

# From Currency Unions to a World Currency: A Possibility?

Daive Furceri\*

University of Palermo and University of Illinois at Chicago

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**Abstract** The purpose of this paper is to analyze the main macroeconomic determinants of benefits and costs by undertaking processes of monetary integration and to investigate the possibility that currency unions could lead to the creation of a global currency in the future. In particular, we will consider two main determinants of costs and benefits predicted by the theory of Optimum Currency Areas: (i) the business-cycle correlation between the candidate's economy and that of the currency zone as a whole, and (ii) the candidate economy's inflation gain. Using this methodology, the results of the paper provide empirical evidence of the existence of several optimal currency areas in the world. Moreover, the creation of a world common currency area is not as unrealistic as it might seem at first sight.

*Keywords:* Currency unions, world currency

*JEL Classification:* E32, F33, F41

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## 1. Introduction

Despite the globalization process and the increasing integration of the world economy, the current international monetary system is characterized by a roughly one-to-one correspondence between the number of the independent countries and the number of currencies (184 members of the IMF are represented by more than 150 currencies). This fragmentation of the international monetary system has been judged not optimal by many distinguished scholars.<sup>1</sup> However, as pointed out by Alesina, Barro and Tenreyro (2002) the recent history, especially the last decade, has been characterized by several examples of monetary integration. In 1999, twelve countries in Europe have adopted a single currency, the Euro, and seventeen *new* European Union (EU) countries will join the European Monetary Union (EMU) as soon as they would meet the Maastricht criteria; Sweden, Denmark and UK have opted out, but they might adopt the Euro in the future. Dollarization has been implemented in Ecuador, El Salvador and Guatemala recognized dollar as legal currency, and several other countries in South and Central America are considering the possibility to start the dollarization process. Six oil-producing countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates) might form a currency union in the near future. Several African countries are considering the idea to adopt a common currency (the Dollar) or to create an independent common currency area, and the CFA (*Communauté française d'Afrique*) zone has already a common currency the CFA franc that has been tied to the French franc and now to the Euro. In Asia, Japan is exploring what kind of

monetary arrangement might make sense, and joint initiatives are underway with Korea. Moreover, the three areas holding the major currencies in the world (the U.S., the EMU and Japan) are not too different in terms of economic features. Thus, from an economic point of view, a future scenario where for example the Federal Reserve (FRB), the European Central Bank (ECB) and the Bank of Japan (BOJ) would conduct a common monetary policy might be not less favorable than an enlarged European Monetary Union or a wide dollarization process.

The purpose of this paper is to analyze some of the main macroeconomic benefits and costs by undertaking these processes of monetary integration, and investigate the possibility that currency unions could lead to the creation of a global currency in the future. In line with many other research works in this topic,<sup>2</sup> we will consider two main costs and benefits predicted by the theory of Optimum Currency Areas:<sup>3</sup> (i) the business-cycle correlation between the candidate's economy and that of the currency zone as a whole, and (ii) the candidate economy's inflation gain. In particular, the theory predicts that the more synchronized the business cycles among the member countries, the lower the probability of asymmetric shocks, and thus the less painful the loss of independent monetary policy and of a flexible exchange rate.<sup>4</sup> On the other hand, the greater the inflationary differentials, the greater the potential benefits from adopting a common currency, or to peg to a more stable currency. The rest of the paper is organized as follows. In the next section, we present the empirical methodology and the data used to evaluate these costs and benefits. Section 3 discusses the results obtained and, finally, section 4 contains the main conclusions.

## 2. Data and Empirical Methodology

Annual data on the GDP deflator and real GDP per capita are retrieved from the *IMF World Economic Outlook (2006)*. They have been used to estimate various cost and benefit measures for 180 countries in the World: 29 advanced economies, 49 African countries, 17 Central and East European countries, 13 Middle-East countries, 13 states belonging to the Commonwealth and Independent States and Mongolia, 26 Developing Asian countries and 33 nations located in the Western Hemisphere.

The data series are available from 1993 to 2005 for all these economies, with the exceptions of some of the *new* countries, such as Bosnia-Herzegovina and Serbia-Montenegro, for which data series are available respectively from 1995 and from 1998.

Benefits of joining a common currency area are measured by inflation comparisons between the client and the anchor country. Inflation data are simply obtained by the growth rate of the GDP deflator.

The costs of joining or creating a common currency area are measured in terms of business cycle synchronization between the client and the anchor country. Business cycle measures are obtained by detrending the series of real GDP per capita. In particular, three different methods have been used to detrend the output series and obtain a measure of the cyclical output component.

Letting  $y_{i,t} = \ln(Y_{i,t})$ , the first measure is simple differencing (growth rate of the real GDP per capita):

$$c_{i,t} = y_{i,t} - y_{i,t-1} \quad (1)$$

The second and the third method use the Hodrick-Prescott (HP) filter, proposed by Hodrick and Prescott (1980). The filter decomposes the series to a cyclical ( $c_{i,t}$ ) and a trend ( $g_{i,t}$ ) component, by minimizing with respect to  $g_{i,t}$ , for  $\lambda > 0$  the following quantity:

$$\sum_{t=1}^T (y_{i,t} - g_{i,t})^2 + \lambda \sum_{t=2}^{T-1} (g_{i,t+1} - g_{i,t-1})^2 \quad (2)$$

The second method consists of using the value recommended by Hodrick and Prescott for annual data for the smoothness parameter ( $\lambda$ ) equal to 100.

