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COUNTRY CHARACTERISTICS AND THE CHOICE OF THE EXCHANGE RATE REGIME: ARE MINI-SKIRTS FOLLOWED BY MAXIS?

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ABSTRACT

Country Characteristics and the Choice of the Exchange Rate Regime: Are Mini-skirts Followed by Maxis?*

We use a sample of 140 countries to study empirically how a country's characteristics are associated with its choice of an exchange rate regime. When countries are classified according to their current exchange rate arrangements, we observe that small countries with low diversification of exports are the most likely candidates to peg their exchange rates. Other country characteristics, such as the level of development, openness of the real or financial sector, geographical diversification of exports, and fluctuations in the terms of trade, have hardly any power to explain the choice of an exchange rate system. Somewhat surprisingly, it is developing countries which have moved towards more flexible exchange rate practices during the last ten years, while countries with well diversified exports have adopted more rigid exchange rate arrangements. The regression results predict that Italy, Spain and the United Kingdom should have floating exchange rates, while Israel, New Zealand and Switzerland should adopt a more rigid exchange rate regime. Finland should adopt a regime of limited flexibility (such as the EMS) rather than peg to a basket or float.

JEL classification: F2, F31, F33
Keywords: exchange rate regime, developing countries, export diversificaiton, EMS

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NON-TECHNICAL SUMMARY

Why do the Nordic countries of Iceland, Norway and Sweden peg their currencies to a basket? On 8 September 1992 the Bank of Finland decided to float the Finnish markka, which was pegged to the ECU. Sweden followed in November. Is the basket peg system a natural choice for Finland or Sweden? In September Italy, Spain and the United Kingdom were unable to resist the speculative attacks on their currencies: the pound sterling and the Italian lira are floating now and the Spanish peseta was devalued with respect to other EMS currencies. Although the Italian and UK governments are planning to restore their EMS memberships, would they be better off with a floating exchange rate regime rather than rejoining the EMS? Why do Switzerland, a 'small open economy', and the United States, a large industrialized nation, let their currencies float freely? Do developing countries typically restrict movements in their exchange rates rather than let their currencies float?

The choice of the exchange rate regime is one of the most fundamental but also one of the most controversial issues in international monetary economics. It can be discussed from several theoretical view points: optimal currency areas; the microeconomic consequences of alternative exchange rate systems; and the credibility of alternative exchange rate arrangements.

It is possible that observed choices do not have any economic rationale, merely reflecting intellectual fashions During the Bretton Woods era some economists criticized the existing international monetary system and advocated more flexible arrangements. After experience with a more flexible international monetary standard, many theoretical and empirical arguments against floating rates have been advanced. It has also been argued that the choice of the exchange rate regime is based more on political considerations than on any economic rationale.

This paper studies empirically how different country characteristics are associated with the choice of a country's exchange rate system. As fundamental factors influencing the choice, we consider the following country characteristics: size, degree of economic development, openness of the goods producing sector, degree of international financial integration, commodity diversification of foreign trade, geographic diversification of trade, and fluctuations in the terms of trade. One may assume, for example, that the pattern of production and the foreign trade sector are often more diversified in large countries than in small economies. As a result, shocks to individual commodity markets will offset each other, making a floating exchange rate regime a morel likely choice for large countries. In a small undiversified country it may be necessary to offset fluctuations in export receipts to alleviate the impact of price fluctuations on the domestic price level. Thus, we expect large countries to be floaters and small economies to typically restrict exchange rate fluctuations. The more open the country, the more

vulnerable it is to changes in economic developments in its foreign trading partners. The openness of the economy may also correlate negatively with the size and the degree of diversification of production and international trade of the economy: small countries tend to be more open and less diversified. Accordingly, we would expect that the more open the country, the more likely it is to restrict exchange rate fluctuations. Closed economies tend to be floaters. We measure the openness of the goods producing sector of the economy by the ratio of foreign trade (imports plus exports) to GDP. The data consist of 140 countries, both developing and industrialized, and are far more comprehensive than the data analysed in previous empirical studies.

The data reveal that during the last 10 years or so flexible exchange rate arrangements have gained popularity. The percentage of countries that peg to a single currency has decreased substantially from 40% to 26.1%. Meanwhile free floating regimes have become more popular: the percentage of countries with such a regime has increased from 7.6% to 21.7%. Although the proportion of countries that peg to a single currency has decreased substantially, the popularity of pegging to a currency composite has remained very stable at approximately 24%. Most nations have not altered the nature of their exchange rate regime during the last decade: 60.8% of the countries in the sample have not changed their regime. While 32.2% (46) economies have moved towards a more flexible exchange rate system, only 10 nations have adopted a more rigid exchange rate arrangement.

We first study the significance of country characteristics by comparing means and medians of variables in alternative exchange rate arrangements. In addition, we estimate logit and probit models to explain the choice of exchange rate regime: the explanatory variables are the country characteristics described above.

We find some support for the view that small economies tend to restrict exchange rate fluctuations rather than let their currencies float freely. The same holds for economies with low commodity diversification of foreign trade. Thus small countries with low diversification of foreign trade are the most likely candidates to peg their exchange rates and use the exchange rate as an intermediate target of monetary policy. The other country characteristics we explore seem to have little ability to explain the choice of a country's exchange rate system.

Though our approach has only limited explanatory success the models still produce interesting predictions. When we compared the models' predictions with the prevailing exchange rate practices on 31 December 1991, we observed the following pressures. First, Bangladesh, Italy, Spain and the United Kingdom should have floating exchange rates. Second, Israel, New Zealand, and Switzerland should adopt more rigid practices than they do currently. This is also true for many developing countries which float. Third, according to our models

Finland should be in the group with limited flexibility of the exchange rate (like the EMS) rather than pegged to a basket or floating.

In the light of our evidence and 'conventional wisdom', the emerging monetary cooperation among the EC countries is somewhat peculiar. On the one hand, the EMS countries are quite large and rich, well integrated financially, and their trade is well diversified. According to 'conventional wisdom' economies of this type tend to float rather than restrict fluctuations in exchange rates. It is also important to notice that although many countries, in particular developing countries, are moving towards more flexible exchange rate arrangements, the rich EC economies are driving hard towards monetary unification. On the other hand, the EMS countries are very open in terms of the real sector, and terms of trade fluctuations have been very low in the EMS economies. Traditionally, economies of this type are considered to restrict fluctuations in exchange rates.

