact, only relative approaches could be then considered. In each country the equilibrium should be reached for the overall balance of payments. The analysis of capital flows should take into account the differences in the level of economic development.

Figure 1 below considers how could be reached the equilibrium of the overall balance of payments. The BB and ZZ curves represent the current account balance and that of the overall balance of payments. The current account is not necessarily in balance. A current account deficit (excess) is compensated by capital inflows (outflows) and the RER remains stable for a given level of the relative domestic demand.

By supposing exogenous the interest rates differential as well as expectations on the nominal exchange rate, it could be written:

$$DR^{\mu} = z \quad \mu, z > 0 \quad (1)$$

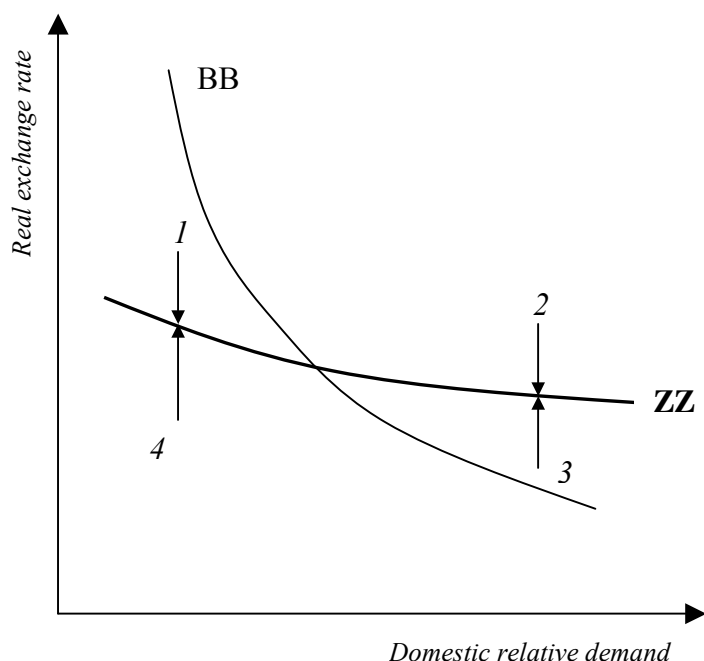
This equation draws the overall balance of payments equilibrium that depends on the real exchange rate R and the relative domestic demand D . The subscript z is the level of the ZZ curve and depends on financial operations and on the level of the current account (curve BB) that could be represented by:

$$DR^{\sigma} = b \quad \sigma, b > 0 \quad (2)$$

Equation 2 indicates that for a given level of specialization (b) the current account balances. So, any point that could be represented to the right-hand side (the left) of the BB curve corresponds to a deficit (excess) of the current account. For a given level of the RER, an increase of the relative domestic demand will raise imports and slows down exports. For a given level of the relative domestic demand, an appreciation of the RER induces a deterioration in price competitiveness and then a trade deficit.

Zones 1 (3) correspond to an excess (deficit) of the current account. A country that is in zone 1 attends a capital outflow, which compensates the current account surplus and stabilizes the real exchange rate. This is usually the situation of developed countries. Zone 3 corresponds to a current account deficit financed by capital inflows and reflects the situation of developing countries. Consequently, the curve ZZ is more elastic for prices than the curve BB ($\sigma < \mu$). Position 2 (4) corresponds to a current account deficit (surplus) that is too important to be financed by capital inflows (outflows).

Figure 1. : The balance of payments equilibrium



Source : Lafay [2004].

For a given level of the relative domestic demand, if a country is positioned in zone 4 a pressure will be exercised on the real exchange rate to correct the balance of payments surplus. The RER will increase until it reaches its equilibrium rate on the curve *ZZ*. *Caeteris paribus*, a country in zone 2 will see its real exchange rate decreasing. This depreciation increases the price competitiveness and the attractiveness of foreign capitals; the current account will then improve. This leads the RER to reach its equilibrium rate on the curve *ZZ*.

In a dynamic approach and if anticipations are taken into account, the curve *ZZ* becomes less elastic. The accumulation of a current account deficit (surplus) leads to some pressures on the real exchange rate to appreciate (depreciate). This slows down the amount of capital inflows (outflows). It is supposed that an appreciation (a depreciation) of the real exchange rate keeps pace with a slowing down (increase) of the domestic demand. Indeed, a depreciation of the RER makes more expensive the price for imports and lowers the domestic demand. It should be emphasized that if a country have an international currency, the rest of the world then finances a part of the national deficit. Consequently, the parameter μ will be lower.

Two remarks should be emphasized: On the one hand, the level of the real exchange rate of developed countries is relatively higher than that of developing countries. On the other hand, capital flows move essentially from developed to developing countries. This idea rests however on an empirical intuition rather than on a theoretical foundation. This point will be investigated in the following section.

3. Capital movements and the balance of payments stages.

The financial expansions until the first half of the XXth century, gave place to two approaches linking the movements of goods with capital flows. The first departs from a given surplus of the current balance of country *A*, and argue that capital flows will be then placed in country *B*; *capital flows follow goods' movements*.² This static approach is in opposition with the idea quoted above, because it denies the link between the spontaneous tendency of capital flows and the differences in the level of economic development.

The second approach associates a real and monetary approach and supposes the equilibrium of the trade balance as a benchmark hypothesis. It demonstrates the opposite link: *goods' movements follow capital flows*. The lending country will then increase its exports. This rests on the price-specie flow adjustment mechanism as it was described under the gold standard. In the borrowing country the monetary expansion caused by capital inflows will lead to a decline of interest rates. Demand for the factors of production increases, which puts a pressure on prices to increase and so on imports.

The automatic adjustment mechanism rests on an optimistic view, which relegates productivities to the background. The debtor country cannot improve its current account and reduces its debts, if capital inflows would not be associated to an increase of productivities. This is a conception of underdevelopment as a simple delay and not as a dependence caused by the domination of developed countries. Capital movements serve then to entail growth from developed to developing countries.

The neoclassical theory of the balance of payments stages is largely unknown in the literature. It has disappeared from schooling manuals in the second half of the XXth century, until it has been reexamined by Lassudrie-Duchêne et al. [1990]. The authors have advanced three main reasons for this vanishing: i) the experiences of some countries in the 1950's have contradicted the theory (ii) the notion of a continuous progress was criticized also by the Marxist theory (iii) the weak explaining power of empirical research.

Some authors as Crowther [1957] or Kindleberger [1963] proposed a cycle of six stages. Others, as Samuelson [1952] or Byé [1965] have described a four phases' cycle:

- The current account of underdeveloped countries is usually in deficit. In fact, these countries suffer a lack for factors of production and possess vast natural resources, which attract foreign capitals. While exports are very limited and constituted essentially by primary products, imports are more diversified. The balance of investments income is in deficit since the country borrows and doesn't lend. Foreign savings serve then to fill the gap of the insufficient level of domestic savings. It is *a new borrower country*.
- Capital inflows increase in the borrowing country the domestic product as well as exports. This rests on a hypothesis: capital inflows are supposed to finance industries for which the borrowing country has developed comparative advantages and the lender has lost the same ones. The complementarities between international trade and foreign investment [Kojima, 1975] assume this hypothesis; otherwise trade cannot be advantageous for both countries. In the *evolved borrower country*, the trade balance

² See Weiller [1946, pp.118-33].

production is at P_0 and that of consumption at C_0 . Capital inflows increase the stock of capital and produce an upward movement of the FPP curve. The production of the capital-intensive good increases (theorem of Rybczynski), then the optimum of production moves toward P_1 . It is supposed that the country payout for interests with exportable goods, which correspond to the totality of the marginal product (AP_1). The national income is then lower (point A) as well as consumption (point C_1).