The third method consists to consider the smoothness parameter ( $\lambda$ ) equal to 6.25. In this way, as pointed out by Ravn and Uhlig (2002), the Hodrick-Prescott filter produces cyclical components very close to those obtained by the Band-Pass filter proposed by Baxter and King (1995). While minor differences among the results obtained by the three filters are not difficult to detect (for example, differencing generally produces the most volatile series, while the HP filter with  $\lambda$  equal to 6.25 the smoothest), the main characteristics are remarkably similar. Finally, business cycle synchronization is measured by the correlation of the cyclical components between the anchor and the client country.

### 3. Empirical Results

In this section we investigate the benefits and the costs of joining (or creating) a common currency area. In principle, currency area can take two forms. First, a country can adopt another country's currency (*dollarization*).<sup>5</sup>

Second a group of countries create a common currency area (a *new* currency that is common to the group).<sup>6</sup> We will investigate both types of monetary arrangements. In particular, for each country will analyze the associated benefits and costs to form a common currency with their neighbor countries, and to peg their currency to the Euro, the Dollar and the Yen. Moreover, we analyze the possibility of a global currency,<sup>7</sup> in terms of business cycles synchronization and inflation gains between macro-areas.

#### 3.1 Europe

In 1999, twelve European Union members (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain), formed the EMU.<sup>8</sup> Other three *old* EU members opted out and probably will join the EMU in the future. On 1 May 2004 the European Union (EU) welcomed ten new members: the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia. In addition, two other

countries, Bulgaria and Romania, joined the EU on January 2007, and other three countries are at various stages of candidacy for membership in the EU: Croatia, Turkey and the Former Yugoslav Republic of Macedonia. It is almost certain that this integration process will lead the accession countries to join the European Monetary Union (EMU) in the near future. As it has been underlined during the accession negotiations, which were held in Copenhagen in December 2002, once these countries will have achieved economic and budgetary results in line with the Maastricht Treaty, they will join the single currency. In fact, none of the countries asked for dispensation and no 'out' options were granted. This means that the *new* (and, eventually, the *prospective*) EU countries should be considered candidates for the Euro once they meet the convergence criteria. The main question, therefore, is whether these economies should expect to obtain net benefits from EMU membership.

In order to answer to this question, we analyze business cycle synchronization and inflation differentials between the European countries and the Euro as a whole, and US and Japan.

The results in Table 1 point out several indications. First, the EMU countries are not surprisingly well synchronized.<sup>9</sup> Germany is the country with the highest business cycle synchronization with the EMU.<sup>10</sup> However, other EU countries such as Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Sweden and United Kingdom, have cycles well aligned with EMU cycle. Moreover, also for other European countries (such as Croatia, Macedonia, and Switzerland) it would not be costly to adopt the Euro.

For the rest of the countries analyzed, the business cycles correlations with the U.S. and Japan are quite low. An exception, however, is made by Iceland that shows a business cycle well aligned with the U.S. cycle.<sup>11</sup>

Analyzing the benefits, in terms of inflation gain, it is possible to see that while the inflation differentials are negligible for most of the EMU countries, the Central and Eastern European countries and EU accession countries have potential benefits in terms of inflation reduction.

### **3.2 Africa**

There are (and probably there will be in the near future) several monetary arrangements in Africa. For example, six Western African countries (Gambia, Ghana, Guinea, Liberia, Nigeria and Sierra Leone) are considering to adopt a common currency, eleven members<sup>12</sup> of the South African Development Community (SADC) are considering to anchor their currencies to the U.S. dollar or to the South African rand, and the CFA zone represents already a common currency area.<sup>13</sup>

In Table2, we present the stabilization cost for each of the African countries for the period 1993-2005, respectively to join the CFA, to form a wide African currency area, to adopt the U.S. dollar, the Euro or the Yen. Although the average business cycle correlation is not significantly high in any of the cases considered, it is possible to see that for several countries (such as Algeria, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Republic of Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Malawi, Mali, Niger, Nigeria and Senegal) it might not be costly to be part of an African common currency. On the converse, it does seem

generally costly for the members of the CFA zone to have a common currency. Finally, there are only few cases in which the cost of adopting a foreign currency is not high (Gambia, and Swaziland the U.S. dollar, Cape Verde, Gambia, Swaziland and Zambia the Euro, Lesotho and South Africa the Yen).<sup>14</sup>

The benefits of a currency union are mainly imputable to the reduction of inflation. Thus, the larger is the ex-ante inflation bias, the larger will be the benefits to adopt a common currency. Analyzing the table it emerges that, since the inflation differentials are the same for most African countries, the inflation rates are very similar. This, together with the business cycle synchronization results, implies that some African countries (those cited before for example) seem to be already part of a hypothetical African common currency, where business cycles are aligned and inflation preferences are almost the same.

### 3.3 Middle-East

In the last decade there have been attempts toward a creation of a common currency in the Middle-East. In particular, six-oil producing countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates) are considering the possibility to adopt a common currency by 2010.

