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EXCHANGE RATE REGIMES AND FISCAL PERFORMANCE. DO FIXED EXCHANGE RATE REGIMES GENERATE MORE DISCIPLINE THAN FLEXIBLE ONES?

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Abstract

This paper analyzes the influence of exchange rate regimes on fiscal performance, focusing on the difference between fixed and flexible exchange rates.

For these ends, a sample of 83 countries for the 1974-1998 period, the GMM methodology for dynamic proposal panel models proposed by Arellano and Bond (1991) and diverse exchange rate classifications are used. In relation to the latter, this paper discusses recent regimes classifications and proposes a new one that permits to cover possible inconsistencies between the commitment of the central bank and its observed behavior.

The results suggest that regimes' influence on fiscal performance depend on the international context, specifically the possibility of indebtedness and of the characteristics of the international finance system –integration, volatility and dominant financial structure-. In other words, it depends on credit availability as well as on the conditions or potential sanctioning of the finance system. It is found that in contexts where there is no original fiscal discipline and the authorities have the possibility of financing with debt of relatively low cost, fixed regimes do not purvey per se greater fiscal discipline than the flexible ones. On the contrary, flexible ones generate more discipline. In contexts with strong financing restrictions, the discipline's effects of both regimes are not substantially different. While in situations with abundance of capitals but where they are highly integrated, volatile and possibly subject to contagion effect, the same functioning of the international finance system can, through their potential sanction, achieve greater discipline in economies with fixed regimes that wish to remain as such.

CONTENTS

1 INTRODUCTION

Before the fall of the Bretton Woods system in 1973, most of the countries had fixed exchange regimes. Since then, countries have experienced with varied exchange rate regimes. The evaluation of the costs and benefits associated with them has been the source of many debates and continuous to be one of the most important in international economy in our days. In theoretical terms, it is difficult to establish a univocal consensus on this relation due to the many links –that are partly reinforced and partly counteracted – among the different exchange rate regimes and the macroeconomic variables. Precisely, the relevance of the empirical analysis consists of trying to quantify the relative importance of the different relations involved.

There are many empirical studies that analyze the impact of exchange rate regimes on different macroeconomic variables such as inflation and its volatility, money growth, real interest rate, product growth and its volatility. An issue that has not been deeply analyzed is the relation between exchange rate regimes and fiscal performance. The aim of this paper is to set out the relative importance of these links, specifically analyzing the regime influence on fiscal behavior.

Apart from informal discussions, the few existing empirical studies can be divided in two groups according to the type of analysis. On the one hand, the first group comprises papers like those of Tornell and Velasco (1995b) and Alfaro (1999), which recur to the analysis of episodes for certain countries –generally from Latin America-. Even if these can provide evidence in favor or against some hypotheses, it is not possible to isolate the effects of the different variables involved. On the other hand, the second group is formed by research such as that of Tornell and Velasco (1995a), Bazzoni and Nashashibi (1994) and Adam et al. (2000), who limit the analysis to the Sub-Sahara region in Africa to eliminate potential endogeneity problems in regime choice. This is because the countries that belong to the Franc Zone maintained a fixed regime from 1948 to 1994 and because this choice was due to political issues associated to colonial history and not to economic motives.

This paper surpasses previous analysis limitations covering a maximum sample of 83 countries during the 1974-1998 period. At the same time that it finds evidence about the exchange rate regimes´ influence on fiscal performance , it provides a possible criterion for regime election.

The empirical analysis expands and improves previous literature in many regards:

- It allows, unlike episode analysis, to work out the effect of exchange rate regimes on fiscal performance considering other variables that can affect this performance.

- It advances towards the use of a dynamic methodology of estimation (Generalized Method of Moments), which considers endogeneity problems and unobserved specific effects, which generate bias in estimations performed by fixed effects if the dependant variable has a strong persistence or temporal inertia.

- The correction of potential endogeneity problems, together with the inclusion of variables that affect regime election, makes it possible to incorporate economies of different regions.

- It makes an extensive use of available information concerning the classification of exchange rate regimes, widening the dichotomy "fixed vs. flexible" according to de jure classification compiled by IMF, and of new contributions by Levy Yeyati and Sturzenegger (2000) in relation to the classification according to behavior. In this sense, a new classification of exchange rate regimes is suggested, making it possible to cover probable inconsistencies between the commitment of the Central Bank -of intervening and subordinating its monetary policy to the currency market- and its behavior.

- It evaluates fiscal performance in many ways -total deficit, primary deficit, total expenditure, primary expenditure and revenues-, trying to capture not only the effect of the regime on an aggregated variable –defined on the basis of other variables- such as deficit, but also on "original" variables allowing to distinguish potential transmission mechanisms. Also, total and primary concepts of fiscal variables are used, making it possible to indirectly observe the links between the variables and the debt interests.

- Diverse sub-periods that characterize the level of capital market integration, indebtedness possibility and the dominant finance structure are considered, analyzing if these characteristics modify the influence of the regime on fiscal performance.

The paper is organized as follows: section 2 does a revision on the most representative theoretical and empirical works; section 3 justifies econometric methodology choice; section 4 presents the macroeconomic variables and diverse exchange classifications that are used; section 5 shows the econometric results; section 6 presents the conclusions.

2 THEORETICAL DISCUSSION

Traditionally, the explanations about exchange rate policies were based on the theory of optimal areas of Mundell (1960 and 1961), determining how different exchange rate regimes could be desirable for countries with different characteristics. For example, small and open countries having economies that are not very subjected to price shocks should have a more fixed regime. Even though the traditional approximation was useful in the past, it does not prove to be so useful nowadays given that it considers the choice of regime as if it were made

in vacuo, where each regime can be instantaneously placed and indefinitely sustained. As history shows, exchange rate regimes are not chosen once and forever but are frequently changed, either voluntarily or involuntarily.

More recently, attention has been focused on the potential credibility effects of the exchange rate policy, emerging a trade-off between credibility and flexibility. The theoretical studies analyzing the relationship between regimes and fiscal performance cover mainly four fields of study of Economics: dynamic stochastic models, the so-called stabilization policies, issues linked to political economy and studies relating the recent crisis of the nineties with growing integration and volatility of the capitals market.

The first group consists of those papers based on *dynamic stochastic models* of general equilibrium, which analyze the results of technological, monetary and government expenditure shocks under different exchange rate regimes. Some of them are: Obstfeld and Rogoff (1995b and 1998), Bachetta and van Wincoop (1999) and Devereux (1999). The latter outlines that the effect of the exchange rate regime on macroeconomic variables depends on the regime itself as well as on the monetary policy that is being implemented.

The second group, which is related to *stabilization policies,* includes many papers among which are those by Aghevli et al. (1991), Frenkel et al. (1991), Giavazzi and Pagano (1988), and Weber (1991). Their conventional vision supports the idea that fixed regimes provide more fiscal discipline than the flexible ones, since the adoption of lax fiscal policies would lead to an exhaustion of reserves and consequently to the collapse of the peg. As presumably the eventual collapse of the fixed exchange rate would imply a big political cost for the policy maker, this one would be disciplined, causing unsustainable fiscal policies not to occur in equilibrium. In other words, devaluation is not an option, which is of course an oversimplification, since like history repeatedly shows, fixed regimes usually fail to impose discipline and generally end in devaluation crises [1].

In relation to a most recent branch linked to issues of political economy, Tornell and Velasco (1994, 1995a and 1995b), Alfaro (1999), Velasco (1997), and Alberola and Molina (2000) can be named. Tornell and Velasco (1994, 1995a and 1995b) support that there are empirical and theoretical problems with the kind of lines of thought exposed by conventional papers on policy stabilization. They consider a fiscal authority prone to spend more than what is socially desirable and with a lower discount rate after a certain moment –for example, because of uncertainty about re-election - and, a central bank that can precommit itself not to finance the

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[1] See for example Calvo and Vegh (1996), Cooper (1971) and Kamin (1988).

deficits incurred by the fiscal authority for a finite period of time. They conclude that the difference in fiscal behavior among regimes lies in the intertemporal distribution of the costs. Under fixed schemes, unsound policies are manifested in falling reserves or exploding debts, making their costs effective only when the situation is unsustainable. While with flexible regimes, they are immediately manifested through movements in the exchange rate and the price level. Therefore, being inflation costly for the fiscal authority, flexible regimes can provide more fiscal discipline. It is important to outline that the previous result depends, on one hand, on the possibility of intertemporal choice for the policymaker, because if it does not have access to credit and/or if it had insufficient reserves, money-financed deficits would inevitably cause an immediate depreciation, regardless of the exchange rate regime. On the other hand, it is essential that the central bank can precommit not to accommodate the wishes of the fiscal authority only for a finite period of time because, if this commitment were forever, the equivalence between regimes found by Helpman (1981) would persist.

Velasco (1997) develops a model analogous with that discussed in Alesina and Drazen (1991) in which he rationalizes debt bubbles and post-stabilization programs. That is, it gives rationality to the phrase "things must be really bad before they start to get better again". So, he recurs to a model with interest groups where the government's resources are seen as common property. In first place, he finds that deficits can be can be reduced through fiscal reform, but such a result will only happen after a long and intense period of government indebtedness and, in second place, that the deficit bias will be greater as greater is the fragmentation level of the interest groups.

From a distributive point of view, Alfaro (1999) justifies why governments hold policies that are presumed not to be sustainable in the long run. Considering heterogeneity in the population as regards its dotations, whether they have transable or non-transable goods, it argues that the real exchange rate appreciation associated to stabilization plans improves the position of the latter.

Since the exchange rate and finance crises of the nineties, there has been a great upsurge of literature that analyzes the *role of growing integration and volatility of capital markets* upon these crises. Some of these papers are by Chang and Velasco (1998), Meng and Velasco (1999), Chang (1999), and Velasco (1996). In general, they analyze credibility policy and finance structure problems combined with herd behavior, contagion effect and financial frictions as main elements in recent crises. Chang (1999) divides the recent disscusions that try to explain the crises in emerging countries into two groups. Included into the first one, he considers those under the "bad policy view" that, in agreement with the spirit of Krugman's first generation crises (1979), suggest that crises are the inevitable result of inconsistent policies.

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Into the second one, he considers those under the "financial panic view", who maintain that fundamentals do not seem to be good predictors and that, on the contrary, the expectations of the market subject to herd behaviors and contagion effect are the key to understand the nineties'crises.