If the hypothesis of an immiserizing growth could not be rejected, then the transition of the balance of payments to a further stage will be severely limited. The cycle could even run in the opposite side. The analysis of the various stages of the balance of payments will then impose some degree of realism. The hypothesis of the balance of payments stages supposes also a strong interdependency between countries. The access of a country to an advanced stage is conditioned by the evolution of the other countries in that phase. The theory doesn't however consider a reversal hypothesis.

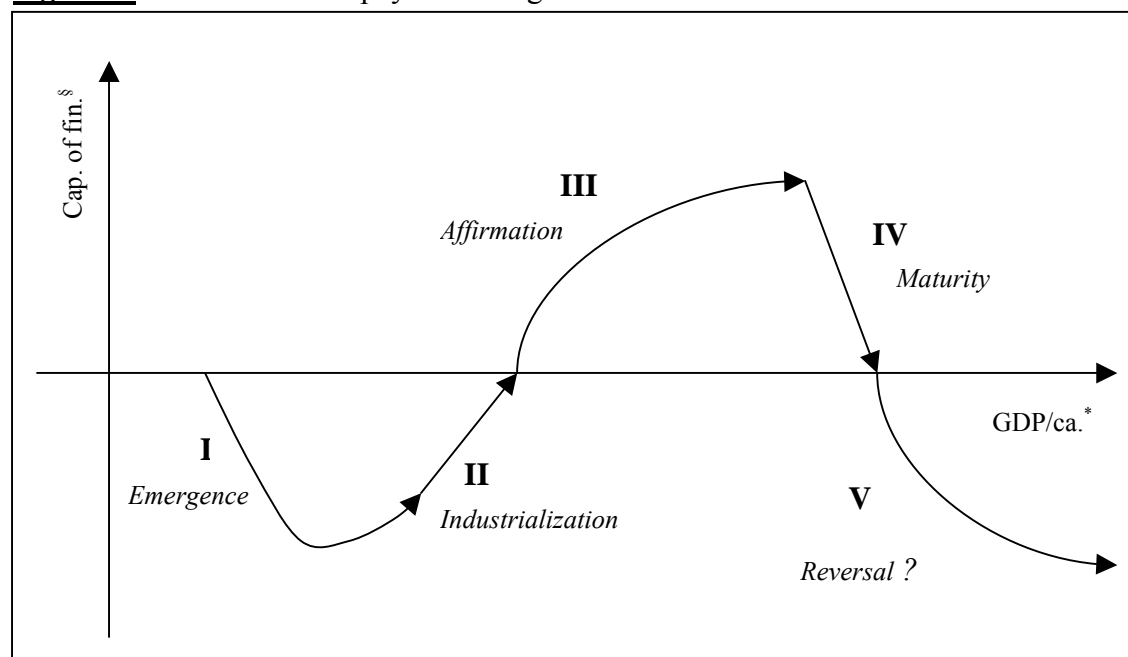
Lassudrie-Duchêne *et al* [1990] drew a further stage where the profitability of the *evolved lender's* investment abroad will fall. This is caused by the competition that exercises the evolution of the *new lender country*. The country is then brought to lower its savings and to increase its consumption, which increases the trade balance deficit. The current account deficit brings the country to lower its investment abroad. The balance of payments structure of the *new mature debtor country* is then similar to that of the *new debtor country*. If one can admit the hypothesis of a reversal of the cycle, this one will be different from the evolution of the *new country*. Differences in the level of economic development and in the nature of specializations could bring the cycle to a sinusoidal shape (*op. cit.*, p. 108).

As noticed above, the balance of payments stages hypothesis rests on the price-specie flow mechanism, which relegates the exchange rate to a simple adaptation variable. So, a country could have a surplus of the saving-investment gap, only if domestic demand is lower than the national income. The real exchange rate could however affect the relative domestic demand and so on the last hypothesis. When the RER is durably undervalued a current account deficit could appear while the country is in a lender phase. The theory is in fact limited to a national frame, which emphasizes the need for a complementary analysis. The evolution of industrial logics, exchange rates, economic policies, the international role of the currency... are so much additional factors, which can influence the evolution of the cycle.

4. A cycle of the balance of payments

To the above analysis, a cycle of the balance of payments is proposed according to the countries' stages of economic development. In the first stage of emergence (*figure 3*), the current account deficit brings countries to resort for foreign debts or to attract foreign investments (*phase I*). Capital inflows will help the country to develop comparative advantages in that industry, allowing to reduce the current account deficit (*phase II*). Domestic savings then increase and become higher than domestic investments allowing the country to develop into a *new lender* (*phase III*). The last stage (*phase IV*) describes the situation of the evolved lender country. The reversal cycle hypothesis as was described by Lassudrie-Duchêne *et al*, could be represented by the last *phase V*.

Figure 3. : The balance of payments stages



* The PPP GDP per capita is reported to the world average.

§ The capacity of financing is reported to the world price of GDP.

Some empirical studies have tried to sustain the theoretical framework; the results were however far from conclusive. Halevi [1971] has classified 81 countries according to their GDP per capita in 8 categories. Contrarily to the above four stages analysis, he adopts a cycle of 12 stages. He calculates then the distribution of frequencies for the period 1962-66. The results do not however confirm the hypothesis of an evolution of countries from a phase to another one.

The cross-section analysis is extremely restrictive because it assumes all the hypotheses quoted above. It is then necessary to admit some realism when interpreting the data. The sample should also carry over a period long enough, to distinguish the evolution of each country through the various phases.

To the phases of *figure 3* some intermediate stages were added to draw the evolution of countries through the cycle (*table 1*). It should be emphasized that the signs of *phase V* are identical to those of *phase I*.

Table 1.: The balance of payments stages

	Trade balance (<i>lato sensu</i>)	Investment income balance	Current account (<i>domestic savings – domestic investment</i>)	Capital balance
I	-	-	-	+
I-00	-	= 0	-	+
I-01	-	+	-	+
I-1	= 0	-	-	+
II	+	-	-	+
II-1	+	+	-	+

III	+	-	+	-
III-1	+	= 0	+	-
III-2	+	+	+	-
IV	-	+	+	-
V	-	-	-	+

Adopting Halevi's methodology, the distribution of the different stages of table 1 for 194 countries. The level of economic development is estimated with the GDP per capita (base 100) reported to the average of 194 countries. It is then classified in 8 categories according to the level of development, with *A* for the most developed countries ($A > 400$). The current account is deflated by the world price of GDP, which is calculated as an index with 1990 as the base year.

Table 2. : Distribution of frequencies of countries (1990-2000)

	<i>A</i> ^a	<i>B</i> ^a	<i>C</i> ^a	<i>D</i> ^a	<i>E</i> ^a	<i>F</i> ^a	<i>G</i> ^a	<i>H</i> ^a	<i>n.avail.</i>	<i>Total</i>
<i>Not defined</i>			1		6	1	4	6	1	19
I		3	6	5	26	20	15	18	1	94
<i>I-00</i>		1	1	1	1	1	3	2		10
<i>I-01</i>	1	2	2		1	3	2	2		13
II		1	3		4	2	3	1		14
<i>II-1</i>		1		1						2
III		7	3		7	4	2	1		24
<i>III-1</i>		2	2				1			5
<i>III-2</i>	1	3	3		1	1	1			10
IV					1		2			3
Total	2	20	21	7	47	32	33	30	2	194

Sources : Chelem-PIB and Chelem-BAL.