Analyzing Table 3, it is possible to see that the cost to adopt a Middle-East common currency, in terms of business cycle synchronization, is negligible for most of the countries. In fact, business cycle synchronization is remarkable high not only for those countries willing to adopt a common currency by 2010, but also for many other countries. The only countries that show a remarkable cost are Egypt, Jordan and Lebanon. Moreover, in terms of stabilization cost, for none of these countries would be convenient, to *dollarize*.<sup>15</sup>

On the benefits side, it is possible to see that the inflation rate is almost the same for all the Middle-East countries, except Iran, Libya and the Republic of Yemen, which have very high inflation rates. This result, together with the costs analyzed before, implies that several Middle-East countries (Bahrain, Kuwait, Libya, Omar, Qatar, Saudi Arabia, Syrian Arab Republic and United Arab Emirates) could to be already part of a hypothetical Middle-East common currency.

### 3.4 CISM

Although there have not been any attempts toward processes of monetary integration in this area, we thought that it could be interesting to analyze the desirability of a common currency for those countries that were part of the Soviet Union before the collapse and that have not been *polarized* (yet) by the European Union. Moreover, several economic initiatives have this area as target. Looking at Table 4, it is possible to observe almost perfect business cycle synchronization for the period 1993-2005 in this area. On the converse, the business cycle for each of these countries is weakly correlated with those of the EMU, the U.S. and Japan.<sup>16</sup> On the benefits side, it is possible to see that these countries have similar inflation rates.<sup>17</sup> Nevertheless, the countries that would benefit more from the creation of the Commonwealth currency union or from the dollarization process would be Belarus, Uzbekistan, Tajikistan and Russia.

### 3.5 Western Hemisphere

Enthusiasm for dollarization and monetary integration has spread fast in this geographic area during the last decade. In particular, dollarization has been implemented in Ecuador and Panama, El Salvador and Guatemala recognized dollar as legal currency, and several other countries in South and Central America are considering seriously the possibility to start the dollarization process. Moreover, the Eastern Caribbean Currency Area (ECCA) represents the first form of currency union in America.<sup>18</sup>

Starting with the analysis of the potential costs (Table 5), it is possible to see that there are some countries with cycles well synchronized with the U.S. cycle, such as Bahamas, Barbados, Dominica, Ecuador (already dollarized), Grenada, St. Lucia and Uruguay. Nevertheless, the average business cycle synchronization is quite low, and is actually the same of that obtained considering the EMU area as the anchor. This, perhaps, is due to the scarce synchronization of many South American countries. In fact, most of them show a cycle negatively correlated with the U.S. cycle. Moreover, two particular cases deserve particular attention. First, surprising and in contrast with other works,<sup>19</sup> Canada does not show a particularly high business cycle synchronization. Second, the recent experience of the dollarized countries (Ecuador, Panama, El Salvador and Guatemala) suggests that their choice has not been too costly in terms of stabilization. In particular, comparing our results with those obtained by Karras (2002), it emerges that Guatemala and Panama have remarkably increased their business cycle synchronization with the U.S. cycle.<sup>20</sup>

On the benefits side, it is possible to observe that the greater inflation reduction would occur for the South American countries. Not, surprisingly in fact, these countries have been historically characterized by high inflation and in some periods by hyperinflation. On the converse, some countries, such as Antigua and Barbuda, Belize, Canada, Dominica and St. Lucia would not benefit from dollarization (in terms of inflation bias). Same conclusions are obtained analyzing the inflation bias compared with respect to the Euro and the Yen.

### 3.6 Asia and Oceania

To conclude our currency union's investigation, we analyze the macroeconomic benefits and costs of a currency union in Asia and Oceania, considering as possible anchor currency the Yen, the U.S. dollar and the Euro.

Looking at Table 6, it is possible to see that most of the countries have not cycles well aligned with Japan, the Euro area or the U.S. However, there is some exception. For example, there is a high synchronization between India, Indonesia, Malaysia, Philippines and Japan, and a high cyclical correlation between Australia, Sri Lanka, Kiribati and the U.S.<sup>21</sup>

On the benefits side, the results point out that for all the countries would be beneficial to anchor their currencies to the Yen. This result, in fact is due to the very low inflation rate in Japan. However, also an Asia-Oceania currency union in which the inflation preferences follow those of the larger economic countries such as Japan and Australia would provide reduction of the inflation bias for most of its members.

### 3.7 World Currency

The empirical results analyzed in the previous sections of this paragraph have shown that there are several areas, such as Europe, the Middle-East, Africa and the Commonwealth of Independent States and Mongolia, in which the creation of a common currency union would be beneficial, and where business cycles are well aligned and inflation preferences almost the same. Moreover, for many Central and South American countries could be advantageous to dollarize as for many Asian countries to adopt the Yen as legal currency. The further question is if the all these area considered together could form a global multi-currency monetary union with a fixed exchange rate and a common monetary policy.

