From Currency Unions to a World Currency:
A Possibility?

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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 investigate the possibility that currency unions could be lead to the creation of a global currency.

In particular, we will consider two main 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 inflationary bias.

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.

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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 about 170 currencies).

This fragmentation of the international monetary system has been judged not optimal by many distinguished scholars. As Mundell wrote:

"If some spaceship captain came down from outer space and looked at the way international monetary relations are conduced, 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".

However, as pointed out by Alesina, Barro and Tenreyro (2002) the recent history, specially 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 fifteen *new* EU countries will join the 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 near 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 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, and are more similar than some of the *new* EU members to the EMU countries. 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 the possible benefits and costs by undertaking these processes of monetary integrations, and investigate the possibility that currency unions could be lead to the creation of a global currency[1].

In particular, in line with many other researches in this topic[2] we will consider two main costs and benefits predicted by the theory of Optimum Currency Areas[3]: (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 inflationary bias. In particular, the theory

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[1] By this term I am not necessarily considering the case that for example, U.S., Europe and Japan are giving up their own currencies, but rather the case of a multi-currency monetary union, a fixed exchange rate with a common monetary policy.

[2] See for example, Alesina, Barro and Tenreyro [2002], Alesina and Barro [2002], Tenreyro and Barro (2004), Furceri and Karras (2006a).

[3] The theory was first developed by Mundell (1961) and extended by the contributions of McKinnon (1963) and Kenen (1969).

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 for the member country. Moreover, in the case of high business-cycle correlation, it becomes more plausible to expect the Common Central Bank to respond to aggregate shocks and to implement these interventions with greater ease. On the other hand, the greater the inflationary bias of the member country, the greater the advantage of adopting the common currency even if (or, in this case, because) it means giving up independent monetary policy.

The rest of the paper is organized as follows. In the next section we review the traditional arguments in favor of currency unions. In section 3, we present the empirical methodology and the data used to evaluate costs and benefits from joining or creating a common currency area, and a world currency. Section 4 discusses the results obtained and, finally, section 5 contains the main conclusions.

2. Traditional Arguments

It is possible to list two kinds of arguments in favor of a greater integration of the international monetary system and of a creation of a global common currency.

First, the advantages argued for a regime of flexible exchange rates and several independent monetary authorities such as: better cushion against asymmetric shocks, stabilizing speculative international capital movements, higher monetary discipline have not proved to be valid in the recent history. In fact, for example, floating has been

associated with higher overshooting during the Mexican Asian, Russian and Argentina crisis, speculative attacks have been source of destabilization, the consequence of the floating exchange rate regime in Mexico has been hyperinflation, and there is generally little independence of monetary policy in a regime of quasi-perfect capital movements.

The second kind of argument is directly associated to the benefits generated by a common currency area. The gain from a common currency come mainly from an enhanced credibility (Tenreyro and Barro, 2004) and hence performance in terms of lower inflation (eliminating thus the inflation bias problem pointed out by Barro and Gordon, 1983). In fact, to the extent that a currency union is the most costly monetary arrangement to break, then it is more credible also than a fixed exchange rate regime. Moreover, with a low inflation and a stable currency investors are willing to invest more, which in turns implies greater growth.

Growth is also fostered through other two different channels: a common currency will tend to result in lower interest rates, determining thus higher investments and hence growth (Dornbusch, 2001); higher exchange rate stability will encourage international trade, implying higher growth (Rose, 2000 and Rose and van Wincoop, 2001).

Another (possible) benefit coming from a currency union is the (possible) reduction of the stabilization cost, interpreted as business cycle synchronization between the client and the anchor country[4]. In fact, recent works in the literature such as Frankel and Rose (1998), Rose and Engel (2002) and Furceri and Karras (2006b) have pointed out that currency union is an important determinant for business cycle synchronization.

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[4] Beginning with Frankel and Rose (1998), it has been proposed that cyclical synchronization may be e*ndogenous*, in the sense that it is itself affected by membership in a monetary union The effect of the creation of a monetary union on the cyclical synchronization could in theory be either positive or negative. In fact, it crucially depends on the nature of trade.

3. Data and Empirical Methodology

Annual data on the GDP deflator and real GDP are retrieved from the *IMF World Economic Outlook (2005)*. 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, 26 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 1998.

Benefits of joining or creating a common currency area are determined by the reduction of the inflation bias. Thus, benefits 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 (or the average measure for the countries that would form the common currency area). Business cycle measures are obtained by detrending the series of real GDP. 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):

$$c_{i,t} = y_{i,t} - y_{i,t-1} \tag{1}$$

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:

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

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

The third method consists to consider the smoothness parameter (λ) equal to 6.25. In fact, as pointed out by Ravn and Uhlig (2002), the Hodrick-Prescott filter with this smoothness parameter 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 λ equal to 6.25 the smoothest), the main characteristics are remarkably similar. This robustness will be formally confirmed by the findings of the next section.