Chang and Velasco (1998) analyze interaction between banking fragility and exchange rate regimes, basing themselves on microfundamentals of the financial system, considering as benchmark Diamond and Dybvig's model (1983). They find that this fragility is evident in fixed regimes. A drastic change in public trust can cause a fall in banking deposits and, possibly, a run on deposits. Under fixed regimes, the central bank faces the following trade-off. If nothing were done, a wave of banking bankruptcy would occur and consequently a serious interruption of the economic activity. If it purveyed credits to the most affected banks, these credits would rapidly return to the central bank in the form of a greater demand of international reserves, causing the collapse of fixed exchange rate. On the contrary, with flexible regimes and a central bank acting as lender of last resort, banking runs on deposits originated by unfulfilled expectations can be eliminated.

Velasco (1996) extends the Barro-Gordon model to a dynamic context in which the level of the state variable, in this case the debt stock, determines the sustainability of the fixed exchange rate. Considering that reputation matters and that there is a fixed cost for devaluation, he finds that fixed regime is sustainable if and only if the debt stock is sufficiently low. There is an indebtedness rank in which multiple equilibriums are obtained, where the devaluation result depends on the expectations of the agents. While for a certain level of high debt, there is an equilibrium where the speculative attack occurs with positive probability, promoting the decrease in debt size on the side of the government. That is, for the fixed exchange rates to be really fixed, the debt must be smaller if investors are voluble -in the sense of being prone to panic-.

The study of all this literature suggests many questions: Do fixed regimes provide more fiscal discipline than flexible ones? Does the possibility of government indebtedness modify the effect of exchange rate regimes on fiscal performance? Do greater integration and volatility of the current international financial system have any special effect on fiscal behavior in economies with fixed exchange rate regimes? Did stabilization programs of the eighties promote greater fiscal discipline? The aim of this paper is to respond to these questions and others that may arise as this analysis goes further.

3 ECONOMETRIC METHODOLOGY

In selecting the estimation method three aspects were taken into account. In the first place, issues concerning data. Due to the availability of panel data -which make it possible to retain all the information in relation to the use of annual averages - the presence of the country's unobservable factors must be enabled. Secondly, particularities of the dependent variable must be considered. Fiscal performance in its diverse forms of measurement has a dynamic nature –as table 9-1 shows-, reason for which the methodology to be used should allow for an inertia behavior of this variable. A third element is the so-called "reverse causality". That is, as some of the explanatory variables are likely to be jointly determined with fiscal behavior, endogeneity of the explanatory variables must be controlled.

Considering these aspects, the appropriate methodology to use is the Generalized-Method-of-Moments (GMM) estimator for dynamic panel data models developed by Arellano and Bond (1991). This estimator deals with country specific effects and potential endogeneity of the explanatory variables. The control for endogeneity is achieved by using "internal instruments" (i.e., instruments based on lagged values of the explanatory variables).

What follows is a brief presentation and justification of the chosen methodology and its benefits as regards the most frequently used alternatives. The dynamic nature of the fiscal performance (F) must be represented through a model containing lagged dependent variables among the regressors. To simplify the analysis, a simple autoregressive model with one lag period of the dependent variable is considered:

$$F_{it} = dF_{i,\,t-1} + x_{it}^{'}b + u_{it} \qquad\qquad i = 1,...,N \qquad t = 1,...,T \qquad\qquad (1)$$

Where d is a scalar, $x_{it}^{'}$ of dimension 1xk represents a group of variables that potentially affect fiscal performance, and b is of kx1. Assuming that the u_{it} follows a one-way error component model:

$$u_{it} = m_i + n_{it} \qquad\qquad\qquad (2)$$

Where $m_i \sim \text{IID}(0, s_m^2)$ and $n_{it} \sim \text{IID}(0, s_n^2)$ are independent of each other and among themselves.

In these dynamic models, the implications of the election of diverse estimation techniques have a different nature from those associated to static models. Since F_{it} is a function of m_i, $F_{i,t-1}$ is also a function of m_i. Therefore, $F_{i,t-1}$, a right-hand regressor in (1), is correlated with the error term. This renders the Ordinary Least Square (OLS) estimator biased and inconsistent even if the n_{it} are not serially correlated. In relation to the Fixed Effect (FE)

estimator, the Within transformation wipes out the m_i, though $(F_{i,\,t-1} - \overline{F}_{i,\,t-1})$ where

$$\overline{F}_{i,\,t-1} = \sum_{t=2}^{T} F_{i,\,t-1} \Big/ (T-1) \text{ will still be correlated with } (n_{it} - \overline{n}_i) \text{ even if the } n_{it} \text{ are not}$$

serially correlated. This is because $F_{i,t-1}$ is correlated with $\overline{n}_i$ by construction. The latter average contains $n_{i,\,t-1}$ which is obviously correlated with $F_{i,\,t-1}$. In fact, the Within estimator will be biased and only if $T \to \infty$ will the Within estimator of d and b be consistent for the dynamic error component model. The same problem springs with the random effects Generalized Least Square estimator (GLS) because $(F_{i,\,t-1} - q\overline{F}_{i,\,t-1})$ will be correlated with $(u_{i,\,t} - q\overline{u}_{i,\,t-1})$.

An alternative transformation that wipes out the individual effects, yet does not create the problem mentioned above, is the First Difference Transformation. In fact, Anderson and Hsiao (1981) suggested the following: first, differencing the model to get rid of m_i, and then, using $\Delta F_{i,\,t-2} = (F_{i,\,t-2} - F_{i,\,t-3})$ or $F_{i,\,t-2}$ as an instrument for $\Delta F_{i,\,t-1} = (F_{i,\,t-1} - F_{i,\,t-2})$. These instruments will not be correlated with $\Delta n_{it} = n_{it} - n_{i,\,t-1}$ as long as the n_{it} themselves are not serially correlated. This instrumental variable estimation method leads to consistent but not necessarily efficient estimates of the parameters in the model, because it does not make use of all the available moment conditions as Ahn and Schmidt (1993) show, and it does not consider the differenced structure on residual disturbances (Δn_{it}). A methodology considering country specific effects and the bias of dynamic panel data models is the GMM estimator developed by Arellano and Bond (1991). This estimator works in the following way: first, take first differences of a model like (1) which, generalized to a model containing k lagged dependent variable as regressor, leave:

$$\Delta F_{it} = \sum_{j=1}^{k} d_j \Delta F_{i,\,t-j} + b'\Delta x_{it} + \Delta n_{it} \tag{3}$$

Where $\Delta F_{it} = F_{it} - F_{i,\,t-1}$. First differencing gets rid of the country specific effects, but leads by construction a correlation between the differenced lagged fiscal variable and the differenced error term. Therefore, these authors propose using lagged levels of the explanatory variables, including the lagged dependent variable, as instruments.

The GMM estimator will be consistent if the lagged levels of explanatory variables are valid instruments for differenced explanatory variables. This will hold if the error term is not serially correlated. These assumptions can be tested through the tests proposed by Arellano and Bond (1991). The first is a Sargan test of overidentifying restrictions, which tests the overall validity of the instruments. Failure to reject the null hypothesis gives support to the model. The second is a test for serial correlation in the error term. If such test does not reject the null hypothesis of second order correlation abs ence, it can be concluded that the original error term does not have serial correlation.

4   DATA

The largest sample embraces a panel of 83 countries[2] –21 OECD countries and 62 non OECD- for the 1974-1998 period. The source of data used for the macroeconomic and fiscal variables were *Macro Time Series (MTS)* and *Government Finance (GF)* of the *World Bank Global Development Network Growth Database (WB)*. The source of data of exchange rate regimes was the *IMF Annual Report on Exchange Arrangements and Exchange Restrictions* for de jure exchange rate classification and the *Exchange Rate Classification Database* by Levy Yeyati and Sturzenegger (2000).

4.1   Macroeconomic and fiscal variables

Total deficit, primary deficit, total expenditure, primary expenditure and fiscal revenues are considered as fiscal performance measures, all of them as GDP percentage. The shock in trade terms, GDP per capita, openness, inflation rate, a dummy of hyperinflation and, several classifications of exchange regimes specifically discussed in the following sub-section are used as explanatory variables[3].

4.2   Exchange rate regimes classifications

There are two points that should be taken into account when carrying out an exchange rate classification:

• The degree of detail in the de jure classification. While it is often spoken of the "fixed vs. flexible" dichotomy, the *de jure* classification available is broader, covering from currency boards or countries not having their own currency, to flexible exchange rate regimes with high, low or no intervention.

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[2] The complete list of countries included in this paper is presented in the Data Appendix 8.1.

[3] For more details regarding the building of variables see Data Appendix 8.2.

- The criterion to follow when carrying out the classification. Economic literature shows two possible options to carry it out: a *de jure* classification, based on the commitment adopted by the central banks; and a *de facto* classification, product of the actual behavior. Neither of the methods is entirely satisfactory. The *de facto* classification has the advantage that it is based on the observed behavior, but does not make it possible to distinguish between stable nominal exchange rates resulting from the absence of shocks, and the stability produced by political actions counteracting the shocks. Because of this, it fails to capture what might be the essence of an exchange rate regime -the type of commitment of the central bank to intervene and subordinate its money policies to the currency market. The *de jure* classification captures this formal commitment, but fails to control policies which are inconsistent with this commitment.

Taking these two points into consideration, three exchange classifications are used:

- Initially, a three-category *de jure* classification is considered: *fixed*, *intermediate* and *flexible*. The fixed regimes cover: a single currency peg; SDR peg; other official basket pegs; and a secret basket peg, according to the IMF terminology. The intermediate group includes: cooperative arrangement, unclassified flexible, rule based, crawling peg and target zone. While the flexible group includes independent float and managed floating.

There were two questions in this way of grouping:

The first one was associated to the managed float category. It was decided to consider it as floating because for the topics and variables involved it is more relevant to know whether there is a commitment on the part of the central bank or not, rather than if they effectively intervene or not in the currency market. In fact, according to Levy Yeyati and Sturzenegger (2000), only a bit more than 30% of the countries said to have a floating exchange rate regime, behave as such.

The second question is how to classify the countries participating in the European "snake" in the mid seventies and later in the EMS. These countries have fixed exchange rate regimes, but they float against other currencies. In agreement with other papers -Ghosh et al. (1997) and Levy Yeyati and Sturzenegger (2000)-, this group is classified as intermediate.