In Table 7, we present the results in terms of stabilization costs. The results show that during the period 1993-2005 the business cycle synchronization is quite high for several areas such as Africa, the CISM, the Western Hemisphere, the EMU and Europe in general, and it remarkably increased in the last six years. In fact, the average busyness cycle synchronization in the period 1999-2005 is 0.53 (much higher than the average correlation for the overall period 1993-2005), and excluding Asia and Oceania, it is extremely and surprisingly high: 0.71.<sup>22</sup>

Repeating the same comparison for the inflation rates, we can see that the inflation rates are remarkably decreased for most of the countries, especially for those characterized by historical hyperinflation. Moreover, the patterns of the average and standard deviation of the inflation rates suggest that countries are becoming much more similar over time.

## 4. Conclusions

Despite the globalization process and the increasing integration of the world economy, the current international monetary system is characterized by a roughly one-to-one correspondence between the number of the independent countries and the number of currencies. However, at the same time the recent history has been characterized by several examples of monetary integration such as the creation of the EMU, the case of dollarization in South America, and a number of attempts toward a common currency in Africa and in the Middle East.

Analyzing two main macroeconomic costs and benefits predicted by the theory of Optimum Currency Areas (the business-cycle correlation between the candidate's economy and that of the currency zone as a whole, and the candidate economy's inflationary bias) the results of the paper provide empirical evidence of the existence of several optimal currency areas in the world. Moreover, the creation of a world common currency area is not as unrealistic as it might seem at first sight.

In particular, the empirical results analyzed in the previous sections have shown that there are several areas, such as Europe, the Middle-East, Africa, the Commonwealth of Independent States and Mongolia, in which the creation of a common currency union would be beneficial, and where business cycles are well aligned and inflation preferences are almost the same. Moreover,

for many Central and South American countries could be advantageous to dollarize as for many Asian countries to adopt the Yen as legal currency.

At the same time, all these macro area (Africa, EMU, the rest of the European countries, Asia and Oceania, the North, Central and South America, the Middle East) are becoming more synchronized over time, and inflation patterns are rapidly converging toward lower levels. Moreover, the fact that the largest increase in synchronization has occurred for the most influential and largest economic areas (such as the U.S., the European Union, and the Middle-East) is certainly an ulterior favorable element that would make easier the implementation of the world common currency area.

As usual, however, the above conclusions should be qualified for at least two reasons. First, the formation of a monetary union by itself may enhance the structural similarities of the economies involved and raise some of the low or negative cyclical correlations estimated here. This is the argument made by Frankel and Rose (1998) about the “endogeneity” of optimum currency area criteria (but see also Krugman, 1992).

## Endnotes

- \* Department of Economics, University of Palermo. Email: [furceri@economia.unipa.it](mailto:furceri@economia.unipa.it). I would like to thank Alicia Adsera, Georgios Karras, Lawrence Officer, Robert Mundell and Paul J. Pieper for the useful comments. I, alone, am responsible for any errors.
- 1. As Mundell (2005) wrote: “If some spaceship captain came down from outer space and looked at the way international monetary relations are conducted, I am sure she would be very surprised...and wonder why more than one currency was needed to conduct international trade and payments in a world that aspired to a high degree of free trade”.
- 2. See for example, Alesina, Barro and Tenreyro (2002), Alesina and Barro (2002), Tenreyro and Barro (2004), Furceri and Karras (2006a), (2006b).
- 3. The theory was first developed by Mundell (1961) and extended by the contributions of McKinnon (1963) and Kenen (1969).
- 4. Moreover, in the case of high business-cycle correlation, it becomes more plausible to expect a common central bank to respond to aggregate shocks and thus to implement these interventions with greater ease.
- 5. In this case, the client country is giving up its monetary independence, and monetary policy is completely conducted by the anchor’s central bank.
- 6. Under this monetary arrangement, monetary policy is conducted by a common central bank (incorporating the preferences of all its members), the members of the common currency share the seignorage and the exchange rate might be free to float relative to other countries.



7. The case of a multi-currency monetary union: a fixed exchange rate with a common monetary policy.
8. Greece joined the EMU in 2001.
9. It is possible to argue that this result is mainly driven by the home bias, due to the fact that these countries are already part of the EMU. However, if we repeat the business cycle computations considering as “anchor” for each EMU member state the rest of the EMU countries, the results are very similar. In particular, on average, the home bias contributes to a 0.05 in synchronization.
10. The same result is obtained if we control for the home bias effect.
11. Similar results are obtained using the HP filter with a smoothness parameter of 100, and Differencing. For example, the average business cycle synchronization with the EMU is 0.44 with HP (100) and 0.41 with Differencing.
12. Botswana, Lesotho Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zimbabwe. The other three members of the SADC (Angola, Democratic Republic of Congo, and Seychelles) are not considering to join the monetary union.
13. It includes: Benin, Burkina Faso, Guinea-Bissau, Ivory Coast, Mali, Niger, Senegal and Togo (having as regional central bank the BCEAO), and Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon and Republic of Congo( having as regional central bank the BEAC).
14. Similar results are obtained using the HP filter with a smoothness parameter of 100, and Differencing. For example, the average business cycle synchronization with Africa is 0.20 with HP (100) and 0.39 with Differencing. All the correlation results are available upon request to the author.
15. Same conclusions are obtained using the HP filter with a smoothness parameter of 100, and Differencing. For example, the average business cycle synchronization with the Middle-East is 0.43 with HP (100) and 0.49 with Differencing.
16. Similar results are obtained using the HP filter with a smoothness parameter of 100, and Differencing. For example, the average business cycle synchronization with the Commonwealth as a whole is 0.90 with HP (100) and 0.91 with Differencing.
17. To the purpose of this analysis we considered the period 1998-2003, since the years immediately after the collapse of the Soviet Union are characterized by outlier high values of inflation for these countries.
18. This includes: Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines. However, although these countries have a common central bank, their currency (the Caribbean dollar) has been anchored to the U.S. dollar since 1976.