Finally, business cycle synchronization is measured by the correlation of the cyclical components between the anchor and the client country.

4. 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*). In the case of this monetary arrangement the client country is giving up its monetary independence, and monetary policy is completely conducted by the anchor's central bank.

Second a group of countries create a common currency area (a *new* currency that is common to the group)[5]. 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.

Thus, in this paragraph we will investigate both types of monetary arrangements. In particular, in carrying out the analysis we will consider countries that are likely to *dollarize* (in the sense of its broader meaning) or to form together a currency union. For the dollarization case we will make use of the Alesina and Barro (2002) results: the probability to adopt a foreign anchor's country increases when the client speaks the same language as the anchor, client and anchor are geographically close, the client was (or is) a colony of the anchor, the anchor is richer of the client.

For the common currency area we will consider countries that are geographically close (belonging to the same geographic macro-area) and that are linked by political and economic arrangements (such as a common market, or a common parliament in the case of the European Union).

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[5] The EMU is the most striking example.

Finally, the section will analyze the possibility of a global currency (the case of a multi-currency monetary union, a fixed exchange rate with a common monetary policy)in terms of business cycles synchronization and inflation bias.

AFRICA

There are, and probably there will be in the 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[6] of the South African Development Community (SADC) are considering to anchor their currencies to the US dollar or to the South African rand, and the CFA represents already a common currency area[7].

As we argued in the previous section, monetary integration is costly because the member country, by giving up independent monetary policy, loses some of the ability to respond to output shocks and thus to smooth the domestic business cycle. Thus, the size of the cost will depend on the correlation between the anchor (or the currency area) and the member that will adopt the new currency (or will join the currency area). In Table1, we present the costs 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.

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[6] 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 oin the monetary union.

[7] It includes: Benin, Burkina Faso, Guinea-Bissau, Ivory Coast, Mali, Niger, Senegal and Togo belonging to the BCEAO, and Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon and Republic of Congo belonging to the BEAC.

Although the average business cycle correlation is not significantly high in any of the case 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 costly (Gambia, and Swaziland the U.S. dollar, Cape Verde, Gambia, Swaziland and Zambia the Euro, Lesotho and South Africa the Yen)[8].

The benefits of a currency union are mainly imputable to the reduction of the inflation bias. Thus, larger is the ex-ante inflation bias, larger will be the benefits to adopt a common currency. In Table 2 we present the average (for the period 1993-2005) inflation bias for each of the African countries with respect to the CFA area, Africa as whole, U.S., the Euro area and Japan. Two main results emerge analyzing the table. First, since inflation biases are the same for most African countries, the inflation rates are the same. This, together with the business cycle synchronization results, implies that several African countries (those cited before for example) seem to be part already of an hypothetical African common currency, where business cycles are aligned and inflation preferences are the same.

Second, in terms of benefits, the optimal solution (the best anchor) is represented by the Yen and the countries that would benefit more by the adoption of an external currency are Angola, Democratic Republic of Congo and Zimbabwe.

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[8] 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.

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 seriously the possibility to adopt a common currency by 2010.

In Table 3 and 4 we show the costs and the benefits for the period 1993-2005 for these (and the other Middle-East) countries to adopt a common currency: a new (or old) Middle East currency, the U.S. dollar, the Euro or the Yen.

Analyzing Table 3, it is possible to see that the cost to adopt a Middle-East common currency are 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 could be convenient, to *dollarize*[9].

On the benefits side, two main results emerge looking at Table 4. First, 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[10]. This results, 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) seem to be part already of an hypothetical Middle-East common currency, where business cycles are aligned and inflation preferences are the same.

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[9] 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.

[10] This is causing the negative inflation bias for the rest of the countries.

Second, in terms of benefits, the optimal solution (the best anchor) is represented, as in the African case, by the Yen.

EUROPE

In 1999, twelve European Union members (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain), formed the EMU[11]. Other three *old* EU members opted out and probably will join the EMU in the future. Moreover, 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, five other countries are at various stages of candidacy for membership in the EU: Bulgaria, Croatia, Romania, 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 future. As 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.

Analyzing Table 5 and 6 we try to answer to this question. Moreover, we investigate if other independent European countries could benefit from adopting a

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[11] Greece joined the EMU in 2001.

common currency (the Euro, the U.S. dollar or the Yen). Table 5 shows the business cycle synchronization (for each European country with EMU) for the period 1993-2005.

The results in Table 5 point out several indications. First, the EMU countries are not surprisingly well synchronized. Germany is the country with the highest business cycle synchronization with the EMU. However, other EU countries, such as Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Slovenia, Sweden and United Kingdom, have cycles well aligned with EMU. In particular, some countries, such as Slovenia and Sweden, have higher synchronization than most EMU countries. 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 the business cycles correlations are low with respect to the other currencies analyzed. An exception however is made by Iceland that shows a business cycle well aligned with the U.S.[12].