- The second exchange classification differentiates long or short term de jure fixed regimes, depending on whether they have been defined as such, at least five consecutive years or not, respectively. This leads to a four-category classification: *longpeg*, *shortpeg*, *intermediate* and *flexible*.

- The third exchange rate classification is the one suggested by this paper, which permit to capture both the central bank commitment to intervene and subordinate its monetary policy to the currency market, as well as the likely inconsistencies in its behavior. For this, de jure

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classification of the IMF and de facto classification by Levy Yeyati and Sturzenegger (2000)[4] are combined under a grouping criterion.

Tables 9-3 up to 9-5 describe, through the "crossing" of de jure and de facto classifications, the main characteristics of the regimes for the 1974-1998 period in quantitative terms, while tables 9-6 up to 98 do the same following some of the macroeconomic variables used in the analysis. Some of the most outstanding characteristics are:

- An important proportion of the *de facto* inconclusive regimes are present for all the *de jure* exchange rate regimes, especially for fixed regimes (table 9-4). At the same time the greatest proportion of the *de facto* inconclusive regimes are concentrated in *de jure* fixed regimes (table 9-3).

- While 63% of the regimes showing a flexible behavior are defined as such, just 28% of the ones behaving as fixed admit being so (table 9-3). This behavior –paraphrasing Calvo and Reinhart (2000)- could be referred to as "fear of pegging". It could results from a desire of reduction of exposure to speculative attacks associated to explicit compromises.

- Excluding the inconclusive ones, while 62% of *de jure* flexible regimes behave as such, just 39% of the fixed ones does so (table 9-5). This result shows an important difference between the central bank commitment to intervene and the behavior actually observed according to the exchange rate regimes.

- The economies with *de jure* fixed regimes are open economies with low GDP per capita, especially for those which are also *de facto* fixed (tables 9-6 and 9-8).

- As regards the inflationary performance, the *de facto* intermediate regimes show the highest rates for each *de jure* regime; and *de facto* fixed regimes have lower average rate than the flexible ones (table 9-7).

On the basis of the characteristics mentioned above, the theoretical and empirical elements considered for building the new classification of exchange rate regimes are:

- The categories' diversity should balance a trade-off between greater information and restrictions imposed by econometric issues.

- A clear difference between commitment and behavior, according to de jure exchange rate regimes, is observed, with greater divergence for fixed regimes.

- The categories' diversity should consider the performance or explanatory capacity of the different possible categories. For example, while it seems to be obvious that a country with

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[4] Specifically the 1st round classification is considered, as it emerges from a deeper analysis likely to eliminate the possible bias towards the irrelevance of the significance of the regime. The outline of the criterion considered by Levy Yeyati and Sturzenegger (2000) is presented in table 9-2.

In this paper the dirty floating categories and crawling peg by Levy Yeyati and Sturzenegger (2000) were grouped under de facto intermediate category.

a de jure fixed regime actually showing an intermediate or flexible behavior is inconsistent with this commitment, it is not clear that an economy with flexible regime, behaving as fixed, violates any kind of commitment which makes it inconsistent.

The new suggested classification of exchange rate regimes -with the letters identifying the different categories- is presented in table 4-1.

Table 4-1
New classification of exchange rate regimes

		de facto Classification			
		Fixed	Intermediate	Flexible	Inconclusive
de jure Classification	Fixed	a	b	c	d
	Intermediate	e	f	g	h
	Flexible	e	f	g	h

This new classification is composed of eight categories:

- (*a*) *de jure* fixed regimes behaving consistently with the commitment. For example: Lesotho 1980-1998, Bahrain 1992-1997, and Ireland 1976-1978.
- (*b*) *de jure* fixed regimes which, having behaved in the opposite way towards the commitment –have variations on their exchange rates–, had strong movements on their reserves. For example: Bolivia 1982-1985, Argentina 1975-1977, and Chile 1974-1976.
- (*c*) *de jure* fixed regimes which, even if they suffer changes on their exchange rates, are not detected or punished for such behavior as they do not show greater changes on their reserve levels. For example: Poland 1992-1995, Burundi 1985-1991, and Sweden 1981-1982.
- (*d*) A priori, they could be thought of as fixed regimes having stable economies, with no greater external shocks or credibility problems. For example: Australia 1974-1983, New Zealand 1974-1984, and The Bahamas 1974-1998.

The remaining categories have been grouped according to their observed behavior, as in theoretical terms it is not evident that the disagreement between both classifications creates any kind of inconsistency.

- (*e*) Economies behaving as fixed that do not want to be limited or judged by the rules governing the *de jure* fixed regimes. They are linked to the "fear of pegging" concept. For example: Finland 1992-1998, Ireland 1987-1998, Denmark 1981-1989, and New Zealand 1992-1998.

- (*f*) They have important movements in their reserves, and changing and volatile exchange rates, but are not engaged with the exchange rate fixation. For example: Argentina 1981-1985, Brazil 1987-1993, and Thailand 1997-1998.

- (*g*) Within this classification, it is really close to pure flexible, as they show important variations in the exchange rate but little movement on its reserves. For example: the United States 1977-1998, Japan 1977-1998, Turkey 1981-1993, Chile 1992-1995, Uruguay 1986-1988 y 1990-1996.

- (*h*) It includes stable economies with no important external shocks or strong-enough as to avoid greater effects on their exchange rates or reserves. For example: Belgium 1974-1998, Canada 1974-1997, Tunisia 1987-1998, and Costa Rica 1993-1998.

5 EMPIRICAL RESULTS

In this section, the econometric results are presented. The inclusion of explanatory variables is not derived from a particular model. On the contrary, it is general enough as to test different hypotheses. The basic model is assessed for the 1974-1998 period and considers, in addition to the lagged of the dependent variable, the terms of trade shocks, the GDP per capita, and the exchange rate regimes as potential determinants of the fiscal variables. Later, the openness and the inflation are included as control variables. Then, the study advances in two ways: in first term, the model is evaluated at different sub-periods and, in second term, the exchange rate classification is enriched.

It is worth mentioning that the Sargan test and the serial correlation test cannot reject their respective null hypothesis for almost all the models estimated through GMM, supporting the use of appropriate lags of the explanatory variables as instruments for the estimation.

For a proper reading of the coefficients associated with exchange rate regimes, it is worth reminding that they refer to their differential effect compared to the flexible –*de jure* flexible in the IMF classification, and pure flexible for the new classification (category g)-.

5.1 Importance in the choice of the estimation method

Models 1 and 2 of tables 9-9 and 9-13 represent the most basic estimated model. They cover the 1974-1998 period and consider the current and past values of the shocks in exchange terms and of the GDP per capita as explanatory variables together with lags of the fiscal variable and the exchange regimes –fixed, intermediate and flexible. Models 1 and 2 differ in the estimation methodology depending on whether it is FE or GMM respectively. The results show the great importance of the proper choice of the method. On the one hand, for all fiscal variables the estimate by FE increases the importance of the inertial behavior and, on the

other hand, the effect of the regimes suffers several changes not only in significance but also in direction and magnitude.

5.2 Controlling endogeneity for variables that influence on the regime choice but not on the fiscal performance

Model 2 makes it possible to isolate the effect of each variable, including the regimes, on the fiscal variable. However, this endogeneity control does not include variables having an incidence on the regime choice but not a direct influence on the fiscal behavior. In the FE estimation context this would be solved by the use of simultaneous equations for truncated endogenous variables as Maddala (1983) suggests. Due to the fact that this proceeding is not appropriate under GMM estimation, this type of variables were included in the regression equation as control variables, building model 3, in which openness an inflation are added as possible determinants of exchange regime, as many papers like Frieden et. al. (2000) and Ghosh et. al. (1997) suggest.

Model 3 shows a strong persistence in all fiscal variables, with positive and significant coefficients. An improvement on the exchange terms increases the total and primary fiscal balance after many periods because of the increase in fiscal revenues and the decrease in expenditures, which is consistent with the standard neoclassic approximation through a tax-smoothing model. However, in the short run the increase in the revenues is compensated by an increase in the expenditures causing a slight or null improvement in the fiscal balance, which can be justified with political economy models, in line with the evidence found by Tornell and Lane (1994) and Talvi and Vegh (2000). As regards the influence of exchange rate regimes, fixed ones show better fiscal performance over the total expenditure, total deficit and primary variables. These results would support the conventional view held by Aghevli et al. (1991), Frenkel et al. (1991), Giavazzi and Pagano (1988), and Weber (1991) according to which fixed regimes provide greater fiscal discipline.

5.3 The role of international markets

Important issues to be taken into account in order to properly analyze the exchange rate regime influence on the fiscal performance are indebtedness possibilities and the international capital market characteristics, especially as regards their level of integration, volatility and dominant financial structure. As described in the theoretical discussion, indebtedness possibilities make the possibility of intertemporal choice for the policymaker. Likewise, there is ample literature that analyzes how some changes in the international financial system modify its intrinsic functioning:

- Dominant financial structure change: while in the seventies and eighties the financial structure was dominated by banks, since the beginning of the nineties there has existed a great growth of institutions such as investment, pension and insurance funds which modify the link and rules between debtors and creditors. As Krueger (2002) explains, while in the eighties an important proportion of the emerging countries debts were in charge of bank loans and the 85% of the creditors could be gathered around a table, in the nineties the bond market has quadruplicated and bond holders are more numerous, anonymous and hard to coordinate than the banks. This creates a joint action problem, due to the fact that certain agreements on debt reorganization that had once been achieved are, in the present context, more difficult to achieve.

- New financial instruments' growth: The previous situations worsen with the growth of debt instruments and derivatives, which allow investors to take short-term positions in weak currencies through spot, forward and options of the money market. This means that those countries having fixed regimes, especially those having unsustainable policies and structural weakness, run under the risk of suffering speculative attacks to their currency and of losing access to the capital market.

- Growing integration: several papers such as Bayoumi (1990) and Jones and Obstfeld (1997) find a growing financial integration pattern since 1973 through the correlation between saving and investment.

- Growing volatility of financial flows: Fischer (1999) mentions that even though the nature of the capital movement is not entirely smooth or predictable, the capital flow volatility in the nineties seems to be excessive.

- Growing volume of financial flows: the total amount of financial flows as proportion of the global product showed a slight upward trend between 1974 and 1982, a decrease in the 1983-1989 period and an important increase in the nineties.