1. INTRODUCTION

Why have the Nordic countries, Finland, Norway, Sweden, and Iceland pegged their currencies to a basket? On September 8, 1992 the Bank of Finland decided to float the Finnish markka, which was pegged to the ECU. The Bank of Finland has announced that the float of the FIM is temporary and Finland will restore the basket peg regime when the economic situation so permits. Is the basket peg system a natural choice for Finland? In September 1992 the United Kingdom, Italy and Spain and in November 1992 Sweden were not able to resist the speculative attacks on their currencies: the UK pound sterling, the Italian lira and the Swedish krona are floating now and the Spanish peseta was devalued with respect to other EMS currencies. Although the UK and Italian governments are planning to restore their EMS memberships, would they be better off with a floating exchange rate regime rather than rejoining the EMS? Why do Switzerland, a "small open economy", and the U.S.A., a large industrialized nation, let their currencies float freely? Do developing countries typically restrict movements in their exchange rates rather than let their currencies float?

These are some of the issues we want to address in this study. The choice of the exchange rate regime is one of the most fundamental but also one of the most controversial issues in international monetary economics. If one accepts the extreme monetarist or new classical view that "money does not matter", one should also agree with the view that the exchange rate regime of a country does not matter.[1] For many economists and laymen this is too extreme a statement to concur with. If one agrees with the view that the exchange rate regime does matter, one must accept some kind

of non-new classical argument: there exist some imperfections or rigidities in the economy which make monetary policy effective or money nonneutral, at least in the short run, and as a consequence also the exchange rate regime matters. There could exist several types of imperfections or rigidities which create a role for monetary policy or the international monetary standard: wages adjust slowly; adjustment in the financial markets, in particular the foreign exchange market, is much faster than in the goods market, etc.[2] In this paper we accept the view that the exchange rate regime may - but does not necessarily - matter.

One may discuss the choice of the exchange rate regime from several theoretical view points: there exists a vast literature under the title of optimal currency areas; one may study the microeconomic consequences of alternative exchange rate systems; recently the properties of alternative exchange rate arrangements have been studied from the point of view of credibility.[3] Also, as mentioned above, one may study the issue from the point of view of different schools of economic thought, i.e., the ongoing debate between monetarists and Keynesians. It is also possible that the choices do not reflect any rationalization provided by economists but rather the choice is like a fad: during the Bretton Woods era some economists criticized the existing international monetary system and advocated more flexible arrangements; after some experience with a more flexible international monetary standard many arguments, theoretical and empirical, against floating have been put forward. If one wants to be fatalistic, one could say that the history of the international monetary standard is like any other fashion: mini-skirts are followed by midis, which are followed by maxis, and so on. It is also argued, see, for instance, Feldstein (1992), that the choice of the exchange rate regime is based more on political pressure than on economic

rationalization.

During the last 10 years or so flexible exchange rate arrangements have gained popularity, cf. Table 1. The percentage of countries that peg to a single currency has decreased substantially from 40.0% to 26.1%. Meanwhile the regime of free floating has become more popular: the percentage of countries in this regime has increased from 7.6% to 21.7%. Although the proportion of countries that peg to a single currency has decreased substantially, the popularity of pegging to a currency composite has remained very stable at the level of about 24%.[4]

Panel B of Table 1 shows how countries have moved from one exchange rate system to another during the last 10 years. 87 (60.8%) nations have not changed position. While 46 (32.2%) economies have moved towards a more flexible exchange rate system, only 10 (7.0%) nations have adopted a more rigid exchange rate arrangement.

The purpose of the paper is to study empirically how different country characteristics are associated with the choice of a country's exchange rate system. In Section 2 we discuss some theoretical hypotheses. The data are introduced in Section 3. The data consist of 140 countries, both developing and industrialized nations, and are far more comprehensive than the data analyzed in the previous empirical studies.[5] The data allow us to put monetary integration in Europe and the exchange rate regime choices in the Nordic countries into a global perspective. In Section 4 we study whether the means and medians of the country characteristics differ in alternative exchange rate regimes. In Section 5 we estimate logit and probit models to explain the choices in

terms of the country characteristics. Section 6 concludes the study.

2. THE HYPOTHESES

As mentioned in the introduction, one cannot analyze the choice of the exchange rate regime in a comprehensive way using a single theoretical model. In this section we draw from several branches of the literature to build an empirical model for explaining how some country characteristics may be associated with the choice of a country's exchange rate system.

1. The size of a country. One may assume that small economies are typically price takers in the world market whereas large countries have some influence over the prices of traded goods. Moreover, the pattern of production and the foreign trade sector are often more diversified in large countries than in small economies. As a consequence, changes in individual commodity markets will offset each other, making a floating exchange rate regime a more likely choice for large countries. In a small undiversified country it may be necessary to offset fluctuations in export receipts to alleviate the impact of price fluctuations on the domestic price level. Thus, we expect large countries to be floaters and small economies to typically restrict exchange rate fluctuations. In this study the size of the economy is measured by GDP.

2. Degree of economic development. We would expect that the lower the level of a country's economic development, the less developed and less efficient would be its goods, factor and capital markets. The more developed a country, the better it is able to cope with fluctuating exchange rates. One can also show that restrictions on the

movements of exchange rates are a kind of substitute for developed capital markets. For instance, if in the basket peg system the exchange rate authorities hold the value of the currency index constant and there are no forward currency markets, the currency index system is a partial substitute for forward currency markets, cf. Pikkarainen (1991a, 1991b). Thus we would expect developing countries to restrict exchange rate fluctuations but advanced industrialized nations to be floaters. GDP per capita (GDPCAP) is used as a measure of the level of economic development.

3. Openness of the goods producing sector of a country. The more open the country, the more vulnerable it is to changes in economic developments in its foreign trading partners. The openness of the economy may also correlate negatively with the size and the degree of diversification of production and international trade of the economy: small countries tend to be more open and less diversified. Accordingly, we would expect that the more open the country, the more likely it is to restrict exchange rate fluctuations. Closed economies tend to be floaters. The openness of the goods producing sector of the economy is measured by the ratio of foreign trade (imports plus exports) to GDP (OPEN).