The benefits, in terms of inflation, are shown in Table 6. Analyzing the table, it is possible to see that the inflation bias is negligible for most of the countries with respect to the EMU (but also with respect to the U.S. and Japan). In particular, the countries that would benefit more by adopting the Euro would be the Central and Eastern European countries, especially the EU accession countries (Croatia, Bulgaria, Macedonia, Romania and Turkey).

To conclude, these results suggest that an enlargement of the current EMU would be not only possible but also not costly for most of the European countries[13].

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[12] Similar results are obtained using the HP filter with a smoothness parameter of 100, and Differencing. For example, the average business cycle synchronization with EMU is 0.44 with HP (100) and 0.41 with Differencing.

COMMONWEALTH OF INDEPENDENT STATES AND MONGOLIA (CISM)

Although there have not been any attempts toward any process of monetary integration in this area, we have 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[14].

In Table 7 and 8 we show the costs and the benefits for these countries to adopt a common currency: a new currency, the U.S. dollar, the Euro or the Yen. Looking at Table 7, it is possible to observe an almost perfect business cycle synchronization for the period 1993-2005 in this area. This would imply that the creation of a Commonwealth common currency would be not costly for its members. On the converse, the business cycles for each of these countries are weak correlated with those of the EMU, U.S. and Japan[15].

On the benefits side, it is possible to see that these countries have similar inflation rate[16]. Nevertheless, the countries that would benefit more from the creation of the Commonwealth currency union or from the dollarization process would be Belarus and Uzbekistan, Tajikistan and Russia.

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[13] See Furceri and Karras (2006a) for a more detailed discussion about the costs and benefits for the European countries to join the EMU.

[14] An example is represented by the Technical Assistance to the Commonwealth of Independent States (TACIS) Program of the European Union that provides grant finance for know-how to support the process of transformation to market economies and democratic societies in the New Independent States and Mongolia.

[15] 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.

[16] To the purpose of this analysis we considered the period 1998-2003, since immediately the year after the collapse of the Soviet Union are characterized by outlier high values of inflation for these countries.

To conclude, the results suggest that several independent states belonging to the Commonwealth seem to be part of a hypothetical currency union, where business cycles are aligned and inflation preferences are very similar.

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[17].

In this section we present the results in terms of costs (business cycle synchronization) and benefits (reduction of the inflation bias) for the North, Central and South American countries, for the period 1993-2005.

Starting with the costs (Table 7), 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 as the anchor country. This, perhaps, is due to the scarce synchronization of most of the South American countries. In fact, most of them show negative correlation with respect to the US.

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[17] 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.

Moreover, two particular cases deserve particular attention. First, surprising and in contrast with other works[18], Canada does not show a particularly high business cycle synchronization. Second, the dollarized countries (Ecuador, Panama, El Salvador and Guatemala)   suggest 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.[19]

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 the Euro and the Yen.

To conclude, it is interesting to note that it seems to be a positive correlation between costs and benefits of dollarization for these countries. This makes dollarization a question particularly difficult to answer. However, for some countries, such as Ecuador and Uruguay, characterized by high business cycle synchronization and very high inflation, there is no doubts about the fact that dollarization would provide net benefit.

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[18] For example, Karras (2002) find that over the period 1950-1990, Canada is the American country with the highest busyness cycle correlation with the U.S. Our result then implies that during the last decade this synchronization has decreased.

[19] 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 0.23 with Differencing.

ASIA AND OCEANIA

To conclude our currency union's investigation, we analyze the possibility in terms of 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.

In Table 11 we show the results in terms of stabilization cost for the period 1993-2005 using the HP filter with a smoothness parameter equal to 6.25. Looking at the table, it is possible to see that most of the countries have not well aligned cycles with Japan, the Euro area or the US. Thus, the loss of their independent monetary policy would be very costly. However, there is some exception. For example, there is an high synchronization between India, Indonesia, Malaysia, Philippines and Japan, and a high correlation between Australia, Sri Lanka, Kiribati and the US[20].

On the benefits side, the results of the inflation bias computed over the period 1993-2005 show (Table 12) 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, Hong Kong, Singapore, Taiwan, and Australia would provide reduction of the inflation bias for the rest of the countries. To conclude, it is possible to see that for most of the countries high costs are associated with high benefits, making thus difficult an evaluation of the net costs.

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[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 Japan is 0.16 with HP (100) and 0.21 with Differencing.

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, 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 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. To this purpose, as we did for the local currency union cases, we consider the main macroeconomic determinants of benefits and costs by undertaking this monetary integration process.

In Table 13 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, Europe and the EMU countries. Moreover, looking at the second and third column of the table it is possible to see that business cycle synchronization is overall remarkably increased in the last six years. 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, all the areas have business cycles very well aligned[21].

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[21] 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.