19. For example, Karras (2002) find that over the period 1950-1990, Canada is the country with the highest business cycle correlation with the U.S. Then, our results imply that during the last decade this synchronization has decreased.
20. Same conclusions of those reported in this section are obtained using the HP filter with a smoothness parameter of 100, and Differencing. For example, the average business cycle synchronization with the U.S. is 0.23 with HP (100) and Differencing.
21. Same conclusions of those reported in this section are obtained using the HP filter with a smoothness parameter of 100, and Differencing. For example, the average business cycle synchronization with Japan is 0.16 with HP (100) and 0.21 with Differencing.
22. The average business cycle correlation for these areas is 0.71. Same conclusions of those reported in this section are obtained using the HP filter with a smoothness parameter of 100, and Differencing. For example, the average business cycle synchronization with the World is 0.26 with HP (100) and 0.56 with Differencing during the period 1993-2005.

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Table1..Europe

Country	Cost(synchronization,HP6.25)			Benfits(Infaltion differentials)		
	€	\$	¥	€	\$	¥
Albania	0.48	0.14	0.46	15.13	16.02	18.66
Austria*	0.90	0.68	-0.01	-1.12	-0.23	2.41
Belgium*	0.89	0.55	0.52	-0.95	-0.06	2.58
Bosnia and Herzegovina	0.01	0.13	0.37	0.67	1.56	4.21
Bulgaria**	-0.18	-0.28	-0.06	100.40	101.29	103.93
Croatia	0.52	0.19	0.47	122.40	123.30	125.94
Cyprus**	0.66	0.20	0.12	0.41	1.30	3.94
Czech Republic**	0.21	-0.21	0.79	4.19	5.08	7.72
Denmark**	0.48	0.40	0.17	-0.94	-0.05	2.59
Estonia**	0.56	0.29	0.21	15.88	16.77	19.42
Finland*	0.68	0.79	0.44	-1.05	-0.16	2.48
France*	0.86	0.51	0.19	-1.29	-0.40	2.24
Germany*	0.92	0.55	0.49	-1.53	-0.64	2.00
Greece*	0.66	0.21	0.51	3.23	4.12	6.77
Hungary**	0.54	0.40	-0.34	10.50	11.39	14.03
Iceland	0.48	0.77	0.38	0.64	1.53	4.18
Ireland*	0.80	0.51	0.60	0.95	1.84	4.48
Italy*	0.69	0.28	0.08	0.27	1.16	3.80
Latvia**	0.52	0.17	0.12	11.30	12.19	14.83
Lithuania**	0.56	0.24	0.30	32.14	33.03	35.67
Luxembourg*	0.70	0.49	-0.16	-0.08	0.81	3.45
Macedonia, FYR	0.55	0.31	0.36	46.41	47.30	49.94
Malta**	0.59	0.36	0.13	0.13	1.02	3.66
Netherlands*	0.88	0.82	0.13	-0.48	0.41	3.05
Norway	-0.50	-0.28	-0.39	0.69	1.58	4.22
Poland**	-0.18	0.32	0.08	10.18	11.07	13.71
Portugal*	0.82	0.67	0.21	1.13	2.02	4.66
Romania**	0.21	-0.07	0.57	62.37	63.26	65.91
Serbia and Montenegro	-0.32	0.33	-0.18	40.86	41.75	44.40
Slovak Republic**	0.28	0.11	0.40	5.15	6.05	8.69
Slovenia*	0.91	0.74	0.32	8.13	9.02	11.66
Spain*	0.91	0.67	0.03	0.94	1.83	4.47
Sweden**	0.82	0.69	0.31	-1.02	-0.13	2.51
Switzerland	0.86	0.54	0.30	-1.97	-1.07	1.57
Turkey	-0.03	0.24	0.41	53.84	54.73	57.37
United Kingdom**	0.51	0.32	0.49	-0.33	0.56	3.20
Average	0.51	0.36	0.24	14.92	15.81	18.46

Note:\* EMU countries; \*\* EU Countries;