4. Degree of international financial integration. One may look at the implications of the openness of capital markets from several points of view. On the one hand, from the point of view of insulation from different types of shocks and effectiveness of stabilization policies, the properties of alternative exchange rate regimes depend on the source of shocks. From this point of view it is difficult to put forward clearcut hypotheses for the choice of the exchange rate regime. On the other hand, the higher the degree of a country's international financial integration, the more likely it is to have

well-developed financial markets and the easier it is for agents to cover risks due to fluctuations in exchange rates. Thus from this point of view we would expect countries with open capital markets to tend to be floaters and those with several restrictions on international capital movements to tend to also restrict the volatility of exchange rates. In this study the openness of capital markets is measured by the ratio of foreign assets of the banking system to the money supply (FIN).[6]

5. Diversification of foreign trade. Here we distinguish between two features: the geographical and commodity concentration of foreign trade. Countries with well-diversified exports will experience greater stability in foreign exchange earnings and may consequently opt for a more flexible exchange rate regime. Countries with less diversified trade tend to restrict exchange rate movements. The geographical concentration of foreign trade is measured by the percentage share of the three largest export destinations (DIVGEO) and the commodity concentration by the Hirschmann concentration index of exports (DIVCOM). Note that the greater the value of these measures the less diversified is a country's exports.

6. Fluctuations in the terms of trade. Fluctuations in the terms of trade are likely to be greater the greater are fluctuations in the real exchange rate. Due to the insulating property of floating exchange rates with regard to foreign price disturbances, higher real exchange rate variability may lead a country to opt for a flexible exchange rate arrangement. Fluctuations in the terms of trade are measured by the coefficient of variation of the terms of trade (TERMS).

Following Edison and Melvin (1990) and the previous empirical literature we dub the

hypotheses presented above the "conventional view" or the "conventional wisdom". In the empirical and theoretical literature on the choice of the exchange rate regime other hypotheses are also put forward. McKinnon (1979) discusses the implications of convertibility of a currency. While countries with fully convertible currencies have the option of pegging or not pegging, those with exchange rate controls and restrictions on making foreign payments are compelled to restrict exchange rates. To take into account the effects of the convertibility of a currency we introduce a dummy variable (INCONV), which obtains the value of 1 for the countries with inconvertible currency and the value of 0 otherwise.

Kenen (1969) and Giersch (1973) suggest that small, open, and undiversified economies can derive greater benefits from exchange rate flexibility than large, closed, and diversified countries. They argue that export diversification reduces the necessity to change the exchange rate frequently. A corollary to this argument is that an undiversified and, therefore most likely, a small economy will be better off with a flexible exchange rate system. The empirical results in Dreyer (1978) give some support for this hypothesis: countries with high export diversification tend to restrict exchange rate movements.

It is postulated by Holden et al. (1979) and Melvin (1985) that the greater the difference between a country's inflation rate and that of its trading partners, the more flexible will be its exchange rate policy. Melvin also argues that the greater the domestic money shocks, the more likely the country is to restrict movements in exchange rates. We agree that these factors may affect the choice of the exchange rate regime but there are good grounds for suspecting that they are determined

simultaneously with the exchange rate regime. For instance, if the central bank is committed to restricting movements in exchange rates in order to keep inflation low, the country's inflation rate must (in the long run) be very close to those of its trading partners. If the private sector believes that the central bank is able and willing to make this commitment, i.e., the exchange rate regime is perceived to be credible, pricing behavior reflects this belief. Thus the rate of inflation clearly depends on the exchange rate regime; inflation and the exchange rate regime are determined simultaneously. Similarly, if the monetary authorities are committed to a target zone exchange rate regime, this is reflected in the money supply process. Hence the conduct of monetary policy depends on the exchange rate regime; the money supply process and the choice of exchange rate regime are determined simultaneously.[7]

The traditional optimal currency area view implies that countries with flexible labour markets should adopt fixed exchange rates rather than float their currencies. We believe that this feature of an economy is also determined simultaneously with the exchange rate system: if a country moves towards a more rigid exchange rate system, the labour market partners will eventually understand the consequences and adopt more flexible practices as regards wage determination and labour mobility. Moreover, it is difficult to obtain a measure of labor market flexibility for the large sample studied here.

The simultaneous determination of the exchange rate regime and factors 1-6 above cannot be fully avoided. The exchange rate regime or conduct of exchange rate policy may affect the economic development (growth) of a country. The pattern of foreign trade, in particular the geographical diversification of trade, may depend on the

exchange rate regime. The openness of the capital markets of a country may also be determined simultanously with the exchange rate regime. We believe, however, that factors 1-6 are more like "fundamentals" which do not depend strongly on the exchange rate regime. Factors like the difference between the domestic and foreign inflation rate and the domestic money supply process depend more clearly on the exchange rate regime, and in order to take into account these features one should estimate a simultaneous equations model.

3. THE DATA

We use the IMF's classification to identify the exchange rate system of a country. Accordingly, we specify the following five categories:

A: country pegs to a single currency,

B: country pegs to a currency composite,

C: limited flexibility in terms of a single currency or a group of currencies,

D: currency is adjusted according to a set of indicators or other managed floating, and

E: independently floating.

The exchange rate arrangements are according to the situation on December 31, 1991. In category A the majority of the countries peg either to the U.S. dollar or the French franc. In category B some countries peg to the SDR; however, the majority of countries have chosen a more individual basket, like the Nordic countries Finland, Iceland, Norway, and Sweden. The EMS, including Germany, belongs to group C in the IMF classification.[9]

We take the IMF's classification of countries' exchange rate arrangements as given. It might be, for instance, that the monetary integration in Western Europe has become tighter during the last 10 years or so but we not have any opportunity to attack this issue very seriously.[9] We do, however, use alternative aggregations of countries and alternate the position of Germany, cf. Section 5. We also study the effects of inconvertibility of a currency.[10]

The exact construction of the data, the data sources, and the countries included in the study are reported in the Data Appendix. For GDP, GDPCAP, OPEN, and FIN we use the average of annual observations covering the period 1987-1990 to even out the contribution of cyclical fluctuations. Fluctuations in terms of trade is measured by the coefficient of variation of quarterly observations over the longer period of 1980-1990 to obtain a more robust estimate than the one which would be obtained using the period 1987-1990. DIVGEO is measured by the percentage of three largest export destinations in 1987-1988, and DIVCOM by the Hirschmann index of exports for 1988.

Some basic statistics on the data are displayed in Table 2. For GDP, GDPCAP, and FIN, the medians differ quite substantially from the respective arithmetic means. This is due to some "outliers" in the data. The same feature is reflected in the high values of the coefficient of variation for these variables.