- Contagion effect: Wolf (1997) defines contagion in the financial markets as the co-movement of markets not ascribable to a common co-movement of the fundamentals. The three ways that can help to explain this behavior are: the herd behavior –attributed to asymmetric information problems-, the portfolio's composition – which makes that any change in the output of an active in a market contribute to modifications in the rest of the composition - and the interdependence of the portfolio –which seeks to compensate losses of capital in a country with the sell of assets from other markets to increase liquidity in view of the rescue of investors -.

For these reasons, the 1974-1998 period was divided into three sub-periods according to the capital flow size and its volatility, the integration level and the dominant financial structure:

- 1974-1982: This period was characterized for an international financial structure dominated by bank loans and for an abundance of capitals that allowed strong increases of the debts that ended with the 1982 crisis.
- 1983-1989: It was a period of strong reduction in the capital flows as a consequence of the debt crisis originated by Mexico in August 1982, which continued with several crises in emergent economies such as Argentina, Brazil, Chile and Nigeria.
- 1990-1998: Like in the seventies, it is a period of capital abundance, but unlike the former the growth of institutions such as investment, pension and insurance funds encouraged a growing integration of the international financial system that favored the development of bonds and stocks markets. The growing volatility of the financial flows appears as an outstanding characteristic, which is usually explained by two classes of arguments. On the one hand, some associate it to rational motives based on the fundamentals and; on the other hand, there are arguments -about which most agree - supporting the existence of additional irrational motives, such as the contagion effect or herd behavior, which make the volatility characteristic of the international investors appears to be boosted by some level of economic frailty. In this sense, Greenspan (1998) points out: "Recent crises, while sharing many, if not most, of the characteristics of past episodes, nonetheless, appear different. Market discipline today is clearly far more draconian and less forgiving th an twenty or thirty years ago. Owing to greater information and more opportunities, capital now shifts more readily and increasingly to those ventures or economies that appear to excel."

Table 5-1 summarizes the characteristics of these periods in two dimensions. In first place, it differentiates according to capital flow size, trying to reflect the credit availability at a global scale. In second place, it distinguishes the dominant structure, the characteristics of the international credit market and the volatility level with the idea of reflecting the conditions or potential sanctioning power of the financial market as explained above and as shown by Greenspan's (1998) statement.

Table 5-1
Characterization of different periods of capital flow

		Dominant structure and international credit market characteristics	
		Dominated by banks, fairly stability of the financial system	Dominated by the bond market; high integration; high volatility of the financial system; contagion effect
Size of capital flows	Very High		1990-1998
	High	1974-1982	
	Low	1983-1989	

In this way -maintaining the de jure exchange classification used in models 1, 2 and 3 and the structure of variables in model 3- models 4, 5 and 6 refer to periods 1974-1982, 1983-1989 and 1990-1998 respectively. An interesting result is that the 1983-1989 period appears as the one with greater persistence or inertia of the fiscal variables, for those associated to both deficit and expenditure. The results obtained are exposed on tables 9-9 to 9-13 and the differential effects of fixed regimes in relation to flexible ones are summarized in table 5-2.

Table 5-2
Differential fiscal performance of the fixed regime in relation to the flexible one

	1974-1982	1983-1989	1990-1998
Total Deficit	(+)	(-)	0
Primary Deficit	(+)	0	0
Total Expenditure	(+)	0	(-)
Primary Expenditure	(+)	0	(-)
Revenues	0	0	0

Note: 0 indicates that there is no statistically significant difference between the fixed regime coefficient compared to the flexible one, (+) that this difference is statistically positive and (-) that it is statistically negative.

A highly different behavior is observed when the different periods are considered, except for the fiscal revenues, which do not show significant differences for any period in comparison to the flexible ones. For the 1974-1982 period fixed regimes show a lower disciplinary effect than that of the flexible ones, which could be associated to political economy models. That is, in an international context with abundance of credit and low initial percentage debts, the presence of "weak" and divided governments or governments prone to spend, predict -ceteris paribus- laxer fiscal situations in countries with fixed regimes and greater discipline in economies with flexible regimes due to the immediacy of the punishment associated to the unsustainable fiscal policy.

For the 1983-1989 period, even though the fixed regime shows greater discipline over the total deficit, in general terms it does not show a different behavior from the flexible one as it does in the preceding period. Nevertheless, since the influence of the regime does not only depend on the possibility of its current strategic use but also on the accumulated behavior up to the moment, the fixed regime grouping under a single category does not make it possible to decipher its effect, for which future models would broaden this classification.

For the 1990-1998 period, the fixed regime is likely to have a grater fiscal discipline through the expenditure variables, although it does not have influence on any other variable. These results are analyzed in the following models in which more information will be available.

5.4   Long and short term fixed regimes: Short Peg and Long Peg

To differentiate -among the de jure fixed - those with long and continuous tradition from the rest, the fixed classification is broaden to Long Peg and Short Peg depending on whether the fixed regime lasted at least five consecutive years or not. The results thus obtained are exposed on tables 9-14 to 9-18 and the differential effects of fixed regimes in relation to the flexible ones are summarized in table 5 -3.

Table 5-3
Differential fiscal performance of Long Peg and Short Peg compared to the flexible one

		1974-1982	1983-1989	1990-1998
	Total Deficit	(+)	0	0
	Primary Deficit	(+)	0	0
Long Peg	Total Expenditure	(+)	0	0
	Primary Expenditure	(+)	0	(-)
	Revenues	0	0	(+)
	Total Deficit	(+)	0	0
	Primary Deficit	(+)	(-)	0
Short Peg	Total Expenditure	(+)	(-)	(-)
	Primary Expenditure	(+)	(-)	0
	Revenues	0	(-)	0

Note: 0 indicates that there is no statistically significant difference between the fixed regime coefficient compared to the flexible one, (+) that this difference is statistically positive and (-) that it is statistically negative.

Table 5-3 shows that while in the 1974-1982 period both classes of fixed regimes tended toward worse fiscal discipline than the flexible ones, through the deficit and expenditure variables, in the 1983-1989 period, the performance was clearly different. Long fixed regimes did not show a disciplinary effect different from that of the flexible ones - probably because in the absence of international credit the potential costs of maintaining an "unhealthy" fiscal policy would be too high. On the other hand, the Short Peg had shown a greater disciplinary impact on both expenditure variables and on the primary deficit, although they showed lower collecting capacity and a similar total deficit performance. These results are consistent with the ones observed under the so-called stabilizing policies, in which the presence of the inflationary processes unfolded by the ongoing monetization of the fiscal deficits make that many countries establish fixed exchange rate regimes as nominal prices anchors, while they tried as well to improve their fiscal performance. However, the difficulty in reducing the total and primary expenditure, reflected on these variables' strong inertia -especially in this period-, the payment of great interests resulting from the bulky debts, and the decrease in the fiscal revenues -partly resulting from the exchange rate appreciation-, did not make it possible to have an improvement in the total fiscal balance. Thus, these crises become

recurrent phenomena during the period. The results obtained for the 1990-1998 period are not sufficiently clear.

5.5 New exchange classification: The importance of a classification that detect inconsistencies

In considering the central bank commitment affairs to intervene and subordinate its monetary policy to the currency market, as the possible inconsistencies in its performance, the new classification suggested in section 4 is used. The results obtained for this classification are exposed on tables 9-19 to 9-23 and are summarized in table 5-4.

Table 5-4
Differential fiscal performance of the new classification of fixed compared to flexible ones (g)

		1974-1982	1983-1989	1990-1998
de Jure and de Facto Fix (a)	Total Deficit	0	•	0
	Primary Deficit	(+)	•	(-)
	Total Expenditure	0	•	0
	Primary Expenditure	(+)	•	(-)
	Revenues	0	•	0
de Jure Fix and de Facto Intermediate (b)	Total Deficit	(+)	0	0
	Primary Deficit	(+)	0	0
	Total Expenditure	(+)	(-)	0
	Primary Expenditure	(+)	(-)	(-)
	Revenues	(-)	(-)	0
de Jure Fix and de Facto Flexible (c)	Total Deficit	0	0	•
	Primary Deficit	0	(-)	•
	Total Expenditure	0	0	•
	Primary Expenditure	(+)	0	•
	Revenues	0	0	•
de Jure Fix and de Facto Inconclusive (d)	Total Deficit	0	0	0
	Primary Deficit	(+)	0	0
	Total Expenditure	(+)	0	0
	Primary Expenditure	(+)	0	0
	Revenues	0	0	(+)

Note: 0 indicates that there is no statistically significant difference between the fixed regime coefficient compared to the flexible one, (+) that this difference is statistically positive and (-) that it is statistically negative and • that such variable is not considered in the regression because of the absence of observations.

In general terms, for the 1974-1982 period fixed regimes are bound to lesser fiscal discipline than flexible ones. It is interesting to note however, that the regimes included in (c) – de jure fixed with changes in their exchange rates, but not in their reserves - are not clearly less disciplinary than the flexible ones. The fact of not having strong variations in their reserves in despite of changes in their exchange parities might be due to the fact that the agents did not expect such changes, maybe because their fundamentals –including its fiscal performance - did not induce to foresee such a situation.

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In the 1983-1989 period many countries with serious debt crises and inflationary processes adopted de jure fixed regimes apparently with two objectives: to behave as a nominal anchor for prices and to favor a grater fiscal discipline. Literature shows that if the government does not have access to credit and/or had insufficient reserves, the monetary financing of deficits would cause an immediate currency depreciation independently from the exchange rate regime. The econometric results are in line with this idea since:

- Regime (d) -de jure fixed having stable economies, with no greater external shocks or credibility problems– did not have a differential effect when compared to the flexible ones.

- In general terms, regime (c) is still as disciplinary as the flexible due to the reasons mentioned above.

- Regime (b) includes most stabilizing plans of the eighties, which were not too much effective in reducing total deficits. The strong persistence of the fiscal variables in this period, the insufficient disciplinary effect of stabilizing policies, and the recurrent re-lining of the exchange rate -with its consequent punishment in terms of violating a rule and losing credibility- would show that, in those economies with a poor fiscal performance and serious inflationary problems, governments would have tended to see such costs with lower weight than the ones that would result from a real budgetary adjustment in order to make its fiscal performance consistent.