Table2.Africa

Country	Cost(synchronization,HP6.25)					Benfits(Infaltion differentials)				
	CFA	Africa	\$	€	¥	CFA	Africa	\$	€	¥
Algeria	0.03	0.60	-0.04	-0.25	-0.74	3.83	-18.76	10.39	9.50	13.04
Angola	0.07	0.27	0.21	-0.03	-0.72	798.33	#####	#####	804.01	807.54
Benin*	0.01	0.45	-0.13	-0.06	-0.27	-1.89	-24.48	4.68	3.78	7.32
Botswana***	-0.09	0.10	0.53	0.50	-0.11	-0.69	-23.27	5.88	4.99	8.53
Burkina Faso*	0.10	0.52	0.06	0.08	0.00	-4.84	-27.42	1.73	0.84	4.37
Burundi	-0.22	-0.17	-0.45	-0.52	-0.29	0.42	-22.16	6.99	6.10	9.63
Cameroon*	0.13	0.54	0.32	0.21	-0.33	-4.83	-27.41	1.74	0.85	4.38
Cape Verde	0.18	0.04	0.36	0.70	0.44	-4.36	-26.95	2.20	1.31	4.85
Central African Republic*	0.21	0.58	0.32	0.35	-0.29	-3.92	-26.50	2.65	1.76	5.29
Chad*	-0.05	0.54	0.07	-0.18	-0.30	-0.03	-22.61	6.54	5.65	9.18
Comoros	0.17	0.61	0.11	0.03	-0.20	-4.00	-26.59	2.56	1.67	5.21
Congo, Democratic Republic of	0.04	0.40	0.38	-0.22	-0.48	240.17	#####	#####	245.85	249.38
Congo, Republic of*	0.28	0.76	-0.40	-0.44	-0.46	0.61	-21.98	7.17	6.28	9.82
Côte d'Ivoire*	0.29	0.68	0.28	0.38	0.02	-2.11	-24.70	4.46	3.57	7.10
Djibouti	-0.09	0.04	0.09	0.16	-0.58	-5.50	-28.09	1.07	0.17	3.71
Equatorial Guinea*	0.60	0.98	0.11	0.09	-0.34	4.62	-17.97	11.19	10.30	13.83
Eritrea	0.25	0.35	-0.11	-0.45	-0.33	3.12	-19.46	9.69	8.80	12.33
Ethiopia	0.36	-0.05	-0.38	0.13	0.33	-2.93	-25.52	3.64	2.75	6.28
Gabon*	0.26	0.80	-0.22	-0.35	-0.42	-1.21	-23.79	5.36	4.47	8.00
Gambia, The**	0.13	0.23	0.59	0.69	-0.08	-0.33	-22.91	6.24	5.35	8.88
Ghana**	-0.17	0.23	0.49	0.16	-0.56	16.90	-5.68	23.47	22.58	26.11
Guinea**	0.02	0.24	-0.21	-0.05	-0.38	-2.25	-24.83	4.32	3.43	6.96
Guinea-Bissau*	0.16	0.17	-0.25	0.02	0.44	0.62	-21.96	7.19	6.30	9.83
Kenya	0.27	0.08	0.20	0.61	0.45	2.73	-19.86	9.29	8.40	11.94
Lesotho***	0.50	0.11	-0.17	0.01	0.76	-0.45	-23.03	6.12	5.23	8.76
Madagascar	-0.05	0.30	0.26	0.19	-0.21	7.24	-15.35	13.80	12.91	16.45
Malawi***	0.16	0.57	0.42	0.01	-0.32	20.15	-2.44	26.71	25.82	29.36
Mali*	0.22	0.69	0.01	-0.09	-0.19	-2.57	-25.15	4.00	3.11	6.64
Mauritania	-0.44	-0.41	-0.51	-0.16	0.03	-2.05	-24.63	4.52	3.63	7.16
Mauritius***	0.15	0.27	-0.39	-0.13	-0.28	-3.03	-25.62	3.53	2.64	6.18
Morocco	0.04	0.01	0.09	-0.05	-0.06	-6.60	-29.18	-0.03	-0.92	2.61
Mozambique***	0.06	0.45	0.31	0.31	-0.63	13.29	-9.30	19.86	18.97	22.50
Namibia***	-0.17	-0.01	0.54	0.07	0.00	0.25	-22.33	6.82	5.93	9.46
Niger*	0.15	0.71	-0.03	-0.14	-0.22	-3.41	-25.99	3.16	2.27	5.80
Nigeria**	0.23	0.56	0.18	0.17	-0.51	14.31	-8.28	20.87	19.98	23.52
Rwanda	0.00	0.47	-0.19	0.06	-0.47	2.18	-20.41	8.74	7.85	11.39
São Tomé and Príncipe	-0.54	-0.50	-0.36	-0.31	-0.15	25.66	3.08	32.23	31.34	34.87
Senegal*	0.15	0.52	-0.01	0.04	0.09	-4.67	-27.25	1.90	1.01	4.54
Seychelles	0.35	0.40	-0.02	0.21	0.42	-5.28	-27.86	1.29	0.40	3.93
Sierra Leone**	-0.25	-0.45	-0.61	-0.53	-0.40	11.66	-10.92	18.23	17.34	20.87
South Africa***	0.45	-0.06	0.32	0.49	0.77	-0.31	-22.89	6.26	5.37	8.90
Sudan	-0.17	-0.10	0.10	0.34	-0.44	41.34	18.75	47.90	47.01	50.55
Swaziland***	0.36	0.47	0.77	0.65	0.05	2.97	-19.61	9.54	8.65	12.18
Tanzania***	-0.15	0.06	-0.36	-0.32	-0.06	5.58	-17.01	12.15	11.26	14.79
Togo*	-0.05	0.27	-0.06	-0.02	0.04	-3.12	-25.70	3.45	2.56	6.10
Tunisia	-0.15	0.10	0.09	-0.20	-0.14	-6.22	-28.80	0.35	-0.54	2.99
Uganda	0.08	-0.38	-0.13	0.05	0.36	-1.28	-23.87	5.29	4.39	7.93
Zambia***	0.42	0.40	0.26	0.53	0.39	29.33	6.75	35.90	35.01	38.54
Zimbabwe***	0.17	0.31	0.00	0.48	-0.24	94.87	72.28	#####	100.54	104.08
Average	0.09	0.28	0.05	0.07	-0.13	25.76	3.18	32.33	31.44	34.97

Note:\* CFA countries; \*\* Western African Countries; \*\*\* SADC (11) countries.