The correlation matrix does not indicate any serious multicollinearity, the highest correlation being 0.51 between DIVCOM and TERMS. When we consider the openness of the goods producing sector, large countries tend to be less open than small ones. The openness of the financial sector seems to be uncorrelated with the

size of a country. However, rich countries tend to be more open than developing nations both in terms of trade and financial integration. Both the commodity and geographical diversification of trade tend to be greater in large economies than in small ones, and greater in rich countries than in poor ones. The geographical and commodity diversification of international trade are quite strongly positively correlated with each other. The openness of the goods and financial markets are weakly positively correlated with each other. Fluctuations in the terms of trade tend to be greater in small countries than in large ones, and greater in poor countries than in rich ones. Countries with high volatility in the terms of trade tend to be closed in terms of international trade in goods and assets. Not surprisingly, fluctuations in the terms of trade have been greater in economies with low commodity diversification of international trade than in those with high commodity diversification.

4. MEANS AND MEDIANS OF COUNTRY CHARACTERISTICS IN ALTERNATIVE EXCHANGE RATE ARRANGEMENTS

In this section we first study the means and medians of the country characteristics when countries are classified according to their current exchange rate practices, cf. Panel A of Table 1. We also investigate the means and medians when countries are classified according to whether they have changed the exchange rate system during the last 10 years, cf. Panel B of Table 1.

The means and medians of the country characteristics in different categories are displayed in Table 3, Panel A. In Panel B we present tests for equality of means and medians in the subgroups. The F-test and t-test assume that the variables are

normally distributed in the subgroups. Since in some cases there are good reasons to be suspicious of the normality assumption, we also report the results of the Kruskal-Wallis test and the Mann-Whitney test. Recall that the Kruskal-Wallis test is a generalization of the Mann-Whitney test to more than two groups. The pairwise comparisons in Panel B are carried out by comparing groups B-E with group A. As in the aggregate data the means and medians differ more from each other for GDP, GDPCAP, and FIN than for OPEN, DIVGEO, DIVCOM, and TERMS.

According to both the F-test and the Kruskal-Wallis test the mean or median GDP is not the same in the various subgroups. The mean GDP increases in the order group A, B, D, E with group C having the highest mean GDP. The median GDP increases in the order of group A, B, E, D, and C. The mean and median GDP in group E differ substantially from each other. This is due to the fact that there are some very large economies in group E, like the U.S.A. and Japan. Also, Canada, Brazil, Australia, and Switzerland are floaters. The mean or median GDP is highest in group C, which is dominated by the EMS economies. The very small countries tend to peg to a single currency. Those countries which peg to a currency composite are also rather small economies on average. Thus there is some evidence that small countries tend to restrict exchange rate fluctuations rather than float.

When we consider the level of development, the mean GDPCAP increases in the order group A, D, B, E, and C while the median GDPCAP increases in the order group E, A, D, B, and C. The average level of development is very similar in groups A, B, D, and E. Group E is very heterogenous: it includes, on the one hand, very rich countries, like Australia, Canada, Japan, New Zealand, Switzerland, and the U.S.A.,

and on the other hand, countries with very low GDP per capita. Group C, the EMS countries, clearly forms the most developed block. This pattern does not support the null hypothesis that developing countries are more likely to restrict exchange rate fluctuations than industrialized nations.

Concerning the openness of the goods producing sector and the degree of international financial integration, it is difficult to argue for any clear pattern in the data when we compare groups A, B, D, and E. It is again group C which stands out: it is the most open one both in terms of the real sector and financial openness.
The geographical diversification of foreign trade is lowest in group A but it does not differ significantly from that in group E. Group C countries have the highest geographical diversification of foreign trade. On the other hand, the commodity diversification of international trade displays a somewhat clearer pattern than the geographical one: among groups A, B, D, and E the commodity diversification of trade is lowest in group A and group B follows. Not surprisingly, the commodity diversification of trade is highest in group C.

Fluctuations in the terms of trade have been lowest in group C and highest in group A. The fluctuations have been of very much the same magnitude in groups B, D, and E.

Thus far our observations can be summarized as follows. First, there is some support for the view that small countries tend to restrict exchange rate fluctuations rather than let their currencies float. Second, there is weak evidence that countries with less diversified international trade tend to peg their exchange rate rather than float. This is

true, in particular, when we consider the commodity diversification of foreign trade. Third, fluctuations in the terms of trade have been most volatile in the group which pegs to a single currency. Fourth, it is difficult to argue for any clear pattern between the choice of exchange rate system and the level of development and the openness of an economy. Fifth, group C, which is dominated by the EMS economies, stands out as a separate block: it is the one with the highest average GDP and GDP per capita, it is the most open group in terms of financial integration, and it has the most diversified trade. According to our null hypotheses or "conventional wisdom" countries of this type should be floaters rather than restrict fluctuations in exchange rates. On the other hand, group C is the most integrated one in terms of the real sector and also the one where terms of trade fluctuations have been lowest. This is consistent with our null hypotheses: countries with an open real sector and low volatility of terms of trade tend to restrict fluctuations in exchange rates rather than float their currencies freely.

In Table 4 we present the means and medians of the country characteristics when countries are classified according to whether they have changed their exchange rate regime during the last 10 years, cf. also Panel B of Table 1. Somewhat surprisingly, it is developing countries which have moved towards more flexible exchange rate practices. Countries with well diversified exports have moved towards more rigid exchange rate arrangements. These observations are opposite to the conventional view discussed in Section 3.

5. LOGIT AND PROBIT MODELS

In this section we complement the analyses of Section 4 by estimating logit and probit models for the choice of the countries' exchange rate system.[11] Following the analyses of Section 4 the logit and probit models are estimated to explain the current exchange rate regimes and the changes in the exchange rate arrangements. The models are estimated both as ordered and nonordered ones, with two or three categories and with several alternative aggregations of countries. Since the data for the terms of trade variable were available only for 46 countries, the models were estimated with and without the TERMS variable. All estimations were executed by Greene's (1992) LIMDEP

In the binomial model the dependent variable obtains the value of 0 when the country belongs to groups A-D and the value of 1 when the country belongs to the group E of independently floating economies. Alternatively, groups A-C are considered as one aggregate, and groups D and E as the other one. As Heller (1978) points out, the characterization of the exchange rate regime of Germany is somewhat controversial. On the one hand, Germany belongs to the EMS and thus it cooperates with other EMS countries. Accordingly, the IMF classifies Germany with other EMS countries in group C. On the other hand, Germany is considered to be a leader in the EMS and the EMS can be interpreted as floating against the currencies outside the system. Also, in Germany monetary policy targets are set in terms of the growth rate of monetary aggregates, which is typical of the floaters. Accordingly, we alternatively classify Germany in group C with other EMS countries or in group E with the floaters.