Moreover, the fact that the larger increase has occurred for the most influential (and largest) economic areas (such as US, Europe and the EMU, the Middle-East and Asia) is certainly an ulterior favorable element that would make easier the implementation of the world common currency area. In fact, given the recent empirical evidence of the effect of currency union on business cycle correlations, is not unrealistic to assume that the creation of a world common currency area will increase the business cycle synchronization for most of the countries, reducing thus the *ex-ante* stabilization costs.

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 hyperinflation. Moreover, the patterns of the average and of the standard deviation inflation rate suggest that countries are becoming much more similar over time in terms of inflation preferences. Nevertheless, the areas that would benefit more by a common world currency will be those including the developing countries.

To conclude, the empirical results of costs and benefits suggest that the creation of a world currency is not as unrealistic as might seem at first sight, at least form an economic point of view. In fact, the busyness cycle synchronization is remarkable increased over time and at the same way inflation preferences are becoming more similar among countries. Moreover, this monetary arrangement, although beneficial for most countries, would be particularly advantageous for most developing areas (such as the Western Hemisphere, Middle East, CISM and Africa) characterized by remarkably high inflation rates, and increasing business cycle synchronization.

5. 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.

The weakness of the arguments in favor of flexible exchange rates and the recent works in the literature showing the benefits coming from currency unions suggest that a global monetary integration would be beneficial for most of the countries, specially in an a world that aims to a high degree of free trade.

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 local common currency union would be beneficial, and where business cycles are well aligned and inflation preferences 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 level. Moreover, the fact that the larger increase in synchronization has occurred for the most influential (and largest) economic areas (such as US, Europe and the EMU, the Middle-East and Asia) is certainly an ulterior favorable element that would make easier the implementation of the world common currency area.

To concluder, this monetary arrangement, although beneficial for most countries, would be particularly advantageous for most developing areas (such as the Western Hemisphere, Middle East, CISM and Africa) characterized by remarkably high inflation rates, and increasing business cycle synchronization.

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Table1. Business Cycle Syncronization in Africa (HP 6.25)

Country	CFA	Africa	$	€	¥
Algeria	0.03	0.60	-0.04	-0.25	-0.74
Angola	0.07	0.27	0.21	-0.03	-0.72
Benin*	0.01	0.45	-0.13	-0.06	-0.27
Botswana***	-0.09	0.10	0.53	0.50	-0.11
Burkina Faso*	0.10	0.52	0.06	0.08	0.00
Burundi	-0.22	-0.17	-0.45	-0.52	-0.29
Cameroon*	0.13	0.54	0.32	0.21	-0.33
Cape Verde	0.18	0.04	0.36	0.70	0.44
Central African Republic*	0.21	0.58	0.32	0.35	-0.29
Chad*	-0.05	0.54	0.07	-0.18	-0.30
Comoros	0.17	0.61	0.11	0.03	-0.20
Congo, Democratic Republic of	0.04	0.40	0.38	-0.22	-0.48
Congo, Republic of*	0.28	0.76	-0.40	-0.44	-0.46
Côte d'Ivoire*	0.29	0.68	0.28	0.38	0.02
Djibouti	-0.09	0.04	0.09	0.16	-0.58
Equatorial Guinea*	0.60	0.98	0.11	0.09	-0.34
Eritrea	0.25	0.35	-0.11	-0.45	-0.33
Ethiopia	0.36	-0.05	-0.38	0.13	0.33
Gabon*	0.26	0.80	-0.22	-0.35	-0.42
Gambia, The**	0.13	0.23	0.59	0.69	-0.08
Ghana**	-0.17	0.23	0.49	0.16	-0.56
Guinea**	0.02	0.24	-0.21	-0.05	-0.38
Guinea-Bissau*	0.16	0.17	-0.25	0.02	0.44
Kenya	0.27	0.08	0.20	0.61	0.45
Lesotho***	0.50	0.11	-0.17	0.01	0.76
Madagascar	-0.05	0.30	0.26	0.19	-0.21
Malawi***	0.16	0.57	0.42	0.01	-0.32
Mali*	0.22	0.69	0.01	-0.09	-0.19
Mauritania	-0.44	-0.41	-0.51	-0.16	0.03
Mauritius***	0.15	0.27	-0.39	-0.13	-0.28
Morocco	0.04	0.01	0.09	-0.05	-0.06
Mozambique***	0.06	0.45	0.31	0.31	-0.63
Namibia***	-0.17	-0.01	0.54	0.07	0.00
Niger*	0.15	0.71	-0.03	-0.14	-0.22
Nigeria**	0.23	0.56	0.18	0.17	-0.51
Rwanda	0.00	0.47	-0.19	0.06	-0.47
São Tomé and Príncipe	-0.54	-0.50	-0.36	-0.31	-0.15
Senegal*	0.15	0.52	-0.01	0.04	0.09
Seychelles	0.35	0.40	-0.02	0.21	0.42
Sierra Leone**	-0.25	-0.45	-0.61	-0.53	-0.40
South Africa***	0.45	-0.06	0.32	0.49	0.77
Sudan	-0.17	-0.10	0.10	0.34	-0.44
Swaziland***	0.36	0.47	0.77	0.65	0.05
Tanzania***	-0.15	0.06	-0.36	-0.32	-0.06
Togo*	-0.05	0.27	-0.06	-0.02	0.04
Tunisia	-0.15	0.10	0.09	-0.20	-0.14
Uganda	0.08	-0.38	-0.13	0.05	0.36
Zambia***	0.42	0.40	0.26	0.53	0.39
Zimbabwe***	0.17	0.31	0.00	0.48	-0.24
Average	0.09	0.28	0.05	0.07	-0.13