- Regime (a) does not have any observations. This would seem to indicate that to be defined as fixed and behave in such a manner would be highly costly at times of strong financial restrictions, probably due to the fact that the strong inertia of fiscal variables makes it impossible to maintain a fixed exchange rate with constant deficits and inflation.

The 1990-1998 period is, as the sixties, one of capital abundance, with flows greater than the ones observed before the debt crisis. However, the incidence of fixed regimes over the fiscal performance compared to that of the flexible ones is highly different for this period. A possible rationalization of this uneven performance could be found in the different characteristics of the present international financial system highlighted above: growth of the bonds and stocks market, new financial instruments favoring short term positions, higher volatility of capital flows and contagion effect. For all this, even though it is a more "calibrated" system for rewarding a good performance, it is also so for discipline errors of private investments or public policies once they are evident. This larger information and opportunities make it possible for the capitals to move more easily and each time more toward those more convenient opportunities, producing a more extreme and less "sympathetic" disciplinary capacity than twenty or thirty years ago did. This evidence in its most extreme version has led Eichegreen (1994) and Obstfeld and Rogoff (1995a) to propose

the so-called "two poles" theory, which suggest an inherent tension between high capital mobility and countries with fixed regimes wanting to perform a monetary policy with domestic objectives. According to these authors, this occurs due to the higher fragility that the growing capital mobility imposes on the exchange commitments, which will cause the countries to be forced to choose between flexible regimes or exchange rate unions in the XXI century. The main obtained results show that:

- Those countries with regime (a) have a reversal in sign compared to those of the 1974-1982 period. This could be due to the fact that those countries that have undergone external shocks -shown in their reserves movement - and have been able to maintain their exchange commitment must have had a more disciplined fiscal performance than the flexible ones.

- Regime (b) has a more disciplinary effect than the flexible only on the primary expenditure. This performance –together with the possible impairment of other fundamentals- probably favored, within the framework of highly volatile capital markets subject to panic, the exchange rate destabilization.

- (c) Do not have any observations. This situation would show the limited current possibilities of finding a country with de jure fixed exchange regime, which simultaneously varies its exchange rates –violating its commitment- without being affected in its reserves' levels.

- Exchange rate regime (d) does not generally have a differential influence over the fiscal variables compared with the flexible ones which, within the framework explained above, could be associated with the fact that these stable economies not suffering credibility problems do not need to show a special disciplinary performance, since they are not subject to greater external shocks. However, they cannot relax their fiscal performance as they did in the seventies because they would probably stop being stable. The underlying idea is that the exchange rate regimes have an impact on the economic performance only when they represent a relevant restriction on the economic policy, which is more likely to occur when the country is subject to significant external shocks.

6 CONCLUSIONS

This paper analyzed the effect of the exchange regimes on the fiscal discipline, focusing on the fixed and flexible difference. The results strongly suggest that such differential effect depends on the international context, specifically on the possibility of indebtedness and the characteristics of the international financial system. In this respect, the results suggest that the traditional view stating that fixed regimes necessarily provide greater fiscal discipline should be revised.

The main conclusions can be summarized in three points:

• In situations where there is originally no fiscal discipline and the authorities have the possibility of financing with debt with relatively low costs -associated to the low probability in the regime collapse or to the low costs in terms of the incidence of such collapse on the rest of the economy-, as in the 1974-1982 period, fixed regimes do not provide greater discipline per se. On the contrary, flexible ones generate greater discipline because of the immediacy of the punishment associated to the unsustainable fiscal policy. This result is compatible with models such as those of Alesina y Drazen (1991), Calvo (1986), Tornell y Velasco (1995a, 1995b), and Velasco (1997) according to which the presence of "weak" and divided or prone to spend governments, in a context of credit abundance and low initial debt percentages, produce ceteris paribus laxer fiscal situations in countries having fixed regimes.

• In contexts with strong financing restrictions, as in the 1983-1989 period, the monetary financing of the deficits will inevitably cause an immediate currency depreciation, independently from the chosen exchange rate regime. Therefore, the disciplinary effects of either regime should not be substantially different.

• On the contrary, in contexts of abundance of capital but where these are highly volatile and probably subject to contagion effect, as in the 1990-1998 period, fixed regimes desiring to be consistent should -ceteris paribus- have a greater disciplinary effect compared to the flexible ones to diminish the probabilities of suffering an exchange attack. This is in line with what Gavin and Hausmann (1999) suggest, according to whom in the context of high economic and financial volatility, the main factor to protect oneself is being solvent, as "...solvency has as much to do with what might happen as what is expected to happen...". That is, "...in order to protect an economy from financial contagion it is not enough to be solvent under existing circumstances and those that are expected to prevail; it is also important to be solvent under more difficult circumstances that may very well be down the road if the world financial system comes under unexpected stress." Therefore, in the nineties,

greater integration, volatility and punishment capacity -associated to greater information flows and to the bond market growth-, made the functioning of the international financial system itself to be in charge, through its potential punishment, of obtaining an extra disciplinary effect by those fixed regime economies desiring to remain like that. This result supports, on the one hand, the so-called "Theory of the two poles" suggested by Eichegreen (1994) y Obstfeld y Rogoff (1995a) and the empiric evidence found by Collins (1996) and Edwards (1996) and, on the other hand, the "fear of pegging" phenomenon. That is to say, if in order to possess a consistent fixed exchange rate regime a country must have an extra disciplinary effect, greater would the incentive to adopt flexible regimes, or alternatively, those willing to behave as fixed ones would have less incentives to define themselves as such so as not to be subject of possible attacks to the currency.

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8   DATA APPENDIX

8.1   Countries' samples

OECD countries: Australia, Austria, Belgium, Canada, Denmark, Spain, United States, Finland, France, Greece, Holland, Ireland, Island, Italy, Japan, Luxemburg, Norway, Portugal, United Kingdom, Sweden, Switzerland.

Non-OECD countries: Argentina, Brazil, Bulgaria, Chile, Colombia, Egypt, Hungary, Indonesia, Israel, Malaysia, Morocco, Mexico, Pakistan, Panama, Peru, Poland, Czech Rep., Korea, Singapore, South Africa, Sri Lanka, Thailand, Turkey, Venezuela, Belize, Bolivia, Burkina Faso, Burundi, Cameroon, Chad, Costa Rica, Cote d'Ivoire, Dominica, Ethiopia, Gabon, Gambia, Guatemala, Haiti, Honduras, India, Jamaica, Madagascar, Mauricio, Namibia, Nepal, Nicaragua, Nigeria, Paraguay, Central African Rep., Democratic Rep. of Congo, Islamic Rep. of Iran, Rwanda, San Vicente and Grenadines, Santa Lucia, Senegal, Seychelles, Togo, Trinidad and Tobago, Tunisia, Uruguay, Zambia, Zimbabwe.

8.2   Macroeconomic variables' definitions

Deficit/GDP	: Total deficit/GDP *(WB, MTS).*
Primary Deficit /GDP	: Déficit total/GDP *(WB, MTS)* – Interets' payment/GDP *(WB, GF).*
Expenditure/GDP	: Total expenditure/GDP *(WB, GF).*
Primary expenditure /GDP	: Total expenditure/GDP – Interets' payment/GDP *(WB, GF).*
Revenues/GDP	: Total expenditure/GDP *(WB, GF)* – Total deficit/GDP *(WB, MTS).*
Shock on the exchange terns	: Δ % on the exports' price*(Exports/GDP) -Δ% on the imports' price*(Imports/GDP) *(MTS).*
Per capita GDP	: Real GDP per capita in constant dollars (international prices, base year 1985) *(MTS. Based on Penn World Table 5.6).*
Opening	: Total of trade (imports+exports)/GDP *(MTS).*
Inflation	: Annual % change on consumer's price index based on a fixed family shopping basket of goods and services *(MTS).*
Hyper	: Dummy variable taking value 1 if the inflationary variable takes a value higher than 150%.

9   TABLES APPENDIX

Table 9-1
Average serial correlation of fiscal variables. 1974-1998 period.

Period	Deficit/GDP	Primary Deficit /GDP	Expenditure/ GDP	Primary Expenditure /GDP	Revenues/GDP
t-1	0.7341	0.7544	0.9630	0.9628	0.9714
t-2	0.6461	0.6264	0.9391	0.9368	0.9582
t-3	0.5313	0.4782	0.9139	0.9086	0.9411
Obs.	1130	1080	1135	1080	1130

Table 9-2
De facto exchange classification criteria used in Levy Yeyati and Sturzenegger (2000)

	σ_e	$\sigma_{\Delta e}$	σ_r
Inconclusive	Low	Low	Low
Flexible	High	High	Low
Dirty Floatation	High	High	High
Crawling Peg	High	Low	High
Fixed	Low	Low	High

Note: σ_e, $\sigma_{\Delta e}$ and σ_r are exchange rate volatility, volatility of exchange rate variations and volatility of reserves respectively.

Table 9-3
De jure exchange rate regime percentage per de facto classification

		De facto classification			
		Fixed	Inter.	Flexible	Inconclusive
De jure classification	Fixed	28%	31%	11%	57%
	Inter.	45%	22%	26%	19%
	Flexible	27%	47%	63%	24%
	Total	100%	100%	100%	100%

Table 9-4
De facto exchange rate regime percentage per de jure classification

		De facto classification				
		Fixed	Inter.	Flex.	Inconclusive	Total
De jure classification	Fixed	6%	6%	4%	84%	100%
	Inter.	19%	8%	19%	54%	100%
	Flexible	8%	12%	32%	48%	100%

Table 9-5
De facto exchange rate regime percentage by de jure classification
(excepting inconclusive ones)

		De facto classification			
		Fixed	Inter.	Flexible	Total
De jure classification	Fixed	39%	35%	26%	100%
	Inter.	42%	17%	41%	100%
	Flexible	16%	22%	62%	100%

Table 9-6
Average GDP per capita per category

		De facto classification			
		Fixed	Inter.	Flexible	Inconclusive
De jure classification	Fixed	1403	2942	3799	2824
	Inter.	9461	4142	5017	10972
	Flexible	6339	4820	6224	4929

Table 9-7
Average inflation per category

		De facto classification			
		Fixed	Inter.	Flexible	Inconclusive
De jure classification	Fixed	11.634	50.462	12.108	8.496
	Inter.	6.290	58.924	20.040	8.072
	Flexible	7.585	97.967	9.973	9.007