Table3. Middle-East

Country	Cost(synchronization,HP6.25)				Benfits(Infaltion differentials)			
	Middle-East	\$	€	¥	Middle-East	\$	€	¥
Bahrain*	0.80	-0.44	-0.53	-0.67	-4.93	-0.45	0.44	3.09
Egypt	-0.23	0.03	0.45	-0.07	-1.00	3.48	4.37	7.02
Iran, Islamic Republic o	0.42	0.20	0.25	0.08	17.44	21.92	22.81	25.46
Jordan	-0.38	-0.57	-0.23	0.29	-4.64	-0.16	0.73	3.38
Kuwait*	0.83	-0.24	-0.49	-0.79	-2.84	1.64	2.53	5.18
Lebanon	-0.31	0.03	0.02	0.30	-1.42	3.06	3.95	6.59
Libya	0.70	0.07	0.01	-0.52	2.93	7.41	8.30	10.95
Oman*	0.91	-0.34	-0.33	-0.62	-5.19	-0.71	0.18	2.82
Qatar*	0.80	0.06	-0.04	-0.36	-2.97	1.51	2.40	5.05
Saudi Arabia*	0.82	-0.12	-0.28	-0.80	-2.55	1.93	2.82	5.47
Syrian Arab Republic	0.85	-0.37	-0.52	-0.42	-1.39	3.09	3.98	6.62
United Arab Emirates*	0.71	-0.40	-0.26	-0.36	-4.25	0.23	1.12	3.76
Yemen, Republic of	0.89	-0.26	-0.37	-0.66	10.79	15.27	16.17	18.81
Average	0.53	-0.18	-0.18	-0.35	0.00	4.48	5.37	8.01

Note:\* countries considering to adopt a common currency by 2010

Table4. CISM

Country	Cost(synchronization,HP6.25)				Benfits(Infaltion differentials)			
	CISM	\$	€	¥	CISM	\$	€	¥
Armenia	0.78	0.02	0.25	0.12	-7.53	1.98	1.42	5.27
Azerbaijan	0.90	0.21	0.28	-0.16	-6.41	3.10	2.54	6.40
Belarus	0.75	0.12	0.04	0.02	16.13	25.64	25.08	28.93
Georgia	0.79	0.17	0.39	0.21	-6.66	2.85	2.29	6.14
Kazakhstan	0.86	0.12	0.32	0.08	-2.03	7.48	6.92	10.77
Kyrgyz Republic	0.68	0.17	0.39	0.31	-8.01	1.49	0.93	4.79
Moldova	0.68	0.10	0.36	0.30	-0.48	9.02	8.46	12.32
Mongolia	0.73	0.49	0.60	0.07	-6.01	3.49	2.93	6.79
Russia	0.84	0.17	0.36	0.18	4.88	14.39	13.83	17.68
Tajikistan	0.54	0.26	0.50	-0.41	7.22	16.72	16.17	20.02
Turkmenistan	0.61	0.17	0.26	-0.58	-5.27	4.23	3.67	7.53
Ukraine	0.95	0.25	0.43	0.03	-0.85	8.65	8.10	11.95
Uzbekistan	0.88	0.28	0.38	0.03	15.02	24.52	23.97	27.82
Average	0.77	0.19	0.35	0.02	0.00	9.50	8.95	12.80