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

Table2. Inflation bias in Africa (percentage points)

Country	CFA	Africa	$	€	¥
Algeria	3.83	-18.76	10.39	9.50	13.04
Angola	798.33	775.75	804.90	804.01	807.54
Benin*	-1.89	-24.48	4.68	3.78	7.32
Botswana***	-0.69	-23.27	5.88	4.99	8.53
Burkina Faso*	-4.84	-27.42	1.73	0.84	4.37
Burundi	0.42	-22.16	6.99	6.10	9.63
Cameroon*	-4.83	-27.41	1.74	0.85	4.38
Cape Verde	-4.36	-26.95	2.20	1.31	4.85
Central African Republic*	-3.92	-26.50	2.65	1.76	5.29
Chad*	-0.03	-22.61	6.54	5.65	9.18
Comoros	-4.00	-26.59	2.56	1.67	5.21
Congo, Democratic Republic of	240.17	217.59	246.74	245.85	249.38
Congo, Republic of*	0.61	-21.98	7.17	6.28	9.82
Côte d'Ivoire*	-2.11	-24.70	4.46	3.57	7.10
Djibouti	-5.50	-28.09	1.07	0.17	3.71
Equatorial Guinea*	4.62	-17.97	11.19	10.30	13.83
Eritrea	3.12	-19.46	9.69	8.80	12.33
Ethiopia	-2.93	-25.52	3.64	2.75	6.28
Gabon*	-1.21	-23.79	5.36	4.47	8.00
Gambia, The**	-0.33	-22.91	6.24	5.35	8.88
Ghana**	16.90	-5.68	23.47	22.58	26.11
Guinea**	-2.25	-24.83	4.32	3.43	6.96
Guinea-Bissau*	0.62	-21.96	7.19	6.30	9.83
Kenya	2.73	-19.86	9.29	8.40	11.94
Lesotho***	-0.45	-23.03	6.12	5.23	8.76
Madagascar	7.24	-15.35	13.80	12.91	16.45
Malawi***	20.15	-2.44	26.71	25.82	29.36
Mali*	-2.57	-25.15	4.00	3.11	6.64
Mauritania	-2.05	-24.63	4.52	3.63	7.16
Mauritius***	-3.03	-25.62	3.53	2.64	6.18
Morocco	-6.60	-29.18	-0.03	-0.92	2.61
Mozambique***	13.29	-9.30	19.86	18.97	22.50
Namibia***	0.25	-22.33	6.82	5.93	9.46
Niger*	-3.41	-25.99	3.16	2.27	5.80
Nigeria**	14.31	-8.28	20.87	19.98	23.52
Rwanda	2.18	-20.41	8.74	7.85	11.39
São Tomé and Príncipe	25.66	3.08	32.23	31.34	34.87
Senegal*	-4.67	-27.25	1.90	1.01	4.54
Seychelles	-5.28	-27.86	1.29	0.40	3.93
Sierra Leone**	11.66	-10.92	18.23	17.34	20.87
South Africa***	-0.31	-22.89	6.26	5.37	8.90
Sudan	41.34	18.75	47.90	47.01	50.55
Swaziland***	2.97	-19.61	9.54	8.65	12.18
Tanzania***	5.58	-17.01	12.15	11.26	14.79
Togo*	-3.12	-25.70	3.45	2.56	6.10
Tunisia	-6.22	-28.80	0.35	-0.54	2.99
Uganda	-1.28	-23.87	5.29	4.39	7.93
Zambia***	29.33	6.75	35.90	35.01	38.54
Zimbabwe***	94.87	72.28	101.43	100.54	104.08

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

Table3. Business Cycle Syncronization in the Middle-East (HP 6.25)