Table 9-8
Average opening per category

		De facto classification			
		Fixed	Inter.	Flexible	Inconclusive
De jure classification	Fixed	105.67	48.08	60.42	61.14
	Inter.	68.13	34.75	47.75	64.61
	Flexible	55.93	47.90	40.74	54.22

Table 9-9
Dependent variable: Deficit/GDP – de jure criteria

		1974-1998			1974-1982	1983-1989	1990-1998
		1	2	3	4	5	6
		FE	GMM	GMM	GMM	GMM	GMM
Constant		2.884***	-0.150***	-0.113***	0.295***	-0.264**	-0.273**
Deficit/GDP	(t-1)	0.400***	0.307***	0.309***	0.251***	0.613***	0.078**
	(t-2)	0.137***	0.100***	0.098***	-0.137***	-0.106**	0.069**
Fixed		*0.362*	*-1.390***	*-1.539***	*1.064***	*-1.964**	*-0.790*
Intermediate		*1.015***	*-0.141*	*0.529*	*0.621**	*-0.302*	*-2.372***
	t	-5.978**	-5.744***	-3.541**	-6.929***	-13.148*	17.548***
Shock in terms of trade	(t-1)	2.007	1.718***	1.563	0.711	-9.759*	6.448
	(t-2)	-11.806***	-22.350***	-22.356***	-2.744	3.074	-14.100***
	t	-0.001***	-0.0009***	-0.001***	-0.002***	0.0004	-0.001**
per capita GDP	(t-1)	0.0003	0.0003***	0.0004***	0.001***	-0.001*	0.001***
	(t-2)	0.0007*	0.0007***	0.0006***	-0.0003	0.001*	0.0001
	t			-0.032***	-0.028**	-0.038	0.010
Openness	(t-1)			0.028***	0.008	-0.035	-0.041
	(t-2)			-0.020***	0.009	0.069***	-0.014
	t			-0.0004***	-0.011**	0.0007	-0.0005***
Inflation	(t-1)			-0.0005***	-0.016***	-0.003	-0.0006***
	(t-2)			0.001***	0.023***	-0.001	0.00008
Hyper-inflation				1.771***		0.321	1.087
R²		0.51					
Sargan test (p value)			1	1	0.30	0.14	0.48
Second order serial correlation Test (p value)			0.93	0.93	0.30	0.37	0.29
Number of observations		1313	1217	1183	317	232	244
Number of countries		83	82	82	58	66	69

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-10
Dependent variable: Primary Deficit/GDP – de jure criteria

		1974-1998			1974-1982	1983-1989	1990-1998
		1	2	3	4	5	6
		FE	GMM	GMM	GMM	GMM	GMM
Constant		0.798	-0.244***	-0.219***	0.055	-0.229**	-0.081
Primary deficit/GDP	(t-1)	0.445***	0.364***	0.370***	0.314***	0.572***	0.291***
	(t-2)	0.133***	0.098***	0.101***	-0.155***	-0.125**	0.113***
Fixed		*0.931***	*-0.323*	*-1.270****	*1.128****	*-1.310*	*0.002*
Intermediate		*1.485****	*1.648****	*1.375****	*0.783****	*0.213*	*-1.635***
	t	-11.005***	-10.825***	-11.949***	-12.149***	-20.891***	10.166**
Shock in terms of trade	(t-1)	2.574	1.859**	-3.226*	-1.241	-12.583**	-9.228**
	(t-2)	-14.083***	-28.693***	-25.973***	-3.116*	-0.983	-5.301
	t	-0.001***	-0.0001	0.00002	-0.001***	0.00008	-0.001***
per capita GDP	(t-1)	0.0004	-0.0003**	-0.0002*	0.001**	-0.0008	0.001***
	(t-2)	0.0006*	0.0009***	0.0008***	-0.0002	0.0009	0.001**
	t			-0.042***	-0.018*	-0.029	-0.031
Openness	(t-1)			0.062***	0.021	0.007	0.041**
	(t-2)			-0.049***	0.001	0.021	-0.057**
	t			-0.0003***	-0.017***	0.0003	-0.0005***
Inflation	(t-1)			-0.0004***	-0.017***	-0.005	-0.0007***
	(t-2)			0.001***	0.022***	-0.002	0.00006
Hyper-inflation				0.910		1.975	-2.460**
R²		0.53					
Sargan test (p value)			1	1	0.44	0.37	0.84
Second order serial correlation Test (p value)			0.93	0.69	0.29	0.16	0.13
Number of observations		1176	1076	1053	289	214	224
Number of countries		82	77	77	54	61	62

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-11
Dependent variable: Expenditure/GDP – de jure criteria

		1974-1998			1974-1982	1983-1989	1990-1998
		1	2	3	4	5	6
		FE	GMM	GMM	GMM	GMM	GMM
Constant		7.645***	0.020**	0.016**	0.699***	-0.363***	-0.179**
Expenditure/GDP	(t-1)	0.637***	0.509***	0.485***	0.221***	0.530***	0.393***
	(t-2)	0.103***	0.061***	0.070***	-0.066***	0.075*	-0.007
Fixed		*-0.288*	*-0.775****	*-0.521***	*1.670****	*-1.457*	*-1.237***
Intermediate		*0.177*	*-0.176*	*-0.017*	*0.701****	*-1.095*	*-1.475****
Shock in terms of trade	t	-2.334	-1.677	-0.654	-11.489***	-20.541***	3.900
	(t-1)	8.954***	8.572***	8.147***	1.735	-4.123	5.910***
	(t-2)	-11.709***	-24.088***	-22.630***	-3.619**	7.140	1.336
per capita GDP	t	-0.001***	-0.002***	-0.002***	-0.002***	-0.0006	-0.002***
	(t-1)	0.001**	0.001***	0.002***	0.001***	-0.0004	0.001***
	(t-2)	0.0003	0.00008	0.0001	0.0001	0.001*	0.0002
Openness	t			-0.017***	-0.010	-0.035	0.014
	(t-1)			0.063***	0.052***	-0.018	-0.022
	(t-2)			-0.012***	0.004	0.052**	-0.067***
Inflation	t			0.0001	-0.027***	-0.00005	-0.0006***
	(t-1)			0.00005*	-0.010**	0.001	-0.00009
	(t-2)			0.0005***	0.024***	-0.0007	0.00007*
Hyper-inflation				1.598*		-0.548	4.357
R²		0.93					
Sargan test (p value)			1	1	0.18	0.02	0.40
Second order serial correlation Test (p value)			0.16	0.31	0.13	0.44	0.27
Number of observations		1311	1216	1180	330	228	250
Number of countries		83	83	83	61	65	67

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-12
Dependent variable: Primary expenditure/GDP – de jure criteria

		1974-1998			1974-1982	1983-1989	1990-1998
		1	2	3	4	5	6
		FE	GMM	GMM	GMM	GMM	GMM
Constant		6.503***	-0.086***	-0.125***	0.560***	-0.334***	-0.208***
Primary expenditure/GDP	(t-1)	0.634***	0.515***	0.461***	0.299***	0.558***	0.335***
	(t-2)	0.103***	0.066***	0.062***	-0.133***	-0.066	0.035***
Fixed		0.308	0.325**	-0.412	1.825***	-1.381	-0.689**
Intermediate		0.437	0.420***	-0.100	0.617**	-0.814	-0.900
Shock in terms of trade	t	-4.515*	-10.080***	-9.394***	-14.400***	-20.491***	0.905
	(t-1)	12.318***	7.089***	7.494***	1.239	-1.282	8.929***
	(t-2)	-13.408***	-23.039***	-22.252***	-4.650***	0.553	1.397
per capita GDP	t	-0.002***	-0.002***	-0.001***	-0.001***	-0.0002	-0.002***
	(t-1)	0.001*	0.0009***	0.0009***	0.0009**	-2.93e-06	0.001***
	(t-2)	0.0004	0.0007***	0.0008***	-0.0001	0.0006	0.0008***
Openness	t			-0.012***	-0.008	-0.041*	-0.018
	(t-1)			0.071***	0.070***	0.005	0.033***
	(t-2)			-0.041***	0.0009	0.045***	-0.063***
Inflation	t			-0.00005	-0.022***	0.0008	-0.0005***
	(t-1)			0.0001***	-0.012***	0.001	-0.0001**
	(t-2)			0.0004***	0.018***	0.001	0.00001
Hyper-inflation				0.402		-2.199	1.678
R²		0.93					
Sargan test (p value)			1	1	0.39	0.13	0.49
Second order serial correlation Test (p value)			0.78	0.86	0.25	0.69	0.11
Number of observations		1188	1088	1063	289	214	234
Number of countries		82	78	78	54	61	64

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-13
Dependent variable: Revenues/GDP – de jure criteria

		1974-1998			1974-1982	1983-1989	1990-1998
		1	2	3	4	5	6
		FE	GMM	GMM	GMM	GMM	GMM
Constant		6.734***	0.021	-0.005	0.508***	-0.311**	0.027
Revenues/GDP	(t-1)	0.531***	0.376***	0.352***	-0.076**	0.073	-0.036
	(t-2)	0.197***	0.151**	0.182***	0.020	0.123***	0.058**
Fixed		*-0.558***	*-0.639****	*-0.593***	*0.353*	*-0.747*	*0.282*
Intermediate		*-0.819****	*-1.251****	*-0.971****	*0.129*	*-1.080**	*1.353****
Shock in terms of trade	t	2.664	2.487***	-0.948	-0.502	6.210**	-15.300***
	(t-1)	5.053***	5.641***	5.773***	3.265**	20.304***	-2.104
	(t-2)	0.851	2.132***	3.454***	0.640	10.041***	20.953***
per capita GDP	t	-0.0006*	-0.0008***	-0.0007***	0.0001	8.40e-06	-0.0006
	(t-1)	0.0008	0.001***	0.0009***	-0.0006*	-0.0003	0.0006
	(t-2)	-0.00009	-0.0001	-0.00008	0.0003	0.002***	-0.0005
Openness	t			0.031***	0.011	0.026	-0.031**
	(t-1)			0.012**	0.026	0.012	0.014
	(t-2)			0.001	0.020*	0.017	0.026
Inflation	t			0.00002	0.001	-0.0006	-0.00003
	(t-1)			0.0002***	0.010**	0.008*	0.0003***
	(t-2)			0.0003***	-0.004	0.007***	-0.0005***
Hyper-inflation				1.524**		-1.237	1.582**
R²		0.94					
Sargan test (p value)			1	1	0.34	0.21	0.78
Second order serial correlation Test (p value)			0.59	0.82	0.90	0.51	0.67
Number of observations		1280	1186	1152	316	228	240
Number of countries		82	81	81	58	65	67