The GDP per capita and the capacity of financing are reported to the average of the period 1990-2000.

^a : The GDP per capita is reported to the average of 194 countries and expressed in base 100.

$H \in]0, 20], G \in]20, 40], F \in]40, 70], E \in]70, 150], D \in]150, 200], C \in]200, 300], B \in]300, 400], A > 400$.

In the above table *phase V* is not explicitly reported. Consequently, this stage could be observed in the first phase and its intermediate stages. The United States are in *phase I-01* with an income index upper to 400. It is too early however to accept the reversal of the cycle hypothesis for the US economy.

If the effect of economic policies is taken into account, then the above analysis cannot accept nor reject the balance of payments stages hypothesis. Nevertheless, it is interesting to note that the frequency of developing countries (*H* to *E*) that are in a phase of emergence represents almost half of the sample. The analysis remains however insufficient.

5. The different stages of the cycle

To account for the various situations of countries, two intermediate stages were added. In the first, all the balances are in equilibrium. In the second, the trade balance and the balance of investment income are in deficit while the current account is in surplus. The latter is exceptionally observed and remains of short duration. It could be explained by an important transfer or by a debt moratorium.

The theory of the balance of payments stages does not foresee important changes of the current account in the short run and should so be considered only for the long run. However, the evolution of the 189 countries of the sample over the period 1967-2000 shows a faster change for some countries.³ In order to eliminate the cyclical disturbances, the series are smoothed by mobile average over a period of five years.

The optimistic view of the theory, which presumes that each country could develop and reach a further stage, is far from being automatically confirmed. In fact, near half of the sample (93 countries), corresponds to a situation of relative immiserizing. The decline of the level of development could be associated either with an increase or a decrease of the current account deficit. In some cases, the relative immiserizing of countries comes along with an excess of national savings on domestic investments. This kind of evolution could be observed in Switzerland (*figure 4*), which could be explained by the role of the banking system in the country. Some countries are also in the same case: Palestinian Autonomy, Kiribati until 1989, Namibia, Qatar until 1982 and Angola before 1977.

Phase I is relatively long and is usually that of developing countries, such as Bhutan or India (*figure 4*). During the transition, some countries of southern Europe have had this kind of evolution. Such was the case of Spain, at the exception of the period 1995-97 when the current account became in surplus. The latter could be explained by the appreciation of the US dollar at the end of the 1990's.

The case of Italy provides a best clear cut for the transition to a further stage. During the 1980's, the country succeeded to the second stage since the trade balance became in surplus while the balance of investments income and the current account remained in deficit. The latter became however in surplus between 1993 and 2000, when the dollar has sharply appreciated. As well in Italy as in Spain, relative prices play an important role in the trade balance. In fact, as the factors of production are relatively abundant in these countries, the specialization is not characterized by high quality. Some countries such as Greece or Portugal have less succeeded their transition and have remained in a phase of emergence.

The evolution to the second stage depends on the conditions quoted above. The Cycle could indeed be reversed if the transition is not fulfilled. This was the case of Algeria since 1984 even if the transition towards the second phase was accomplished since 1979. Cuba saw its cycle being reversed since 1986, leading to an uncommon situation where the relative GDP per capita and the current account deficit have decreased. This evolution was also observed in Cameroon since 1985.

The accession to the second stage is relatively brief and lacking in some cases. As the trade balance is very important in the current account, the improvement of the former leads the latter to become very quickly in surplus.

The third stage corresponds to the situation of industrial countries, the most of the petroleum exporting countries and the new industrialized countries, at the exception of Hong-Kong. Since the late 1960's, Ireland became a new lender (*figure 4*). In this country, the three first stages of the cycle could be easily distinguished.

³ 5 countries were excluded.

Some countries evolved towards an intermediate situation (stage III-2) with an investment income balance in surplus. Beyond this stage, the country gets ready to reach a stage of maturity. Germany was in this case until the reunification. The Costs were so huge that the country has declined to the second stage with an investment income balance in deficit. The costs of reunification were also very important for the new *Länder* as the cycle reversed instantaneously. In fact until 1989, the country was in the first phase and was ready to evolve toward a further stage. The reunification has led however to a reverse of the cycle.

The other European countries of the euro zone have also been in the third stage. France became a *new lender* since the second half of the 1980's and Belgium-Luxembourg since 1984. In these countries the current account have increased substantially but the growth rates were very low. Finland and Netherlands are also in the third phase.

In the euro zone, the balance of payments of the countries had not shown the same evolution during the last decades. Moreover, the most developed countries in EMU, at the exception of Austria, are new lenders contrarily to the southern countries, which are in the first stages of the cycle. The question that arises is to know if capital flows in the euro zone will move from northern countries to southern countries such as Portugal.

If the fiscal domain will not be improved in EMU, the adjustment mechanism will take place through internal prices and will affect labour markets. This contradicts with one of the hypotheses of the optimal currency areas theory, which states that the payments disequilibrium in the union will not be permanent if factor mobility is high enough. This idea rests in fact on an optimal reallocation of labour, which supposes implicitly that workers have the same level of qualification. This argument does not take into account the international division of labour, which is linked to the structure of the balance of payments.