Country	Middle-East	$	€	¥
Bahrain*	0.80	-0.44	-0.53	-0.67
Egypt	-0.23	0.03	0.45	-0.07
Iran, Islamic Republic of	0.42	0.20	0.25	0.08
Jordan	-0.38	-0.57	-0.23	0.29
Kuwait*	0.83	-0.24	-0.49	-0.79
Lebanon	-0.31	0.03	0.02	0.30
Libya	0.70	0.07	0.01	-0.52
Oman*	0.91	-0.34	-0.33	-0.62
Qatar*	0.80	0.06	-0.04	-0.36
Saudi Arabia*	0.82	-0.12	-0.28	-0.80
Syrian Arab Republic	0.85	-0.37	-0.52	-0.42
United Arab Emirates*	0.71	-0.40	-0.26	-0.36
Yemen, Republic of	0.89	-0.26	-0.37	-0.66
Average	0.53	-0.18	-0.18	-0.35

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

Table4. Inflation bias in the Middle-East (percentage points)

Country	Middle-East	$	€	¥
Bahrain*	-4.93	-0.45	0.44	3.09
Egypt	-1.00	3.48	4.37	7.02
Iran, Islamic Republic of	17.44	21.92	22.81	25.46
Jordan	-4.64	-0.16	0.73	3.38
Kuwait*	-2.84	1.64	2.53	5.18
Lebanon	-1.42	3.06	3.95	6.59
Libya	2.93	7.41	8.30	10.95
Oman*	-5.19	-0.71	0.18	2.82
Qatar*	-2.97	1.51	2.40	5.05
Saudi Arabia*	-2.55	1.93	2.82	5.47
Syrian Arab Republic	-1.39	3.09	3.98	6.62
United Arab Emirates*	-4.25	0.23	1.12	3.76
Yemen, Republic of	10.79	15.27	16.17	18.81

Note:* countries considering to adop a common currency by 2010

Table5. Business Cycle Syncronization in Europe (HP 6.25)

Country	€	$	¥
Albania	0.48	0.14	0.46
Austria*	0.90	0.68	-0.01
Belgium*	0.89	0.55	0.52
Bosnia and Herzegovina	0.01	0.13	0.37
Bulgaria	-0.18	-0.28	-0.06
Croatia	0.52	0.19	0.47
Cyprus**	0.66	0.20	0.12
Czech Republic**	0.21	-0.21	0.79
Denmark**	0.48	0.40	0.17
Estonia**	0.56	0.29	0.21
Finland*	0.68	0.79	0.44
France*	0.86	0.51	0.19
Germany*	0.92	0.55	0.49
Greece*	0.66	0.21	0.51
Hungary**	0.54	0.40	-0.34
Iceland	0.48	0.77	0.38
Ireland*	0.80	0.51	0.60
Italy*	0.69	0.28	0.08
Latvia**	0.52	0.17	0.12
Lithuania**	0.56	0.24	0.30
Luxembourg*	0.70	0.49	-0.16
Macedonia, Former Yugoslav Republic of	0.55	0.31	0.36
Malta**	0.59	0.36	0.13
Netherlands*	0.88	0.82	0.13
Norway	-0.50	-0.28	-0.39
Poland**	-0.18	0.32	0.08
Portugal*	0.82	0.67	0.21
Romania	0.21	-0.07	0.57
Serbia and Montenegro	-0.32	0.33	-0.18
Slovak Republic**	0.28	0.11	0.40
Slovenia**	0.91	0.74	0.32
Spain*	0.91	0.67	0.03
Sweden**	0.82	0.69	0.31
Switzerland	0.86	0.54	0.30
Turkey	-0.03	0.24	0.41
United Kingdom**	0.51	0.32	0.49
Average	0.51	0.36	0.24

Note:* EMU countries; ** EU Countries;

Table6. Infaltion bias in Europe (percentage points)

Country	€	$	¥
Austria*	-1.12	-0.23	2.41
Belgium*	-0.95	-0.06	2.58
Cyprus**	0.41	1.30	3.94
Denmark**	-0.94	-0.05	2.59
Finland*	-1.05	-0.16	2.48
France*	-1.29	-0.40	2.24
Germany*	-1.53	-0.64	2.00
Greece*	3.23	4.12	6.77
Iceland	0.64	1.53	4.18
Ireland*	0.95	1.84	4.48
Italy*	0.27	1.16	3.80
Luxembourg*	-0.08	0.81	3.45
Netherlands*	-0.48	0.41	3.05
Norway	0.69	1.58	4.22
Portugal*	1.13	2.02	4.66
Spain*	0.94	1.83	4.47
Sweden**	-1.02	-0.13	2.51
Switzerland	-1.97	-1.07	1.57
United Kingdom**	-0.33	0.56	3.20
Albania	15.13	16.02	18.66
Bosnia and Herzegovina	0.67	1.56	4.21
Bulgaria	100.40	101.29	103.93
Croatia	122.40	123.30	125.94
Czech Republic**	4.19	5.08	7.72
Estonia**	15.88	16.77	19.42
Hungary**	10.50	11.39	14.03
Latvia**	11.30	12.19	14.83
Lithuania**	32.14	33.03	35.67
Macedonia, Former Yugoslav Republic of	46.41	47.30	49.94
Malta**	0.13	1.02	3.66
Poland**	10.18	11.07	13.71
Romania	62.37	63.26	65.91
Serbia and Montenegro	40.86	41.75	44.40
Slovak Republic**	5.15	6.05	8.69
Slovenia**	8.13	9.02	11.66
Turkey	53.84	54.73	57.37