The specifications where groups A-C were considered as one aggregate and groups D and E as the other performed slightly better than the models with groups A-D vs. group E. The binomial models performed slightly better when Germany was included in group E instead of group C, indicating that Germany is more similar to group E countries than those which do not float freely.

Some estimation results for the binomial models are reported in Table 5. Specification (5A) includes all the variables, except the inconvertibility dummy, while in specification (5B) we have omitted the TERMS variable. Although GDP, OPEN, FIN, DIVCOM, and TERMS have the expected signs in specification (5A), only OPEN and DIVCOM are statistically significant. In specification (5B) with 125 countries only DIVCOM is statistically significant and of expected sign. In the binomial models the inconvertibility dummy was not statistically significant.

Besides the binomial models we estimated ordered and nonordered multinomial logit and probit models with three classes. In these models the dependent variable obtained the value of 0, 1 or 2. Here too we estimated the models with several alternative aggregations of countries. As in the binomial models we alternated the position of Germany.

In the ordered multinomial models the best specification was that where the dependent variable obtained the value of 0 for group A and B countries, 1 for group C and D countries, and 2 for group E economies. In Table 6 in specification (6A) we display the model for the small sample of 46 countries without the inconvertibility dummy. Specification (6B) is the model for the large sample of 125 countries with the

inconvertibility dummy. In both models only DIVCOM is of expected sign and statistically significant. In the large sample also the inconvertibility dummy is significant.

The ordered multinomial models support the view that Germany resembles more the independently floating economies than those which restrict fluctuations in exchange rates. Although the performance of the ordered models is not very satisfactory, it is important to notice that the estimated threshold was always statistically significant, indicating that the countries in the groups have some common features.

The IMF's classification of exchange rate arrangements implicitly implies that the flexibility of an exchange rate system increases when we move from group A towards group E. We agree that this is true to some extent but as the analyses in Section 4 indicate we also have some reasons to suspect this view. This is true, in particular, when we consider group C. Consequently, we also estimated three class nonordered models. In these models the dependent variable obtains the value of 0 for group A and B countries, the value of 1 for group C countries, and the value of 2 for group D and E countries. Since TERM and INCONV were not significant in the nonordered models, we report in Table 7 the results with the large sample of 125 countries without INCONV. Not surprisingly the nonordered three class models performed better than the two class models or the three class ordered models. We observe that large countries belong to group C or they tend to adopt rather flexible exchange rate arrangements, while small nations tend to restrict fluctuations in exchange rates. Consistent with the results in Section 4, the countries in group C are the most developed ones; developing economies tend to peg either to a single currency or a

basket of currencies or, even more likely, they tend to adopt a flexible exchange rate regime. The openness of the goods producing sector is highest in group C. FIN and DIVGEO are statistically insignificant. High commodity diversification of international trade is typical for the aggregate of groups D and E.

We also estimated logit and probit models to explain the change of exchange rate regime in terms of these same country characteristics, cf. Panel B of Table 1 and Table 4. The models were estimated as two (groups R and N aggregated or group R omitted) or three category specifications and as ordered or nonordered ones. These estimations (not reported here) confirm the results in Section 5: it is developing countries which have moved towards more flexible exchange rate arrangements; the countries with high diversification of exports have moved towards more rigid exchange rate practices. There is also weak evidence that countries with low volatility of terms of trade have adopted more rigid exchange rate systems.

6. DISCUSSION

In this paper we have studied how different country characteristics are associated with the choice of countries' exchange rate arrangements. When we studied the current country positions, we found some support for the view that small economies tend to restrict exchange rate fluctuations rather than let their currencies float freely.[12] The same holds for economies with low commodity diversification of foreign trade.[13] Thus small countries with low diversification of foreign trade are the most likely candidates to peg their exchange rates and use the exchange rate as an intermediate target of monetary policy. Other country characteristics, like the level of economic develop-

ment, openness of the real or financial sector, geographical diversification of trade, and fluctuations in the terms of trade, have in practice hardly any power in explaining the choice of a country's exchange rate system.[14]

When we studied the changes in country positions, we found that it is developing countries which have moved towards more flexible exchange rate arrangements during the last 10 years. Meanwhile economies with well diversified exports have adopted more rigid exchange rate practices. These tendencies are opposite to the "conventional view" but support the views expressed by Kenen (1969) and Giersch (1973).

In the light of our evidence and "conventional wisdom", the emerging monetary cooperation among the EC countries is somewhat peculiar. On the one hand, the EMS countries are quite large and rich, they are well integrated financially, and their trade is well diversified. According to "conventional wisdom" economies of this type tend be floaters rather than restrict fluctuations in exchange rates.[15] It is also important to notice that although many countries, in particular developing countries, are moving towards more flexible exchange rate arrangements, the rich EC economies are driving hard towards monetary unification. On the other hand, the EMS countries are very open in terms of the real sector, and terms of trade fluctuations have been very low in the EMS economies. Traditionally economies of this type are considered to restrict fluctuations in exchange rates.[16]

Overall the country characteristics do not help very much to explain the countries' choice of exchange rate regime. It might be that the choices are based on some other

factors, economical or political, rather than those analyzed here. The results in Melvin (1985) indicate that current or very recent economic conditions may matter: the greater the recent foreign price shocks the more likely a float, and the greater the recent domestic money shocks the more likely a peg. Microeconomic implications, like the transaction costs or risks due to fluctuations in exchange rates, may motivate the monetary unification in the EC. Also the arguments by Feldstein (1992) should be taken seriously; it is possible that the choices are based more on political pressure or fads than on economic grounds.[17]

The evidence in our study can also be interpreted to support indirectly the view of new classical macroeconomics. Since the country characteristics studied here do not help very much to explain of the choice of exchange rate regime and since in some cases the observed choices are opposite to the predictions of conventional theory, one may infer that this provides indirect evidence for the view that (in the long run) the exchange rate regime does not have any real effects.[18] The evidence may also suggest that the way in which exchange rate policy is conducted given a chosen regime and the role or independence of the central bank are more important and relevant issues than the exchange rate regime as such.

Is there any sense in the analyses we have performed in the study? When we studied the predictions of our models, i.e., we compared the models' predictions with the prevailing exchange rate practices on December 31, 1991, we observed the following pressures. Firstly, Italy, Spain, the United Kingdom, and Bangladesh should have floating exchange rates. Secondly, Israel, New Zealand, and Switzerland should adopt more rigid practices than their current ones. This is also true for many developing

countries which float. Thirdly, according to our models Finland is the only country which should join group C which consists mainly of the EMS countries. We will leave the reader with these predictions on the future.