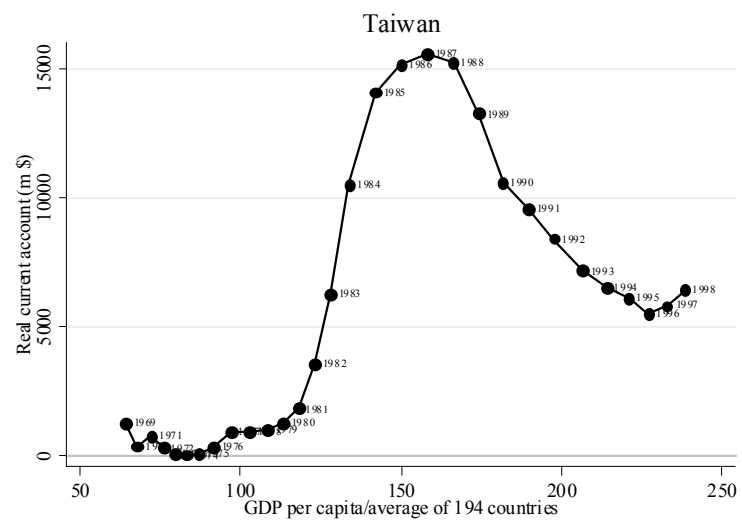
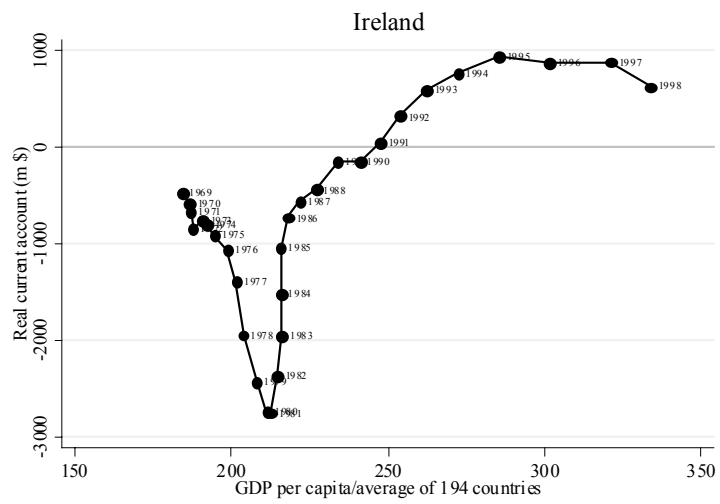
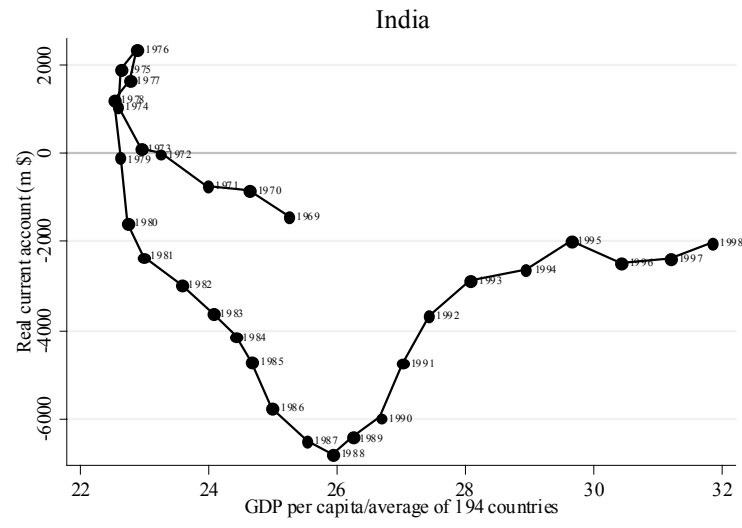
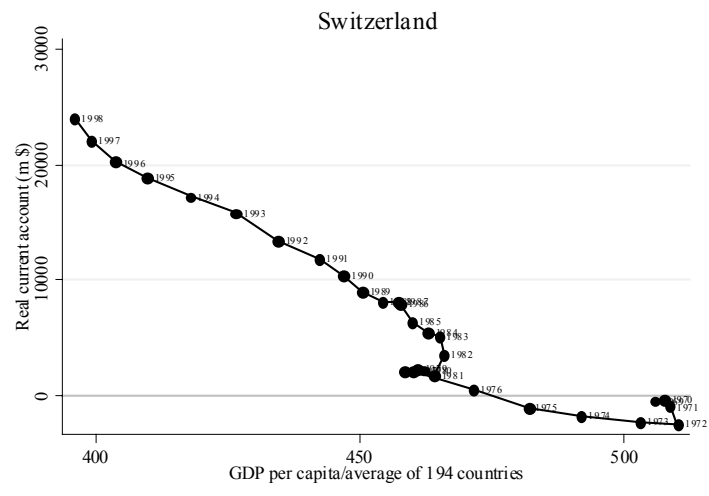
The main conclusion of balance of payments stages hypothesis is to demonstrate that current accounts are linked to the level of economic development. So, the adjustment mechanism could not be complete if countries in the currency area have not the same level of economic development.

A question arises in the light of European enlargement: Where do candidate countries stand from the euro zone? In *appendix 2*, the ten countries of Eastern Europe that will be concerned with enlargement, have large current account deficits. In the 1990's, all these countries were in the first stage as *new borrowers*, at the exception of Slovenia before 1997. The data for these countries is however very short to show any long trend in the cycle.

Taiwan has also evolved (*figure 4*) from the third stage to the intermediate *phase III-2* during the 1980's. The investments income balance has become in surplus since 1982 and the country became a net capital exporter.

Singapore has also followed a similar evolution, becoming a net exporter of capital since 1986. Even though the country is in the intermediate *phase III-2*, the economy is a net receiver of foreign direct investments. South Korea also has had important changes in the structure of the balance of payments. The country has not succeeded however to evolve toward the third stage, which was reached exceptionally for brief periods.

Figure 4. : Cycle stages

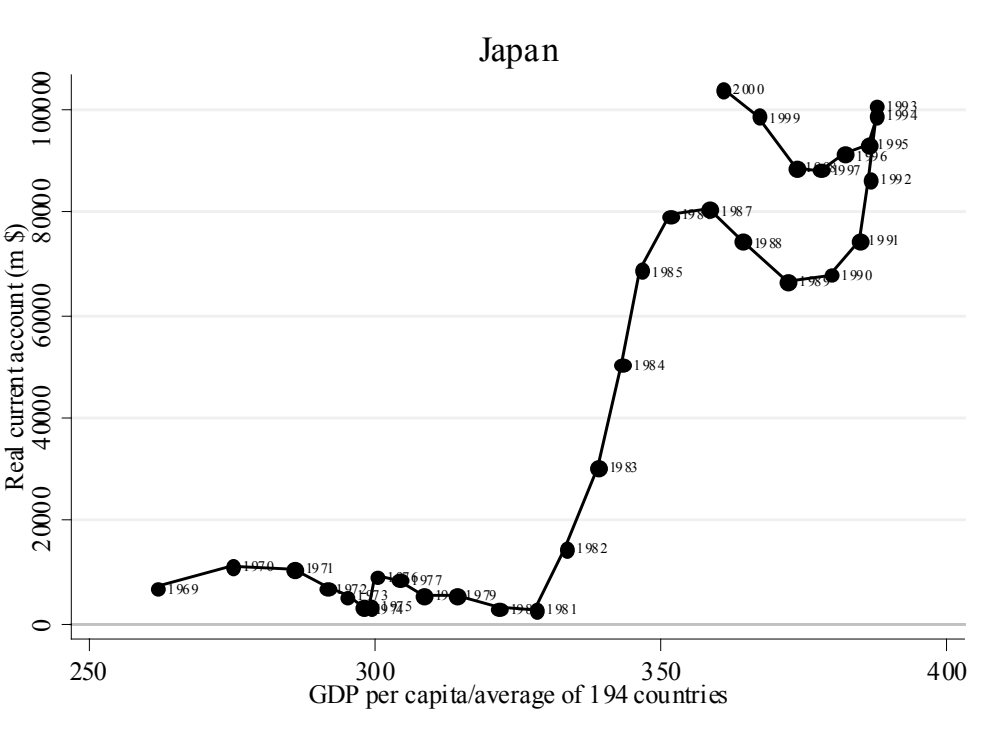


Sources : Chelem-PIB, BAL (CEPII).

In Japan, the trade balance is in surplus and the investment income balance improved and became positive since the 1980's; the country is in *phase III-2*. Japan exports a part of the excess of savings toward the rest of the world, and notably toward Asian countries. These capitals are for the most part portfolio investments rather than foreign direct investments.

The 1990's have marked a bend in the evolution of the Japanese current account. The country's growth rate is henceforth very low while it was the highest one of the OECD countries during the 1960's. The overvaluation of the Yen has become in fact unsurprisingly unbearable. However, the current account continued to improve, at the exception of the period between 1993 and 1997. The valuations of the years 1999-2000 remember the situation of Switzerland. Such evolution cannot be explained by the balance of payments stages hypothesis and entail an examination of the American balance of payments. Indeed, the two cycles are very linked, because a part of the American current account deficit is financed by the Japanese surplus. The evolution of the bilateral real exchange rate between the dollar and the yen is an important factor in the evolution of the cycle of the two countries.