Note:* EMUcountries; ** EU Countries;

Table7. Business Cycle Syncronization in the CISM (HP 6.25)

Country	Commonwealth	$	€	¥
Armenia	0.78	0.02	0.25	0.12
Azerbaijan	0.90	0.21	0.28	-0.16
Belarus	0.75	0.12	0.04	0.02
Georgia	0.79	0.17	0.39	0.21
Kazakhstan	0.86	0.12	0.32	0.08
Kyrgyz Republic	0.68	0.17	0.39	0.31
Moldova	0.68	0.10	0.36	0.30
Mongolia	0.73	0.49	0.60	0.07
Russia	0.84	0.17	0.36	0.18
Tajikistan	0.54	0.26	0.50	-0.41
Turkmenistan	0.61	0.17	0.26	-0.58
Ukraine	0.95	0.25	0.43	0.03
Uzbekistan	0.88	0.28	0.38	0.03
Average	0.77	0.19	0.35	0.02

Table8. Inflation bias in the CISM (percentage points)

Country	Commonwealth	$	€	¥
Armenia	-7.53	1.98	1.42	5.27
Azerbaijan	-6.41	3.10	2.54	6.40
Belarus	16.13	25.64	25.08	28.93
Georgia	-6.66	2.85	2.29	6.14
Kazakhstan	-2.03	7.48	6.92	10.77
Kyrgyz Republic	-8.01	1.49	0.93	4.79
Moldova	-0.48	9.02	8.46	12.32
Mongolia	-6.01	3.49	2.93	6.79
Russia	4.88	14.39	13.83	17.68
Tajikistan	7.22	16.72	16.17	20.02
Turkmenistan	-5.27	4.23	3.67	7.53
Ukraine	-0.85	8.65	8.10	11.95
Uzbekistan	15.02	24.52	23.97	27.82

Table9. Business Cycle Syncronization in America (HP 6.25)

Country	$	€	¥
Antigua and Barbuda*	0.37	0.09	-0.35
Argentina	0.24	-0.09	0.02
Bahamas, The	0.73	0.70	0.47
Barbados	0.74	0.43	0.05
Belize	-0.02	-0.04	-0.23
Bolivia	-0.30	-0.38	-0.63
Brazil	0.17	0.44	0.29
Canada	0.34	0.40	-0.59
Chile	-0.04	0.17	0.32
Colombia	-0.48	-0.43	0.48
Costa Rica	0.27	-0.05	-0.57
Dominica*	0.74	0.66	0.33
Dominican Republic	-0.29	0.13	-0.41
Ecuador	0.73	0.76	0.04
El Salvador	0.41	0.28	-0.80
Grenada*	0.55	0.65	0.27
Guatemala	0.49	0.69	0.35
Guyana	-0.17	-0.12	0.38
Haiti	-0.12	0.25	-0.01
Honduras	-0.35	-0.35	-0.35
Jamaica	0.26	0.66	0.01
Mexico	0.06	-0.18	-0.49
Netherlands Antilles	-0.46	-0.54	-0.67
Nicaragua	-0.25	-0.39	0.20
Panama	0.48	0.30	-0.26
Paraguay	0.19	0.48	0.22
Peru	-0.15	-0.34	0.13
St. Kitts and Nevis*	-0.24	0.04	0.64
St. Lucia*	0.63	0.15	0.07
St. Vincent and the Grenadines*	0.28	0.35	-0.03
Suriname	0.20	0.11	-0.09
Trinidad and Tobago	-0.25	-0.24	-0.59
Uruguay	0.73	0.75	0.12
Venezuela	-0.04	0.05	-0.47
Average	0.16	0.16	-0.06

Note:* ECCA countries.

Table10. Inflation bias in America (percentage points)

Country	$	€	¥
Antigua and Barbuda*	-0.19	-1.08	2.45
Argentina	2.49	1.60	5.13
Bahamas, The	0.46	-0.43	3.11
Barbados	0.61	-0.28	3.25
Belize	-0.66	-1.55	1.98
Bolivia	3.89	3.00	6.54
Brazil	13.41	12.52	16.05
Canada	-0.07	-0.96	2.58
Chile	3.47	2.58	6.12
Colombia	11.25	10.36	13.89
Costa Rica	10.37	9.48	13.01
Dominica*	-0.03	-0.92	2.61
Dominican Republic	10.34	9.45	12.98
Ecuador	3.22	2.33	5.86
El Salvador	2.73	1.84	5.38
Grenada*	0.28	-0.61	2.92
Guatemala	6.21	5.32	8.85
Guyana	5.00	4.10	7.64
Haiti	16.10	15.21	18.75
Honduras	12.10	11.21	14.75
Jamaica	12.98	12.09	15.63
Mexico	11.81	10.92	14.45
Netherlands Antilles	0.34	-0.56	2.98
Nicaragua	12.60	11.71	15.24
Panama	0.06	-0.83	2.70
Paraguay	8.87	7.98	11.51
Peru	8.05	7.16	10.69
St. Kitts and Nevis*	0.59	-0.30	3.23
St. Lucia*	-0.29	-1.18	2.35
St. Vincent and the Grenadines*	0.18	-0.72	2.82
Suriname	84.71	83.82	87.35
Trinidad and Tobago	3.29	2.40	5.93
Uruguay	17.04	16.15	19.68
Venezuela	36.29	35.40	38.94