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-14
Dependent variable: Deficit/GDP – de jure criteria

		1974-1998		1974-1982	1983-1989	1990-1998
		3	7	8	9	10
		GMM	GMM	GMM	GMM	GMM
Constant		-0.113***	-0.138***	0.292***	-0.255**	-0.274**
Deficit/GDP	(t-1)	0.309***	0.283***	0.252***	0.589***	0.076*
	(t-2)	0.098***	0.088***	-0.138***	-0.109**	0.069**
Fixed		*-1.539***				
Long Peg			*-1.755***	*1.218***	*-2.025*	*-0.874*
Short Peg			*-1.898***	*0.901**	*-1.924*	*-0.567*
Intermediate		*0.529*	*0.526*	*0.591*	*0.419*	*-2.411***
Shock in terms of trade	t	-3.541**	-3.349***	-7.113***	-11.914	17.64***
	(t-1)	1.563	2.130*	0.468	-9.118*	6.73
	(t-2)	-22.356***	-22.031***	-2.943	3.523	-14.003***
per capita GDP	t	-0.001***	-0.0009***	-0.002***	0.0002	-0.001**
	(t-1)	0.0004***	0.0004**	0.001***	-0.001*	0.001***
	(t-2)	0.0006***	0.0006***	-0.0003	0.001*	0.00007
Openness	t	-0.032***	-0.037***	-0.027**	-0.038	0.009
	(t-1)	0.028***	0.030***	0.008	-0.037	-0.041
	(t-2)	-0.020***	-0.021***	0.010	0.069***	-0.014
Inflation	t	-0.0004***	-0.0004***	-0.011**	0.0006	-0.0005***
	(t-1)	-0.0005***	-0.0005***	-0.016***	-0.002	-0.0006**
	(t-2)	0.001***	0.0001***	0.023***	-0.001	0.00007
Hyper-inflation		1.771***	2.018***		0.187	1.116
Sargan test (p value)		1	1	0.30	0.13	0.49
Second order serial correlation Test (p value)		0.93	0.96	0.30	0.36	0.29
Number of observations		1183	1183	317	232	244
Number of countries		82	82	58	66	69

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-15
Dependent variable: Primary deficit/GDP – de jure criteria

		1974-1998		1974-1982	1983-1989	1990-1998
		3	7	8	9	10
		GMM	GMM	GMM	GMM	GMM
Constant		-0.219***	-0.196***	0.057	-0.201*	-0.072
Primary deficit/GDP	(t-1)	0.370***	0.377***	0.317***	0.613***	0.259***
	(t-2)	0.101***	0.104***	-0.154***	-0.102**	0.113***
Fixed		*-1.270***				
Long Peg			*-1.727***	*1.167***	*-0.025*	*-0.301*
Short Peg			*-1.255*	*1.113***	*-3.325***	*0.801*
Intermediate		*1.375***	*1.637***	*0.789***	*-0.095*	*-1.803***
Shock in terms of trade	t	-11.949***	-5.390	-12.085***	-21.271***	10.127**
	(t-1)	-3.226*	-0.234	-1.204	-12.102**	-7.935*
	(t-2)	-25.973***	-26.061***	-3.031*	0.166	-5.125
per capita GDP	t	0.00002	-0.0006***	-0.001***	0.003	-0.001***
	(t-1)	-0.0002*	0.00008	0.001**	-0.0009	0.001***
	(t-2)	0.0008***	0.0008***	-0.0002	0.0006	0.001**
Openness	t	-0.042***	-0.036***	-0.018*	-0.026	-0.028
	(t-1)	0.062***	0.062***	0.021	0.006	0.034**
	(t-2)	-0.049***	-0.050***	0.002	0.026	-0.054**
Inflation	t	-0.0003***	-0.0004***	-0.017***	0.0002	-0.0005***
	(t-1)	-0.0004***	-0.0004***	-0.017***	-0.004	-0.0007***
	(t-2)	0.001***	0.001***	0.022***	-0.001	0.00004
Hyper-inflation		0.910	2.399**		1.823	-2.461**
Sargan test (p value)		1	1	0.45	0.36	0.83
Second order serial correlation Test (p value)		0.69	0.35	0.30	0.20	0.13
Number of observations		1053	1053	289	214	224
Number of countries		77	77	54	61	62

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-16
Dependent variable: Expenditure/GDP – de jure criteria

		1974-1998		1974-1982	1983-1989	1990-1998
		3	7	8	9	10
		GMM	GMM	GMM	GMM	GMM
Constant		0.016**	0.006	0.692***	-0.338**	-0.156*
Expenditure/GDP	(t-1)	0.485***	0.468***	0.223***	0.540***	0.431***
	(t-2)	0.070***	0.059***	-0.066***	0.065	-0.012
Fixed		*-0.521***				
Long Peg			*-0.185*	*1.910****	*-0.885*	*-0.131*
Short Peg			*-2.048****	*1.515****	*-3.441****	*-2.999****
Intermediate		*-0.017*	*-0.165*	*0.664****	*-1.774****	*-1.109****
Shock in terms of trade	t	-0.654	-1.417	-11.611***	-19.806***	4.619*
	(t-1)	8.147***	8.339***	1.591	-3.838	5.264***
	(t-2)	-22.630***	-22.851***	-3.758**	10.457*	0.908
per capita GDP	t	-0.002***	-0.002***	-0.002***	-0.0006	-0.001***
	(t-1)	0.002***	0.001***	0.001***	-0.0006	0.001***
	(t-2)	0.0001	0.0002**	0.0001	0.001*	0.0004
Openness	t	-0.017***	-0.011***	-0.007	-0.035	0.014
	(t-1)	0.063***	0.063***	0.051***	-0.023	-0.023
	(t-2)	-0.012***	0.011***	0.004	0.063***	-0.063***
Inflation	t	0.0001	0.0001	-0.028***	6.25e-06	-0.0006***
	(t-1)	0.00005*	0.00002	-0.011**	0.002	-0.00008
	(t-2)	0.0005***	0.0004***	0.025***	-0.0002	0.00008*
Hyper-inflation		1.598*	0.863		-1.246	3.663
Sargan test (p value)		1	1	0.19	0.01	0.43
Second order serial correlation Test (p value)		0.31	0.41	0.14	0.42	0.14
Number of observations		1180	1180	330	228	250
Number of countries		83	83	61	65	67

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-17
Dependent variable: Primary expenditure/GDP – de jure criteria

		1974-1998 3	1974-1998 7	1974-1982 8	1983-1989 9	1990-1998 10
		GMM	GMM	GMM	GMM	GMM
Constant		-0.125***	-0.113***	0.569***	-0.266**	-0.225***
Primary expenditure/GDP	(t-1)	0.461***	0.484***	0.296***	0.589***	0.325***
	(t-2)	0.062***	0. 051***	-0.126***	-0.061	0.035***
Fixed		*-0.412*				
Long Peg			*0.084*	*1.617****	*0.604*	*-0.829**
Short Peg			*-0.855*	*2.400****	*-4.383****	*-0.241*
Intermediate		*-0.100*	*0.044*	*0.638***	*-1.186**	*-0.983*
Shock in terms of trade	t	-9.394***	-9.660***	-14.196***	-20.608***	0.055
	(t-1)	7.494***	4.575**	1.452	-0.380	8.878***
	(t-2)	-22.252***	-22.712***	-4.381***	2.449	1.636
per capita GDP	t	-0.001***	-0.001***	-0.001***	0.0002	-0.002***
	(t-1)	0.0009***	0.001***	0.0007*	-0.0001	0.001***
	(t-2)	0.0008***	0.0008***	-0.00006	0.0002	0.0008***
Openness	t	-0.012***	-0.011**	-0.009	-0.044**	-0.019
	(t-1)	0.071***	0.093***	0.069***	0.005	0.035**
	(t-2)	-0.041***	-0.048***	-0.001	0.049***	-0.062***
Inflation	t	-0.00005	-0.0001	-0.022***	0.0009	-0.0005***
	(t-1)	0.0001***	0.00006	-0.012***	0.001	-0.001**
	(t-2)	0.0004***	0.0003**	0.018***	0.0006	5.15e-06
Hyper-inflation		0.402	-0.404		-2.636	1.249
Sargan test (p value)		1	1	0.37	0.21	0.43
Second order serial correlation Test (p value)		0.86	0.94	0.26	0.66	0.12
Number of observations		1063	1063	289	214	234
Number of countries		78	78	54	61	64

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-18
Dependent variable: Revenues/GDP – de jure criteria

		1974-1998 3	1974-1998 7	1974-1982 8	1983-1989 9	1990-1998 10
		GMM	GMM	GMM	GMM	GMM
Constant		-0.005	0.018	0.500***	-0.308**	0.046
Revenues/GDP	(t-1)	0.352***	0.324***	-0.069**	0.069	-0.099**
	(t-2)	0.182***	0.166***	0.164	0.123**	0.019
Fixed		*-0.593***				
Long Peg			*-0.482*	*0.214*	*-0.676*	*0.584***
Short Peg			*-1.167***	*0.490*	*-1.035***	*-0.856*
Intermediate		*-0.971****	*-0.749**	*0.151*	*-1.163**	*1.400****
Shock in terms of trade	t	-0.948	-2.174	-0.413	6.295**	-15.012***
	(t-1)	5.773***	5.945***	3.260**	20.283***	-4.278
	(t-2)	3.454***	2.819**	0.832	10.202***	20.872***
per capita GDP	t	-0.0007***	-0.0006***	0.0001	0.0002	-0.0006
	(t-1)	0.0009***	0.0008***	-0.0006*	-0.003	0.0003
	(t-2)	-0.00008	-0.00006	0.0003	0.001***	-0.0002
Openness	t	0.031***	0.033***	0.011	0.027	-0.034**
	(t-1)	0.012**	0.15***	0.025	0.011	0.019*
	(t-2)	0.001	0.002	0.018**	0.018	0.028
Inflation	t	0.00002	0.00003	0.0007	-0.0005	-0.00001
	(t-1)	0.0002***	0.0002***	0.010**	0.008**	0.0003***
	(t-2)	0.0003***	0.0003***	-0.003	0.007***	-0.0005***
Hyper-inflation		1.524**	1.328		-1.274	1.547
Sargan test (p value)		1	1	0.35	0.21	0.65
Second order serial correlation Test (p value)		0.82	0.72	0.86	0.51	0.64
Number of observations		1152	1152	316	228	240
Number of countries		81	81	58	65	67