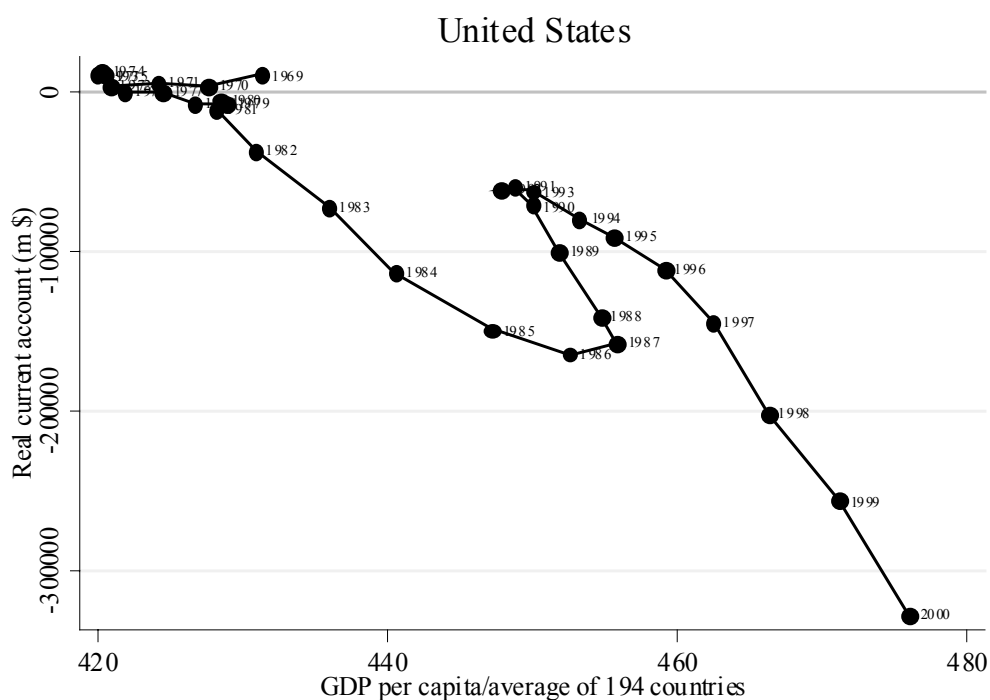
Figure 5. : The stages of the balance of payments of Japan



The years 2001, 2002 are estimated with the data of the OCDE.
 Sources : Chelem-PIB and BAL (CEPII), Perspectives économiques de l'OCDE.

The early financial transformation in Japan has placed the country to become the most credible pretender to the replacement of the dollar as an international currency. Germany was also on the road of maturity until the reunification with the *Länder* of the East. The internationalization of a currency remains however dependent on the competition of the dollar. As noted by Lassudrie-Duchêne *et al.* (*Op. cit.*, p. 117): "a country have not the power to decree or to prevent its currency to become an international currency". The dollar continues, in spite of the situation of the American current account, to enjoy from an international status.

Figure 6. : The stages of the US balance of payments



The years 2001,2002 are estimated with the data of the OCDE.
Sources : Chelem-PIB et BAL, Perspectives économiques de l'OCDE.

The United States were *a priori* in a phase of maturity in the early 1970's and have evolved according to the reversing hypothesis of *phase V*. The trade balance and the current account have become in deficit and the country recipient of long term capitals; savings became rapidly slower than investments. However, until 1997 the investment income balance has remained in surplus, in spite of the predictions of *phase V*. It becomes overdrawn only since 1998 according to the signs of *phase V*. This asks rather the United States are really in situation of a reversal of the cycle. Was *phase I-01* only an intermediate stage before *phase V* in 1998? Have the movements of the US dollar been able to modify the nature of the cycle? The answer to these questions requires an important degree of realism and calls to more caution when interpreting the different balances.

Until 1997, the United States continued to benefit from the payments of their capital invested abroad. The investments income balance represented an average of 0.5% of the GDP over the period 1980-1997. Since 1994, capital inflows have increased very rapidly. The investment income balance became as soon in deficit since 1998. These evolutions are puzzling and lead to a doubt on the reversal of the cycle hypothesis.

If the United States were in a reversal of the cycle, the international role of the dollar eases the importance of the current account deficit. In fact, the rest of the world, particularly Japan, contributes to finance a part of this deficit.

In front of the acceleration of the American current account deficit, which countries are able to allow for the financing? Japan arrives at the first position with a current account balance near 113 billion dollars in 2002, then the European Union with 74,6 billion dollars. The American deficit has amounted however for the same year to 500 billion dollars. So, The

adjustment will not be done without ease. As noticed by Bourguinat [2003], it would be useful to improve the allocation of capital movements according to the capacity of mobilization of domestic savings of each country.

6. The current account and the international division of labour

In order to test empirically the relationship between these cycles and the level of economic development we adopt a panel of 167 countries.⁴ We adopt the Probit model with random effects and consider the following equation:

$$Y_{nt}^* = X_{nt} \beta + \varepsilon_{nt} \quad (3)$$

with:

$$\begin{aligned} \varepsilon_{nt} &= u_n + \omega_{nt} \\ u_n &= X_n \psi + \eta_n \end{aligned}$$

As the dependent variable Y (countries' cycle) is discrete, this leads to use the latent variable Y_{nt}^* associated with Y_{nt} , *i.e* the probability that this variable takes the value 1 [Maddala, 1983]. X_{nt} is the GDP per capita. ε_{nt} is a white noise, which follows a normal distribution with zero mean and finite variance.

In order to estimate this probability the decision is supposed to rest on some values taken by an unobservable latent variable Y_{nt}^* .

$$\begin{aligned} Y_{nt} = 0 & \quad \text{when } Y_{nt}^* < 0 & \Rightarrow \text{phase of emergence} \\ Y_{nt} = 1 & \quad \text{when } 0 \leq Y_{nt}^* \leq a & \Rightarrow \text{phase of industrialization} \\ Y_{nt} = 2 & \quad \text{when } Y_{nt}^* > a & \Rightarrow \text{phase of affirmation and maturity} \end{aligned}$$

a is a positive threshold added to distinguish between *phase II* and the lender phases.

The results are reported in *table 3*. The first specification corresponds to the above classification of the stages. In the second, the phases of emergence and industrialisation correspond to a negative value of the latent variable. The positive threshold a distinguish then between *phases III* and *IV*.

The results indicate a positive and significant correlation between the two variables. So, when the level of economic development increases the probability that the country evolves to a further stage of the cycle is higher. Moreover, these results are robust since they are not affected by the distinction between the different phases (specifications 1 and 2). The intercept is significant and has a negative sign. This could be explained by all the other factors that could affect the cycle, such as political factors, domestic economic policies, wars... In fact, near half of the sample corresponds to a situation of relative immiserizing.

Table 3: Probit estimation: The cyclical model

	(1)	(2)
GDP per capita	0.0058 (15.18) ^{***}	0.00136 (3.65) ^{***}
Intercept	-1.628	-1.656

⁴ 27 countries were excluded because a lack of data.

	$(-20.51)^{***}$	$(-19.69)^{***}$
Log-Likelihood	-2036.2471	-1620.4883
Wald chi2(2)	230.48	13.35
Prob. > chi2	0.0000	0.0003
ρ	0.54666	0.47157
Number of observations	4936	4936

(***) coefficients are significant at the 10%(5%(1%)) level.
The statistics between parentheses are the t-statistics.

The structure of the current account is linked to the international division of labour. The most developed countries are specialised in manufactured goods that require higher skills and developing countries produce more labour intensive goods. This leads to a hierarchy in the international monetary system.