NOTES

1. Stockman (1983, 1987) provide an excellent discussion on the equilibrium approach to exchange rate determination.

2. As in Dornbusch (1976).

3. De Grauwe (1992) provides a nice introduction to all of these approaches. Agenor (1991) gives a good review of the credibility aspect.

4. Notice that the information in Table 1 concerns all the countries classified by the International Monetary Fund. According to Avhegli et al. (1991) the same pattern also holds for the group of developing countries.

5. Dreyer (1978) uses a data set of 88 developing countries, Bosco (1987) a set of 92, and Savvides (1990) a set of 39. Heller (1978) analyzes a data set of 86 developing and industrialized countries, Holden et al. (1979) a set of 75, and Melvin (1985) a set of 64. Edison and Melvin (1990) provide a survey on the previous literature.

6. An alternative measure of the degree of international financial integration might be the difference between domestic and foreign interest rates. This measure might, however, be quite sensitive to speculative periods. Moreover, it is not available for as many countries as the measure used here.

7. Difficulties in collecting taxes might be a powerful incentive to pursue high inflation, which often can be sustained only in a floating exchange rate regime.

8. Group C is dominated by the EMS countries. The empirical analyses were also done so that group C consists only of the EMS economies. The results do not differ from those reported here for the larger group C.

9. Historical fluctuations in the effective exchange rate of a country would be an

alternative measure of the flexibility of an exchange rate regime. The official IMF classification may depend to a certain extent on wishful thinking: some countries classify themselves as having more rigid regimes than they do have in practice.

10. The analyses were also done so that we omitted the 10 countries which announce a freely floating exchange rate (group E) and at the same time claim an inconvertible currency. The results do not differ from those including all countries.

11. On logit and probit models see, for instance, Maddala (1983) and Greene (1992).

12. The results in Heller (1978), Melvin (1985), and Bosco (1987) also support this view.

13. Holden et al. (1979) obtain the same results. In Bosco (1987) and Savvides (1990) the commodity diversification of trade is not statistically significant; in Dreyer (1978) it is statistically significant but opposite to the hypothesis presented here.

14. In the previous empirical studies the contribution of these country characteristics is mixed. Only the view that countries with an open real sector tend to restrict fluctuations in exchange rates is supported quite consistently; Savvides (1990) is the only one to reject this view.

15. However, these observations are consistent with the views of Kenen (1969) and Giersch (1973).

16. The results concerning the EMS countries might be somewhat biased due to simultaneity. Monetary integration may have affected the openness, diversification of trade and fluctuations in the terms of trade of these economies. In this study we do not have any opportunity to tackle the possible simultaneity problem.

17. Recall also that because of simultaneity we do not have inflation differentials as an explanatory variable. Control of inflation has been a major factor in European monetary integration.

18. Stockman (1983) studies also empirically the relationship between the variability of real exchange rates and the exchange rate system. His results provide some evidence against the neutrality hypothesis: flexible exchange rate systems are associated with greater variability of real exchange rates.

TABLE 1. Exchange rate arrangements in 1982 and 1992

A. Number of countries with alternative exchange rate arrangements

	1982	1992
Group A	58 (40.0%)	41 (26.1%)
Group B	36 (24.8%)	37 (23.6%)
Group C	17 (11.7%)	14 (8.9%)
Group D	23 (15.9%)	30 (19.1%)
Group E	11 (7.6%)	34 (21.7%)
Total	145	157

1982: as of March 31; 1992: as of March 31. Group A: pegged to a single currency. Group B: pegged to a currency composite. Group C: flexibility limited in terms of a single currency or group of currencies. Group D: adjusted according to a set of indicators or other managed floating. Group E: independently floating. Although Switzerland is not included in the IMF classification tables, Switzerland is included here into the group of independently floating countries.

B. Changes in country positions from 1982 to 1992

	Group A	Group B	Group C	Group D	Group E
Group A	36	4	0	7	10
Group B	0	24	0	9	2
Group C	0	0	12	2	3
Group D	1	4	1	8	9
Group E	1	0	1	2	7

Groups in the column indicate the position of a country in 1982, and in the row the position of a country in 1992. The diagonal elements indicate how many countries have stayed in the same group. Thus, for instance, 36 countries have stayed in group A and 4 countries have moved from group A to group B. Burma and Upper Volta are omitted.

TABLE 2. Basic statistics on the data

	Min	Max	Mean	Median	Std	Cv
GDP	107	5049525	126352	5918	511165	4.046
GDPCAP	120	28529	4380	1699	6542	1.494
OPEN	0.000	3.136	0.527	0.432	0.436	0.827
FIN	0.000	18.209	0.798	0.218	1.978	2.479
DIVGEO	21.8	90.5	54.5	52.3	15.9	0.292
DIVCOM	5.6	92.8	40.9	40.5	23.1	0.565
TERMS	0.022	0.343	0.113	0.100	0.073	0.646

Std: standard deviation. Cv: coefficient of variation.

Correlations:

	GDP	GDPCAP	OPEN	FIN	DIVGEO	DIVCOM	TERMS
GDP	1	0.45	-0.12	-0.00	-0.19	-0.30	-0.13
GDPCAP		1	0.14	0.22	-0.27	-0.41	-0.46
OPEN			1	0.16	0.10	-0.05	-0.32
FIN				1	-0.10	-0.11	-0.46
DIVGEO					1	0.40	0.03
DIVCOM						1	0.51
TERMS							1

GDPCAP: GDP per capita. OPEN: openness of the goods producing sector. FIN: degree of financial integration. DIVGEO: geographic concentration of foreign trade. DIVCOM: commodity concentration of foreign trade. TERMS: fluctuations in the terms of trade. See Data Appendix for detailed description of the data and data sources.

TABLE 3. Means and medians of country characteristics in alternative exchange rate regimes

A. Means and medians of country characteristics in subgroups

	Group A	Group B	Group C	Group D	Group E
GDP	7535	33787	384071	65517	352667
	2019	5103	200000	40625	8033
GDPCAP	1734	4501	14395	2101	5228
	1071	1727	16000	1375	1050
OPEN	0.527	0.505	0.701	0.518	0.482
	0.445	0.525	0.560	0.447	0.373
FIN	0.814	0.529	2.085	0.484	0.815
	0.126	0.166	2.000	0.288	0.214
DIVGEO	60.2	52.5	45.2	53.2	55.6
	58.5	51.9	46.7	50.0	55.0
DIVCOM	52.6	44.5	26.5	31.9	36.2
	50.0	43.3	10.0	29.0	35.0
TERMS	0.164	0.106	0.065	0.113	0.133
	0.194	0.083	0.048	0.110	0.105

For each variable the means are in the upper row and medians in the lower row, respectively.