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-19
Dependent variable: Deficit/GDP – new classification

		1974-1982 11	1983-1989 12	1990-1998 13
		GMM	GMM	GMM
Constant		0.302***	-0.358***	-0.253**
Deficit/GDP	(t-1)	0.231***	0.825***	0.077*
	(t-2)	-0.146***	-0.131**	0.076**
de jure fixed-de facto fixed (a)		*1.045*		*0.605*
de jure fixed-de facto intermediate (b)		*2.757****	*-1.584*	*-0.717*
de jure fixed-de facto flexible (c)		*-0.066*	*-1.882*	
de jure fixed-de facto inconclusive (d)		*0.497*	*-1.204*	*0.652*
de jure interm.-de facto fixed or de jure flexible-de facto fixed (e)		*0.158*	*1.009**	*-0.625*
de jure interm.-de facto interm. or de jure flexible-de fecto interm. (f)		*0.105*	*1.158*	*-1.146****
de jure interm.-de facto incon. or de jure flexible-de facto incon. (h)		*-0.087*	*0.623*	*-0.180*
Shock in terms of trade	t	-8.680***	-14.258*	14.424**
	(t-1)	-1.932	-6.138	5.870
	(t-2)	-4.928***	5.624	-20.762***
per capita GDP	t	-0.001***	0.0008	-0.001*
	(t-1)	0.001***	-0.002*	0.002**
	(t-2)	-0.0003	0.001*	0.0003
Openness	t	-0.025	-0.062**	0.059**
	(t-1)	0.015	-0.009	-0.083***
	(t-2)	0.004	0.070**	-0.017
Inflation	t	-0.011*	0.0007	-0.0006***
	(t-1)	-0.027***	-0.005	-0.0007***
	(t-2)	0.024***	-0.001	0.0002**
Hyper-inflation			1.880	-0.089
Sargan test (p value)		0.30	0.14	0.43
Second order serial correlation Test (p value)		0.15	0.35	0.39
Number of observations		306	224	232
Number of countries		56	62	65

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-20
Dependent variable: Primary deficit/GDP – new classification

		1974-1982 11	1983-1989 12	1990-1998 13
		GMM	GMM	GMM
Constant		0.087	-0.344***	-0.119
Primary deficit/GDP	(t-1)	0.323***	0.740***	0.245***
	(t-2)	-0.169***	-0.103	0.116***
de jure fixed-de facto fixed (a)		*1.194***		*-2.071*
de jure fixed-de facto intermediate (b)		*2.396***	*-2.199*	*-0.027*
de jure fixed-de facto flexible (c)		*-0.312*	*-5.186***	
de jure fixed-de facto inconclusive (d)		*0.627*	*-1.274*	*-0.524*
de jure interm.-de facto fixed or de jure flexible-de facto fixed (e)		*0.920***	*0.014*	*-0.314*
de jure interm.-de facto interm. or de jure flexible-de fecto interm. (f)		*-0.266*	*0.577*	*-1.974***
de jure interm.-de facto incon. or de jure flexible-de facto incon. (h)		*0.130*	*0.056*	*-0.457*
Shock in tems of trade	t	-13.937***	-21.337**	3.216
	(t-1)	-2.782	-4.850	-13.543**
	(t-2)	-4.224***	3.030	-7.260*
per capita GDP	t	-0.001***	0.0004	-0.002**
	(t-1)	0.001***	-0.0007	0.001***
	(t-2)	-0.0003*	0.001	0.001***
Openness	t	-0.017*	-0.033	0.005
	(t-1)	0.025*	0.014	0.010
	(t-2)	0.004	0.020	-0.045**
Inflation	t	-0.019***	0.0003	-0.0006***
	(t-1)	-0.024***	-0.005	-0.0007***
	(t-2)	0.025***	-0.001	0.0003**
Hyper-inflation			2.888	-1.078
Sargan test (p value)		0.42	0.63	0.74
Second order serial correlation Test (p value)		0.20	0.30	0.13
Number of observations		279	209	217
Number of countries		52	57	59

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-21
Dependent variable: Expenditure/GDP – new classification

		1974-1982 11	1983-1989 12	1990-1998 13
		GMM	GMM	GMM
Constant		0.751***	-0.364***	-0.119
Expenditure/GDP	(t-1)	0.144***	0.476***	0.354***
	(t-2)	-0.088***	0.100**	0.019
de jure fixed-de facto fixed (a)		*0.626*		*0.192*
de jure fixed-de facto intermediate (b)		*1.091***	*-2.075**	*-1.392*
de jure fixed-de facto flexible (c)		*0.682*	*0.605*	
de jure fixed-de facto inconclusive (d)		*0.752**	*-0.598*	*-0.078*
de jure interm.-de facto fixed or de jure flexible-de facto fixed (e)		*-0.554**	*-0.297*	*0.515*
de jure interm.-de facto interm. or de jure flexible-de fecto interm. (f)		*-0.038*	*0.639*	*0.524*
de jure interm.-de facto incon. or de jure flexible-de facto incon. (h)		*-0.695****	*-0.179*	*-0.327*
Shock in terms of trade	t	-12.290***	-17.400***	4.330*
	(t-1)	-0.876	-2.518	7.676***
	(t-2)	-4.970***	6.948	-7.922**
per capita GDP	t	-0.002***	-0.0005	-0.002***
	(t-1)	0.001***	-0.0008	0.001**
	(t-2)	0.0001	0.002**	0.0002
Openness	t	-0.017	-0.007	0.004
	(t-1)	0.061***	-0.042	-0.009
	(t-2)	-0.003	0.059**	-0.032*
Inflation	t	-0.034***	-0.0002	-0.0004***
	(t-1)	-0.015***	-0.00005	-0.0001***
	(t-2)	0.028***	-0.0012	-0.00001
Hyper-inflation			0.846	1.585
Sargan test (p value)		0.07	0.01	0.59
Second order serial correlation Test (p value)		0.11	0.49	0.07
Number of observations		319	220	238
Number of countries		59	61	63

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-22
Dependent variable: Primary expenditure/GDP – new classification

		1974-1982 11	1983-1989 12	1990-1998 13
		GMM	GMM	GMM
Constant		0.491***	-0.434***	-0.105*
Primary expenditure/GDP	(t-1)	0.234***	0.469***	0.429***
	(t-2)	-0.144***	-0.036	0.054***
de jure fixed-de facto fixed (a)		*1.123***		*-1.458**
de jure fixed-de facto intermediate (b)		*1.081**	*-1.476*	*-1.813***
de jure fixed-de facto flexible (c)		*0.866**	*-0.721	
de jure fixed-de facto inconclusive (d)		*1.071**	*-0.545	*0.094
de jure interm.-de facto fixed or de jure flexible-de facto fixed (e)		*0.543	*-0.126	*0.655**
de jure interm.-de facto interm. or de jure flexible-de fecto interm. (f)		*-0.587	*0.805	*-0.544
de jure interm.-de facto incon. or de jure flexible-de facto incon. (h)		*-0.292	*0.056	*-0.746***
Shock in terms of trade	t	-16.577***	-14.726***	2.945
	(t-1)	-0.739	3.663	13.518***
	(t-2)	-5.107***	3.784	-2.153
per capita GDP	t	-0.001***	-0.00001	-0.002***
	(t-1)	0.0009*	-0.0002	0.001***
	(t-2)	-0.0001	0.0006	0.0006***
Openness	t	-0.007	-0.028	-0.033*
	(t-1)	0.074***	-0.017	0.047***
	(t-2)	0.002	0.047***	-0.041***
Inflation	t	-0.023***	0.001	-0.0004***
	(t-1)	-0.019***	0.002	-0.00001
	(t-2)	0.021***	0.002	0.00006**
Hyper-inflation			-3.064	0.434
Sargan test (p value)		0.10	0.03	0.58
Second order serial correlation Test (p value)		0.22	0.45	0.07
Number of observations		279	209	227
Number of countries		52	57	61

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.

Table 9-23
Dependent variable: Revenues/GDP – new classification

		1974-1982 11	1983-1989 12	1990-1998 13
		GMM	GMM	GMM
Constant		0.503***	-0.273**	0.116
Revenues/GDP	(t-1)	-0.099***	0.661***	-0.207***
	(t-2)	0.010	0.170***	-0.012
de jure fixed-de facto fixed (a)		*-0.004*		*-0.773*
de jure fixed-de facto intermediate (b)		*-1.420**	-2.101*	-0.198*
de jure fixed-de facto flexible (c)		*0.180*	*0.413*	
de jure fixed-de facto inconclusive (d)		*-0.090*	*-0.740*	*0.983****
de jure interm.-de facto fixed or de jure flexible-de facto fixed (e)		*-0.379*	*-0.021*	*0.788**
de jure interm.-de facto interm. or de jure flexible-de fecto interm. (f)		*0.003*	*-0.085*	*1.216****
de jure interm.-de facto incon. or de jure flexible-de facto incon. (h)		*-0.437***	*-0.026*	*0.280*
	t	-0.172	3.864	-10.173**
Shock in terms of trade	(t-1)	1.781	18.516***	-0.476
	(t-2)	2.732*	5.299	20.668***
	t	0.0001	0.00003	-0.0002
per capita GDP	(t-1)	-0.0005*	-0.0006	-0.0003
	(t-2)	0.0004*	0.001	-0.0002
	t	-0.003	0.033	-0.044***
Openness	(t-1)	0.030*	-0.017	0.019
	(t-2)	0.014	0.021	0.014
	t	-0.003	0.001	0.00002
Inflation	(t-1)	0.016***	0.005	0.0003***
	(t-2)	-0.004*	0.002	-0.0005***
Hyper-inflation			-4.200***	-0.977
Sargan test (p value)		0.47	0.36	0.60
Second order serial correlation Test (p value)		0.75	0.37	0.09
Number of observations		305	220	228
Number of countries		56	61	63

Note: *, ** and *** show that the null hypothesis is rejected at significant levels of 10%, 5% and 1% respectively.