Note:* ECCA countries.

Table11. Business Cycle Syncronization in Asia and Oceania (HP 6.25)

Country	¥	$	€
Australia	-0.51	0.62	0.28
Bangladesh	-0.04	-0.39	-0.15
Bhutan	-0.35	-0.16	-0.25
Brunei Darussalam	-0.55	-0.47	-0.27
Cambodia	0.50	0.15	0.44
China	-0.53	0.05	0.07
Fiji*	0.30	-0.19	-0.04
Hong Kong SAR	0.25	-0.08	0.13
India	0.79	0.13	0.36
Indonesia	0.65	-0.33	-0.21
Kiribati*	0.06	0.88	0.79
Korea	-0.12	-0.33	-0.54
Lao People's Democratic Republic	0.41	-0.52	-0.51
Malaysia	0.62	-0.29	-0.03
Maldives	-0.11	0.29	0.16
Myanmar	0.44	-0.19	0.26
Nepal	0.45	-0.09	0.31
New Zealand	0.20	-0.20	-0.25
Pakistan	-0.21	-0.20	-0.08
Papua New Guinea*	-0.25	-0.03	-0.21
Philippines	0.72	-0.18	-0.11
Samoa*	0.50	-0.30	0.01
Singapore	-0.07	0.37	0.28
Solomon Islands*	-0.16	0.46	0.02
Sri Lanka	0.05	0.68	0.26
Taiwan Province of China	0.32	0.33	0.58
Thailand	0.50	-0.31	-0.15
Tonga*	0.16	-0.02	0.30
Vanuatu*	0.53	0.35	0.35
Vietnam	-0.02	-0.41	-0.50
Average	0.15	-0.01	0.04

Note:* Oceania countries

Table12. Inflation bias in Asia and Oceania (percentage points)

Country	¥	$	€
Australia	2.98	0.33	-0.56
Bangladesh	4.85	2.21	1.32
Bhutan	9.06	6.42	5.53
Brunei Darussalam	1.85	-0.79	-1.68
Cambodia	11.69	9.05	8.16
China	5.56	2.92	2.03
Fiji*	3.46	0.82	-0.07
Hong Kong SAR	1.12	-1.52	-2.41
India	6.60	3.96	3.07
Indonesia	15.13	12.49	11.60
Kiribati*	3.71	1.06	0.17
Korea	5.21	2.57	1.68
Lao People's Democratic Republic	27.99	25.34	24.45
Malaysia	4.19	1.54	0.65
Maldives	3.87	1.23	0.34
Myanmar	28.14	25.49	24.60
Nepal	6.70	4.06	3.17
New Zealand	2.75	0.10	-0.79
Pakistan	8.51	5.87	4.98
Papua New Guinea*	8.58	5.94	5.05
Philippines	7.66	5.02	4.13
Samoa*	4.75	2.11	1.22
Singapore	1.50	-1.14	-2.03
Solomon Islands*	7.97	5.33	4.44
Sri Lanka	9.43	6.79	5.90
Taiwan Province of China	1.50	-1.14	-2.03
Thailand	3.64	1.00	0.11
Tonga*	5.78	3.14	2.25
Vanuatu*	2.84	0.20	-0.69
Vietnam	9.21	6.57	5.68

Note:* Oceania countries

Table13. Business Cycle Syncronization in the World (HP 6.25)

Country	1993-2005	1999-2005	Change
Africa	0.53	0.54	+
Asia and Oceania	-0.66	-0.47	+
CISM	0.84	0.89	+
EMU	0.47	0.59	+
Europe (not EMU)	0.62	0.96	+
Middle East	0.02	0.41	+
US	0.19	0.60	+
Western Hemisphere	0.76	0.98	+
Average	0.35	0.56	+

Table14. Inflation (percentage points)

Country	1993-2005	1999-2005
Africa	31.08	18.36
CISM	337.93	20.72
Asia and Oceania	6.27	5.19
EMU	2.82	2.40
Europe (not EMU)	8.07	3.86
Middle East	7.30	8.35
US	1.93	1.98
Western Emisphere	20.58	10.19
Average	52.00	8.88
Standard Deviation	115.96	7.17