B. Tests for location of distributions

F- and t-tests for equality of means in subgroups:

	F	Group B	Group C	Group D	Group E
GDP	0.014	0.023	0.000	0.000	0.053
GDPCAP	0.000	0.024	0.000	0.537	0.016
OPEN	0.658	0.790	0.173	0.941	0.696
FIN	0.144	0.582	0.145	0.584	0.998
DIVGEO	0.045	0.047	0.006	0.116	0.328
DIVCOM	0.001	0.122	0.001	0.000	0.003
TERMS	0.078	0.064	0.010	0.223	0.555

The table displays the marginal significance levels of two sided tests for equality of means in the subgroups. F: F-test for all the subgroups. Last four columns: t-tests for group A and group i, i = B, ..., E, respectively. The smaller the reported significance level, the more significant the test statistic is.

Kruskal-Wallis test and Mann-Whitney test for location of distributions:

	KW	Group B	Group C	Group D	Group E
GDP	0.000	0.0238	0.000	0.000	0.001
GDPCAP	0.000	0.147	0.000	0.347	0.226
OPEN	0.114	0.332	0.044	0.506	0.886
FIN	0.000	0.808	0.000	0.190	0.268
DIVGEO	0.068	0.975	0.996	0.936	0.824
DIVCOM	0.000	0.954	0.996	1.000	0.997
TERMS	0.141	0.898	0.987	0.797	0.756

The table displays the marginal significance levels of tests for location of distributions. KW: Kruskal-Wallis test for all the subgroups. Last four columns: one sided Mann-Whitney tests for group A and group i, i = B, ..., E, respectively.

TABLE 4. Means and medians of country characteristics for countries which have changed their exchange rate system between 1982 and 1992

A. Means and medians of country characteristics in subgroups

	Group R	Group N	Group F
GDP	155295	197019	30177
	64392	6338	15000
GDPCAP	7017	6147	1875
	5460	2364	866
OPEN	0.361	0.534	0.494
	0.374	0.500	0.347
FIN	0.821	0.977	0.396
	0.341	0.239	0.208
DIVGEO	44.6	53.7	59.0
	44.6	52.3	59.4
DIVCOM	19.0	40.8	46.5
	17.2	41.4	43.5
TERMS	0.068	0.110	0.173
	0.066	0.100	0.113

Group R: countries which have moved to a more rigid exchange rate arrangement. Group N: no change in the exchange rate system. Group F: countries which have moved to a more flexible exchange rate regime.

B. Tests for location of distributions

F- and t-tests for equality of means in subgroups:

	F	Group R	Group F
GDP	0.315	0.784	0.634
GDPCAP	0.004	0.709	0.001
OPEN	0.467	0.064	0.015
FIN	0.327	0.535	0.407
DIVGEO	0.024	0.064	0.067
DIVCOM	0.004	0.007	0.288
TERMS	0.054	0.122	0.105

Last two columns: t-tests for group N and group R and F, respectively.

Kruskal-Wallis test and Mann-Whitney test for location of distributions:

	KW	Group R	Group F
GDP	0.119	0.929	0.317
GDPCAP	0.003	0.833	0.000
OPEN	0.030	0.060	0.008
FIN	0.156	0.877	0.203
DIVGEO	0.021	0.036	0.967
DIVCOM	0.004	0.003	0.856
TERMS	0.058	0.955	0.071

Last two columns: one sided Mann-Whitney tests for group N and group R and F, respectively.

TABLE 5. Two category probit-models

	(5A)	(5B)
GDP	0.217	0.546
	(0.623)	(1.380)
GDPCAP	-0.413	-0.683
	(1.074)	(2.610)***
OPEN	-3.297	0.039
	(2.218)**	(0.127)
FIN	0.313	-0.098
	(1.009)	(0.990)
DIVGEO	0.040	0.008
	(1.850)*	(0.914)
DIVCOM	-0.040	-0.020
	(1.894)*	(2.854)***
TERMS	3.245	
	(0.813)	
INCONV		-0.364
		(1.255)
Log-likelihood	-21.203	-82.759
Chi-squared	15.680**	19.724***
Observations	46	125

Constant terms are not reported. Absolute t-statistics are displayed in parentheses under the coefficient estimates. *: test-statistic is significant at the 10% level; ** (***): significant at the 5% (1%) level. Scale of coefficients: GDP 10^{-6}, GDPCAP 10^{-4}. The dependent variable obtains the value of 0 for group A-C countries and the value of 1 for group D and E economies. Germany is classified in group C.

TABLE 6. Three category ordered probit-models

	(6A)	(6B)
GDP	0.610 (0.439)	0.502 (0.839)
GDPCAP	-0.014 (0.043)	-0.210 (1.000)
OPEN	-2.132 (1.541)	0.035 (0.114)
FIN	0.337 (1.275)	-0.041 (0.510)
DIVGEO	0.050 (2.155)**	0.003 (0.410)
DIVCOM	-0.052 (1.803)*	-0.011 (1.804)*
TERMS	5.270 (1.220)	
INCONV		-0.584 (2.288)**
THRESHOLD	1.500 (3.957)***	0.889 (6.424)***
Log-likelihood	-33.137	-116.38
Chi-squared	27.960***	21.836***
Observations	46	125

The dependent variable obtains the value of 0 for group A and B countries, 1 for group C and D economies, and 2 for group E nations. Germany is classified in group C. The variable THRESHOLD is the threshold between the second and third class; the threshold between the first and second class is normalized to be zero.

TABLE 7. Three category nonordered logit-models

Estimates for group	C	D and E
GDP	8.098 (2.048)**	10.663 (2.682)***
GDPCAP	1.019 (1.854)*	-1.796 (2.737)***
OPEN	1.333 (1.731)*	0.909 (1.428)
FIN	0.162 (1.343)	-0.066 (0.424)
DIVGEO	-0.038 (1.148)	0.018 (1.170)
DIVCOM	-0.002 (0.136)	-0.029 (2.373)**
Log-likelihood	-93.808	
Chi-squared	48.189***	
Observations	125	

Germany is classified in group C. The parameters for group A and B countries are normalized to be equal to zero.