The above results imply that the internationalisation of the hegemonic country's currency (*phase IV*) could be explained by its evolution through the international division of labour. So, when the quality of specialisation improves through time the curve *BB* becomes higher (*b* increases) and could be drawn on the upper and right corner of *figure 1*. Consequently, the GDP per capita and the real exchange rate increase and the country evolve to a lender position.

New lender countries export then the excess of domestic savings to developing countries, where the quality of specialisation and factor productivity are lower. The balance of payments cycle of *figure 3* is then mainly explained by specialisation and productivities, *i.e* by the quality of labour qualification.

To test this hypothesis a new specification of *equation 3* is considered. X_{nt} is then a vector of the explaining variables *i.e* the quality of specialisation (ADAP) and the factor productivity approximated by the GDP per capita (GDP), which is also a *proxy* of the level of economic development. The panel is however restricted to 50 countries composed by developed and developing countries. The first variable accounting for the quality of specialisation (ADAP) is calculated according to the indicator developed by G. Lafay [1976]:

$$C_{ik} = \left(\frac{X_{ik} - M_{ik}}{(X_i + M_i)/2} \right) - \left(\frac{X_{ik} + M_{ik}}{X_{im} + M_{im}} \right) \left(\frac{X_{im} - M_{im}}{(X_i + M_i)/2} \right) \quad (4)$$

The term C_{ik} leads to identify the products *k*, for which the country *i* have a comparative advantage/disadvantage. It should be noted that this indicator is concerned only with manufactured goods *m*. It is then weighed by the growth rate of world demand τ for each product *k* calculated by a mobile average on a period of 6 years. It comes then:

$$ADAP = \sum C_{ik} \tau_k$$

The data is extracted from the Chelem-CIN database for exports and imports and Chelem-BAL for total trade. The world demand is approximated by that of the OECD and comes from the STAN database (*Structural Analysis*). The product composition is however different in both databases. As the number of estimated values is higher in the STAN database, we use the first one. We then exclude 14 products among the 49 goods of Chelem-CIN, in order to have a homogeneous sample.

The results reported in *table 4* indicate a negative correlation between the quality of specialisation and the cycles of the balance of payments. This contradicts with the expected sign and indicates that a country could evolve to a further stage even if the quality of its specialisation worsens. The GDP per capita have a correct sign indicating that an increase in productivities leads the country to evolve to a further stage. This confirms the relationship drawn in *figure 3* between the two variables and the above results. It should be noted however, that during the first stages of economic development specialisation do not improve necessarily, as the country have a lack for factors of production. The country should in fact have an increase in productivities and then, as its relative level of economic development increases, the specialisation improves faster.

The first specification is then tested again (3)' with a restriction on the level of GDP per capita, which should be higher than the index 100. The results indicate a positive correlation for both variables and are significant at the 1% level. The empirical test validates then the link between the structure of the balance of payments and the international division of labour. When the first stages of economic development are excluded the results improve and show that countries' indebtedness is linked to a vertical division of labour.

This conclusion challenges the optimum currency areas theory. In fact, even if labour mobility is very high between two countries, the reallocation of labour will not be optimal if the level of economic development is very different. As balance of payments are linked to the international division of labour, this would lead to unemployment and the adjustment mechanism would not be complete. Indeed, the OCA theory implicitly adopted that countries have the same level of economic development and that PPP holds [Razgallah, 2003].

Table 3: The international division of labour simulation

	(1)'	(2)'	(3)'
ADAP	-7.38 (-2.16)***	-7.08 (-2.02)**	43.60 (2.64)***
GDP	0.01 (13.23)***		0.0095 (8.52)***
Intercept	-1.41 (-10.68)***	-0.32 (-4.31)***	-2.328 (-7.98)***
Log-Likelihood	-491.77	-520.94	-334.52
Wald chi2(2)	175.99	4.08	97.96
Prob. > chi2	0.0000	0.0435	0.0000
ρ	0.6444	0.6694	0.6485
Number of observations	1140	1140	761

*(**/***) coefficients are significant at the 10%(5%(1%)) level.
The statistics between parentheses are the t-statistics.

7. Conclusions

According to the previous analysis, the international monetary system is a hierarchically based system constituted of interdependent monetary areas. Capital movements are explained essentially by the different stages of economic development, not by the savings-investment gap. Capital flows move mainly from developed to developing countries where the comparative advantages of the latter correspond to the comparative disadvantages of the former.

The detailed examination of the current balance of 189 countries confers to the theory of the balance of payments stages a considerable explaining power. The theory could improve the estimation of capital movements in equilibrium real exchange rate models.