Table5.America

Country	Cost(synchronization,HP6.25)			Benefits(Inflation differentials)		
	\$	€	¥	\$	€	¥
Antigua and Barbuda*	0.37	0.09	-0.35	-0.19	-1.08	2.45
Argentina	0.24	-0.09	0.02	2.49	1.60	5.13
Bahamas, The	0.73	0.70	0.47	0.46	-0.43	3.11
Barbados	0.74	0.43	0.05	0.61	-0.28	3.25
Belize	-0.02	-0.04	-0.23	-0.66	-1.55	1.98
Bolivia	-0.30	-0.38	-0.63	3.89	3.00	6.54
Brazil	0.17	0.44	0.29	13.41	12.52	16.05
Canada	0.34	0.40	-0.59	-0.07	-0.96	2.58
Chile	-0.04	0.17	0.32	3.47	2.58	6.12
Colombia	-0.48	-0.43	0.48	11.25	10.36	13.89
Costa Rica	0.27	-0.05	-0.57	10.37	9.48	13.01
Dominica*	0.74	0.66	0.33	-0.03	-0.92	2.61
Dominican Republic	-0.29	0.13	-0.41	10.34	9.45	12.98
Ecuador	0.73	0.76	0.04	3.22	2.33	5.86
El Salvador	0.41	0.28	-0.80	2.73	1.84	5.38
Grenada*	0.55	0.65	0.27	0.28	-0.61	2.92
Guatemala	0.49	0.69	0.35	6.21	5.32	8.85
Guyana	-0.17	-0.12	0.38	5.00	4.10	7.64
Haiti	-0.12	0.25	-0.01	16.10	15.21	18.75
Honduras	-0.35	-0.35	-0.35	12.10	11.21	14.75
Jamaica	0.26	0.66	0.01	12.98	12.09	15.63
Mexico	0.06	-0.18	-0.49	11.81	10.92	14.45
Netherlands Antilles	-0.46	-0.54	-0.67	0.34	-0.56	2.98
Nicaragua	-0.25	-0.39	0.20	12.60	11.71	15.24
Panama	0.48	0.30	-0.26	0.06	-0.83	2.70
Paraguay	0.19	0.48	0.22	8.87	7.98	11.51
Peru	-0.15	-0.34	0.13	8.05	7.16	10.69
St. Kitts and Nevis*	-0.24	0.04	0.64	0.59	-0.30	3.23
St. Lucia*	0.63	0.15	0.07	-0.29	-1.18	2.35
St. Vincent and the Grenadines*	0.28	0.35	-0.03	0.18	-0.72	2.82
Suriname	0.20	0.11	-0.09	84.71	83.82	87.35
Trinidad and Tobago	-0.25	-0.24	-0.59	3.29	2.40	5.93
Uruguay	0.73	0.75	0.12	17.04	16.15	19.68
Venezuela	-0.04	0.05	-0.47	36.29	35.40	38.94
Average	0.16	0.16	-0.06	8.75	7.86	11.39

Note:\* ECCA countries.

Table6. Asia and Oceania (HP 6.25)

Country	Cost(synchronization,HP6.25)			Benfits(Infaltion differentials)		
	¥	\$	€	¥	\$	€
Australia	-0.51	0.62	0.28	2.98	0.33	-0.56
Bangladesh	-0.04	-0.39	-0.15	4.85	2.21	1.32
Bhutan	-0.35	-0.16	-0.25	9.06	6.42	5.53
Brunei Darussalam	-0.55	-0.47	-0.27	1.85	-0.79	-1.68
Cambodia	0.50	0.15	0.44	11.69	9.05	8.16
China	-0.53	0.05	0.07	5.56	2.92	2.03
Fiji*	0.30	-0.19	-0.04	3.46	0.82	-0.07
Hong Kong SAR	0.25	-0.08	0.13	1.12	-1.52	-2.41
India	0.79	0.13	0.36	6.60	3.96	3.07
Indonesia	0.65	-0.33	-0.21	15.13	12.49	11.60
Kiribati*	0.06	0.88	0.79	3.71	1.06	0.17
Korea	-0.12	-0.33	-0.54	5.21	2.57	1.68
Lao People's Democratic Republic	0.41	-0.52	-0.51	27.99	25.34	24.45
Malaysia	0.62	-0.29	-0.03	4.19	1.54	0.65
Maldives	-0.11	0.29	0.16	3.87	1.23	0.34
Myanmar	0.44	-0.19	0.26	28.14	25.49	24.60
Nepal	0.45	-0.09	0.31	6.70	4.06	3.17
New Zealand	0.20	-0.20	-0.25	2.75	0.10	-0.79
Pakistan	-0.21	-0.20	-0.08	8.51	5.87	4.98
Papua New Guinea*	-0.25	-0.03	-0.21	8.58	5.94	5.05
Philippines	0.72	-0.18	-0.11	7.66	5.02	4.13
Samoa*	0.50	-0.30	0.01	4.75	2.11	1.22
Singapore	-0.07	0.37	0.28	1.50	-1.14	-2.03
Solomon Islands*	-0.16	0.46	0.02	7.97	5.33	4.44
Sri Lanka	0.05	0.68	0.26	9.43	6.79	5.90
Taiwan Province of China	0.32	0.33	0.58	1.50	-1.14	-2.03
Thailand	0.50	-0.31	-0.15	3.64	1.00	0.11
Tonga*	0.16	-0.02	0.30	5.78	3.14	2.25
Vanuatu*	0.53	0.35	0.35	2.84	0.20	-0.69
Vietnam	-0.02	-0.41	-0.50	9.21	6.57	5.68
Average	0.15	-0.01	0.04	7.21	4.56	3.67

Note:\* Oceania countries

Table7. World

Country	Cost(synchronization,HP6.25)		Benfits(Infaltion differentials)	
	1993-2005	1999-2005	1993-2005	1999-2005
Africa	0.53	0.54	31.08	18.36
Asia and Oceania	-0.66	-0.47	6.27	5.19
CISM	0.84	0.89	337.93	20.72
EMU	0.47	0.59	2.82	2.40
Europe (not EMU)	0.62	0.96	8.07	3.86
Middle East	0.02	0.41	7.30	8.35
US	0.19	0.60	1.93	1.98
Western Hemisphere	0.76	0.98	20.58	10.19
Average	0.30	0.48	52.00	8.88
Standard Deviation			115.96	7.17