DATA APPENDIX

Countries in the sample

Group A (country pegs to a single currency): Antigua & Barbuda, Argentina, Bahamas, Barbados, Belize, Djibouti, Dominica, Ethiopia, Grenada, Liberia, Nicaragua, Oman, Panama, St. Lucia, St. Vincent and the Grenadines, Sudan, Suriname, Syria, Trinidad and Tobago, Yemen (all of these countries peg to the U.S. dollar); Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, Mali, Niger, Senegal, Togo (all of these countries peg to the French franc); Bhutan, Lesotho, Swaziland, Yugoslavia. Total of 38 countries.

Group B (country pegs to a currency composite): Burundi, Iran, Libya, Myanmar, Rwanda, Seychelles (all of these countries peg to the SDR); Algeria, Austria, Bangladesh, Botswana, Cape Verde, Cyprus, Czechoslovakia, Fiji, Finland, Hungary, Iceland, Jordan, Kenya, Kuwait, Malawi, Malaysia, Malta, Mauritius, Marocco, Nepal, Norway, Papua New Guinea, Solomon Islands, Sweden, Tanzania, Thailand, Tonga, Uganda, Vanuatu, Western Samoa, Zimbabwe (all of these countries peg to a currency composite other than the SDR). Total of 37 countries.

Group C (limited flexibility in terms of a single currency or a group of currencies): Bahrain, Qatar, Saudi Arabia, United Arab Emirates (these countries are classified under the title of limited flexibility in terms of a single currency); Belgium (Luxembourg

is aggregated with Belgium), Denmark, France, Germany, Ireland, Italy, Netherlands, Spain, United Kingdom (these countries belong to the EMS). Total of 13 countries.

Group D (currency is adjusted according to a set of indicators or other managed floating): Chile, Colombia, Madagascar, Zambia (these countries adjust their exchange rates according to a set of indicators); China P.R., Costa Rica, Ecuador, Egypt, Greece, Honduras, India, Indonesia, Israel, Korea, Mauritania, Mexico, Pakistan, Poland, Portugal, Romania, Singapore, Somalia, Sri Lanka, Tunisia, Turkey (these countries are classified under the title of other managed floating). Total of 25 countries.

Group E (independently floating): Afghanistan, Australia, Bolivia, Brazil, Canada, Dominican Rep., El Salvador, Gambia, Ghana, Guatemala, Guyana, Haiti, Jamaica, Japan, Lebanon, New Zealand, Nigeria, Paraguay, Peru, Philippines, Sierra Leone, South Africa, Switzerland, Unites States, Uruguay, Venezuela, Zaire. Total of 27 countries.

The exchange rate arrangements are according to the situation on December 31, 1991. In the estimations Germany is classified either in class C or in class E.

When compared the position on March 31, 1982 to the one on March 31, 1992, the following countries have moved to a more rigid exchange rate regime (Group R): Argentiina, Greece, Iceland, Israel, Morocco, Spain, Thailand, United Kingdom, Western Samoa, Yugoslavia. Total of 10 countries.

Openness of the goods producing sector of the economy is measured by the ratio of foreign trade (imports plus exports) to GDP. The average of the annual observations covering the period of 1987-1990 is used. Source of the raw data: IFS. Variable: OPEN.

Degree of international financial integration is measured by the ratio of foreign assets of the banking system to the money supply. The average of the annual observations covering the period 1987-1990 is used. Source of the raw data: IFS, line 21 (foreign assets of the banking system) and line 34 (money supply). Variable: FIN.

Geographic concentration of foreign trade is measured by the percentage of the three largest export destinations in 1987-1988. Source: The Economist Book of Vital World Statistics (1990). No data were available for Antigua & Barbuda, Bhutan, St. Lucia, Swaziland, or Botswana. Variable: DIVGEO.

Commodity concentration of foreign trade is measured by the Hirschmann index of exports for 1988. The index is normalized to take values ranging from 0 to 100 (maximum concentration). Sources: Handbook of International Trade and Development Statistics (1990), Table 4.5, is the main source; for some countries Direction of Trade Statistics (1991) is used. No data were available for Antigua & Barbuda, Bhutan, Djibouti, Swaziland, Botswana, Czechoslovakia, Tanzania, China P.R., Poland, Romania, Afghanistan, or Lebanon. Variable: DIVCOM.

Fluctuations in the terms of trade is measured by the coefficient of variation of terms of trade over the period of 1980-1990. Quarterly data are used when available.

The following countries have moved to a more flexible exchange rate system (Group F): Afghanistan, Australia, Bolivia, Brazil, Burundi, Chile, China P.R., Dominican Rep., Ecuador, Egypt, El Salvador, Gambia, Ghana, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Indonesia, Jamaica, Lao, Libya, Madagaskar, Maldives, Mauritius, Nepal, New Zealand, Nigeria, Paraguay, Peru, Philippines, Romania, Rwanda, Sao Tome, Sierra Leone, Singapore, Somalia, Sudan, Tunisia, Uganda, Uruguay, Venezuela, Viet Nam, Zaire, Zambia. Total of 46 countries.

Since data were not available for all of group F countries, these economies are not included in the analysis of Sections 3-5 of the study. For the countries included in the sample, see groups A-E above.

Definition of variables and data sources

The size of a country is measured by GDP in U.S. dollars. The average of the annual observations covering the period 1987-1990 is used to even out the contribution of cyclical fluctuations and possible excessive movements in exchange rates. The exchange rate is the average of each year. Source of the raw data: International Financial Statistics (IFS). Variable: GDP.

Degree of economic development is measured by GDP per capita in U.S. dollars. The average of the annual observations covering the period of 1987-1990 is used. Source of the raw data: IFS. Variable: GDPCAP.

Source of the raw data: IFS. Data were available for Liberia, Trinidad and Tobago, Burkina Faso, Central African Republic, Cote d'Ivoire, Senegal, Togo, Austria, Bangladesh, Cyprus, Finland, Iceland, Jordan, Kenya, Malawi, Malaysia, Malta, Mauritius, Norway, Sweden, Thailand, Zimbabwe, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Spain, United Kingdom, Greece, India, Israel, Korea, Pakistan, Sri Lanka, Turkey, Brazil, Canada, El Salvador, Japan, New Zealand, Philippines, Switzerland, United States. Variable: TERMS.

Dummy variable to indicate the inconvertibility of a currency obtains the value of 1 for the countries with inconvertible currency and the value of 0 otherwise. Source: Exchange Arrangements and Exchange Restrictions. Variable: INCONV.

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