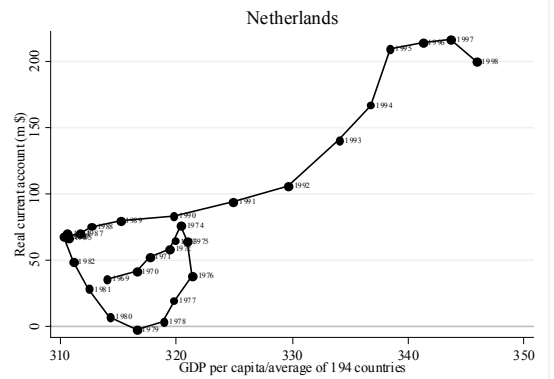
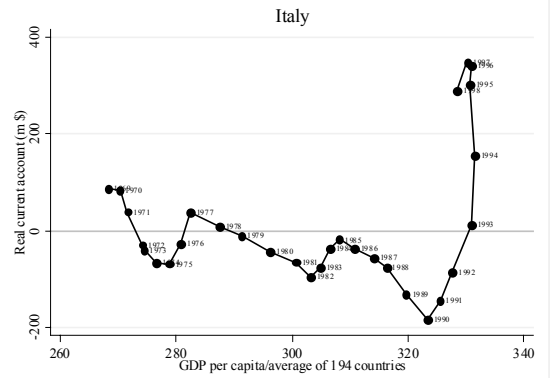
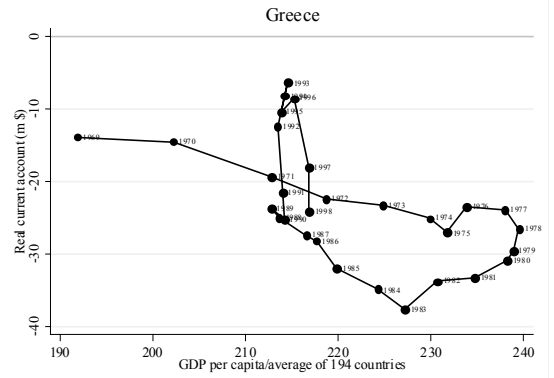
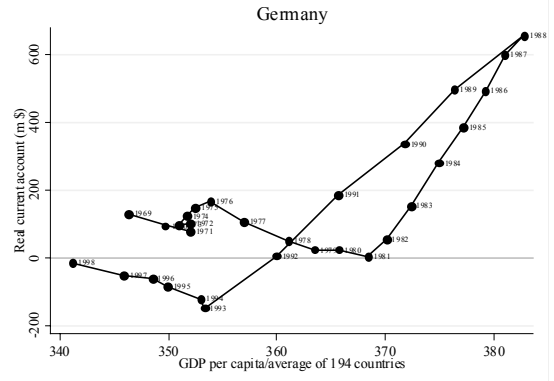
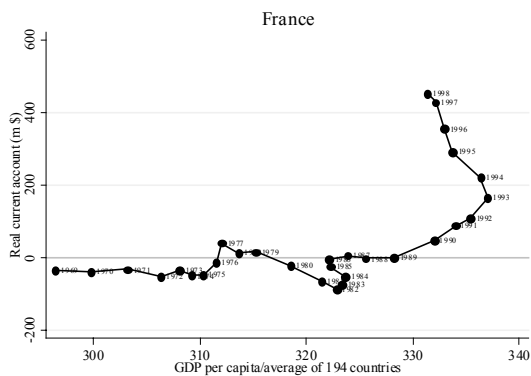
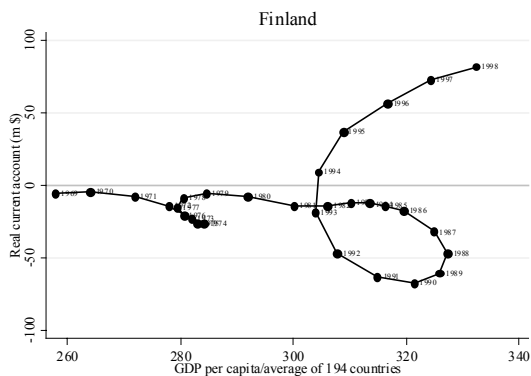
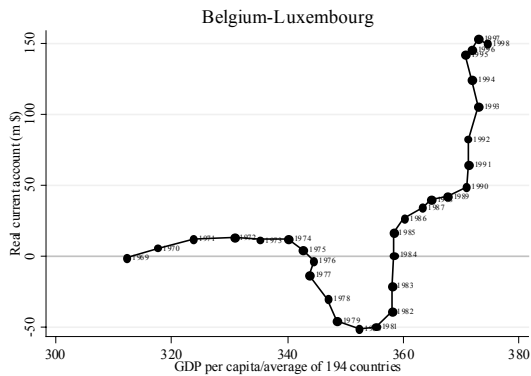
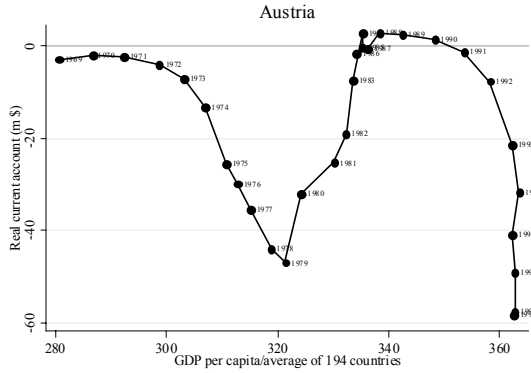
The theory of the balance of payments stages hypothesis challenges the optimum currency areas theory, which states that the payments disequilibrium in the monetary area will not be permanent. In fact, even if factor mobility is sufficiently high between two countries that have not the same level of development, the adjustment mechanism could not be complete. The current account structure reflects also the level of qualification of workers. This, imply an imperfect reallocation of factor mobility when a country faces an asymmetric shock.

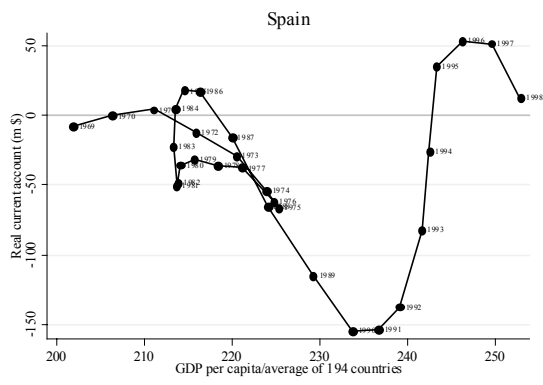
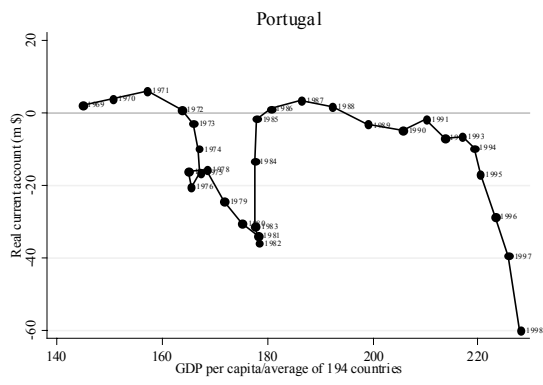
Several remarks could be made: According to this scheme, the cyclical evolution of the balance of payments implies a non-linear evolution of the real exchange rate. On the other hand, the equilibrium real exchange rate of the balance of payments is not unique and increases with the level of economic development. In the long run, the relation between capital movements and the level of development influences the evolution of the real exchange rate. This one could also follow a cyclical model. In spite of the restrictive hypotheses adopted by the theory, the evolution of the current account of some countries is widely explained by the predictions of the theory. Nevertheless, the role of economic policies remains very important in the evolution of the cycle.

References

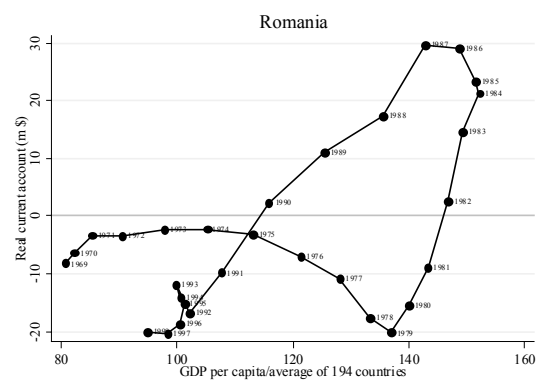
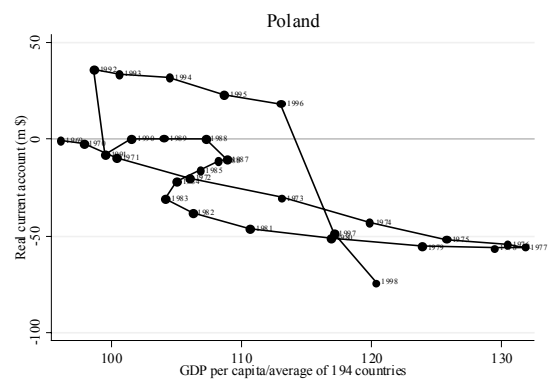
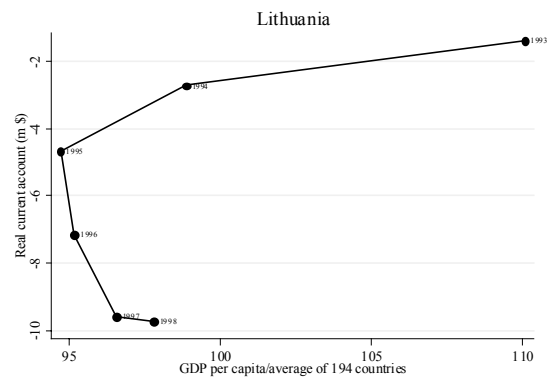
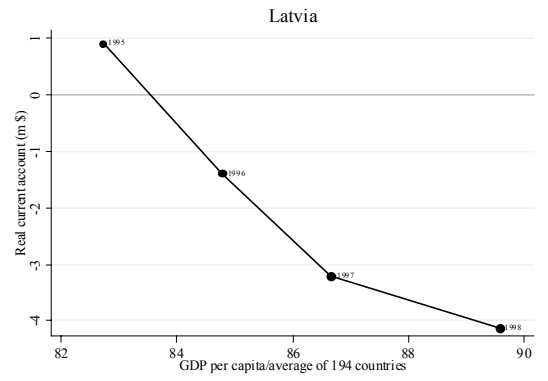
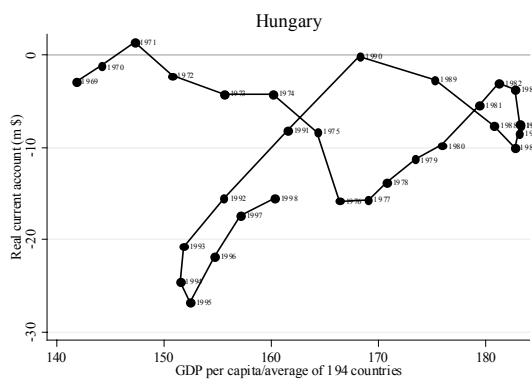
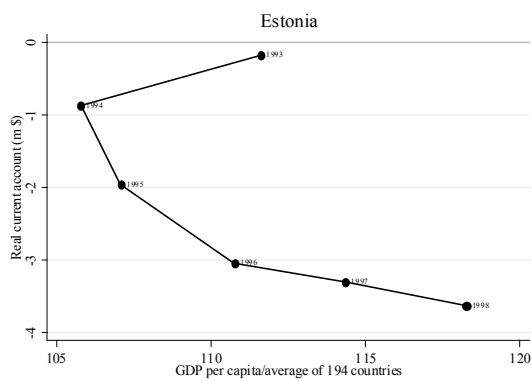
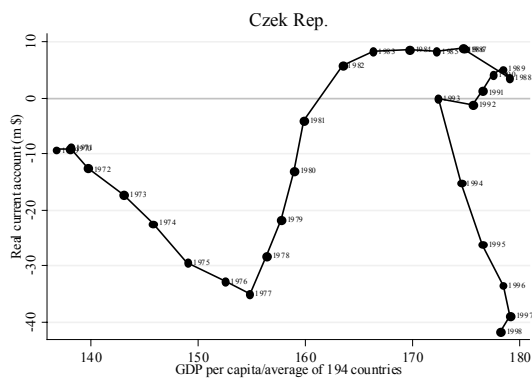
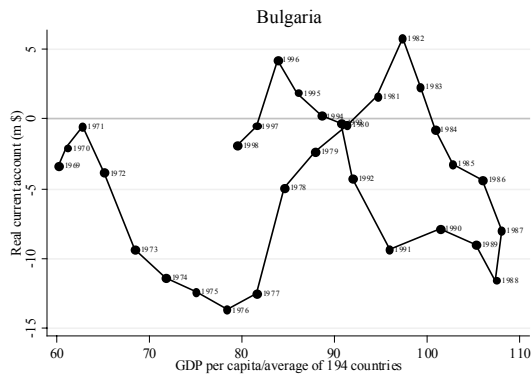
- Bhagwati Jadish N., (1958), "Immiserizing growth, a geometrical note", *Review of economics studies*, June.
- Bourguinat Henri, (2003), « Le retour des déficits jumeaux américains et le partage de l'épargne mondiale », *Revue d'Economie Politique*, 113(4), juillet-août.
- Byé Maurice, (1965), *Relations économiques internationales*, Dalloz.
- Cairnes J. E., (1874), *Some leading principles of political economy newly expounded*, London.
- Crowther W. G., (1957), *Balances and imbalances of payments*, Graduate school of Business Administration, Harvard U.P.
- El Badawi I. A., (1994), "Estimating long-run equilibrium real exchange rates", in *Estimating Equilibrium Exchange Rates*, ed, J. Williamson.
- Halevi Nadav, (1971), "An empirical test of the 'Balance of payments stages' hypothesis", *Journal of International Economics*, vol.1.
- Kindleberger Charles P., (1963), *Histoire financière de l'Europe occidentale*, Economica.
- Kojima K., (1975), "International Trade and foreign investment: substitute or complements?", *Hitotsubashi journal of economics*, June.
- Lafay Gérard, (1976), "Compétitivité, spécialisation et demande mondiale", *Economie et statistique*, n°80.
- Lafay Gérard, (1985), « Une référence pour les taux de change de moyen terme », *Economie Prospective Internationale*, n°24, 4^e Trimestre.
- Lafay Gérard, (1996), "Les origines internationales du chômage", *Revue d'Economie Politique*, n°106(6), novembre-décembre.
- Lafay Gérard, (2004), *Introduction à l'économie internationale*, Economica.
- Lassudrie-Duchêne Bernard, N. Fabry, D. H. Kim, (1990), « Investissements internationaux et cycles longs des balances des paiements », in *Investissement international et dynamique de l'économie mondiale*, ed., M. Humbert, Economica.
- MacDonald R., J. L. Stein, (1999), *Equilibrium Exchange Rates*, Kluwer Academic Publishers, London.
- Maddala G. S., (1983), *Limited Dependent and Qualitative variables in Econometrics*, Cambridge, Cambridge University Press.
- Nurkse R., (1945), "Conditions of International Monetary Equilibrium", in *The International Monetary System: Highlights from Fifty Years of Princeton's Essays on International Finance*, ed., Peter B. Kenen, Westview Press, Boulder, Colorado.
- Razgallah Brahim, (2003), "La théorie des zones monétaires optimales s'applique-t-elle aux pays en développement?", *mimeo*, Université Panthéon-Assas, (forthcoming).
- Samuelson Paul A., (1952), *L'économique*, TII, A. Colin.
- Stemitsiotis Loukas, (1992), *Taux de change de référence et système monétaire international*, Economica.
- Weiller Jean, (1946), *Problèmes d'économie internationale*, Centre National d'Information Economique, Paris : Presses universitaires de France.
- Williamson John, (1994), *Estimating equilibrium exchange rates*, Institute for International Economics.

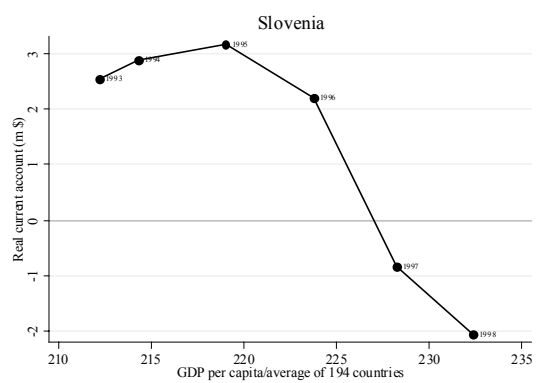
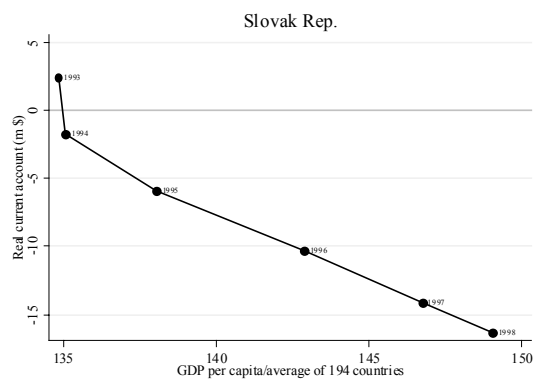
Appendix 1: Cycles in the Euro zone





Appendix 2: Eastern Europe's cycles





Appendix 3: Some other countries

