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15 July 2009

Online at <https://mpa.ub.uni-muenchen.de/16314/>
MPRA Paper No. 16314, posted 17 Jul 2009 00:21 UTC

Choosing and Assessing Exchange Rate Regimes: A Survey of the Literature

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This version: July 2009

Abstract

This paper explore more than 30 years of ideas on the issues surrounding the selection and assessment of exchange rate regimes. It will attempt to provide a comprehensive overview on the theoretical and empirical analysis of the selection and assessment of exchange rate regimes, exposing and interpreting those areas which, from our point of view, are representative of the most influential contributions in this context. The literature can be divided into two main groups: classical and modern. The first group refers to earlier studies examining the differences between floating and fixed exchange rate regimes based on the nature of the shocks and on the OCA theory. The second group is focused on the trade-off between credibility and flexibility, the economic performance and currency crisis, among others. In addition, this paper reviews why many countries follow *de facto* regimes different from their *de jure* regimes, that is, declaring different regimes to the actual regimes in place. Finally, this paper reviews the more recent empirical criteria that have been used to evaluate the choice of an optimal exchange regime.

Keywords: Exchange rate, currency crisis, optimal currency area.

JEL classification: F02, F31, F33, F36.

*I would like to thank Alexandros Mandilaras, Paul Levine, Vasco Gabriel and Keith Pilbeam for many helpful comments on the preliminary stages of this paper. All errors are mine. The email is: alexis.cruz@empirica.com.do.

1 Introduction

In the last fifty years, the choice of an exchange rate regime has been key to determining economic policy. Following the collapse of Bretton Woods' architecture of fixed exchange rates in the early 1970s, the wave of financial crises in the 1990s and the introduction of the Euro, there has been continued debate about the exchange rate regimes most suited to particular countries or groups of countries.

Over the years, theoretical explanations for exchange rate regime choice have expanded the shock vulnerability theory to factor in the following: the optimal currency area (OCA) theory, the "impossible trinity constraint" in times of high capital mobility, time-inconsistency issues associated with regime choice, the influences on economic performance, the balance sheet effects for financially dollarized economies and the role of currency crises. Empirically, the range of methods has expanded similarly. While some consensus has appeared to take shape in terms of the theoretical debate on exchange rate regime choice determinants, empirical evidence suggests no such consensus has formed here.

This paper sets out to review the main theories and empirical methods employed in selecting an appropriate exchange rate regime. In order to achieve this, the paper is organised as follows: Section 2 introduces the distinct classifications of exchange regimes (official exchange rate regimes versus those in practice) and the different theoretical approaches which illustrate how an optimal exchange rate regime is determined. Section 3 reviews the relevant empirical methods and finally, a summary is provided in Section 4.

2 Choosing an Exchange Rate Regime

The selection of an exchange rate regime has been at the centre of debate in international macroeconomics for a long time. This section, examines the distinct classifications (*de jure* and *de facto*) of exchange rate regimes. Secondly, theoretical and empirical literature on the choice of exchange rate regimes is surveyed.

2.1 Exchange Rate Classifications: *De Facto* versus *De Jure*

In order to study the selection of an exchange rate regime, it is necessary to employ the proper classifications for exchange rate systems. Until the late 1990s, most studies

on the choice of exchange rate regimes have focused on official regimes.¹ Recently, numerous empirical studies of exchange rate regimes have provided evidence that the evaluation of adjustments in central parities and foreign exchange market interventions can generate considerable differences between the official arrangements and the *de facto* regime adopted by a country (Ghosh et al., 1997, 2002; Calvo and Reinhart, 2002; Levy-Yeyati and Sturzenegger, 2005). A vast range of empirical literature classifies exchange rate regimes as either *de jure* or *de facto*.² The former establishes a list of regimes and it is based on the official exchange rate regimes declared by governments and usually collected by the International Monetary Fund (IMF). In other words, countries are classified by what they declare they do. The IMF's classification scheme has started from a very rough peg or not dichotomy in the 1970s and the early 1980s, to a four regime classification in the 1980s and most of the 1990s, and finally to an eight regime scheme since 1998.

The first column in Table 1 presents a list of the eight categories of exchange rate regimes actually used in the *de jure* classification and widely employed in literature on the subject (Frankel, 1999; Edwards and Savastano, 1999; IMF, 1999; Ghosh et al., 1997, 2002). They are arranged from top to bottom by the relative stability they afford the nominal exchange rate or, in inverse order by the degree of flexibility that they impart to the economy and now they run the gamut from monetary union to crawling peg and floats with varying degrees of intervention.³ However, several attempts have been made to adjust this classification or to offer altogether new ones based on observed behaviour of the exchange rate, which results in a classification of *de facto* exchange rate regimes.

De facto classifies countries by what they do. This classification attempts to ensure that the official classifications are consistent with actual practice. A country might experience very small exchange rate movements but a high relative variability in reserves and interest rates, even though the monetary authorities have no official commitment to maintaining the parity. This behaviour is often referred to as the “fear of floating” phenomenon (Calvo and Reinhart, 2002). In many cases central banks attempt to stabilise the exchange rate because they view devaluations or depreciations as probable

¹One early exception is the work developed by Holden et al. (1979), which constructed an empirical index to measure exchange rate flexibility.

²For a further discussion on the issues involved in classifying exchange rate regimes, see Nitithanprapas and Willett (2002).

³Table 3 briefly describes the main features of each category in the *de jure* classification and summarises their alleged advantages and disadvantages.

Table 1: The *De Jure* and *De Facto* Classification Scheme

<i>De Jure</i>	<i>De Facto</i> by Reinhart and Rogoff	<i>De Facto</i> by Levy-Yeyati and Sturzenegger
(1) Currency Union	(1) No separate legal tender	(1) Fixed
(2) Dollarization	(2) Pre-announced peg or currency board arrangement	(2) Crawling peg
(3) Currency Board	(3) Pre-announced horizontal band that is narrower than or equal to $\pm 2\%$	(3) Dirty floats
(4) Conventional Peg	(4) <i>De facto</i> peg	(4) Flexible
(5) Crawling Peg	(5) Pre-announced crawling peg	
(6) Bands	(6) Pre-announced crawling band that is narrower than or equal to $\pm 2\%$	
(7) Managed Float	(7) <i>De facto</i> crawling peg	
(8) Pure Float	(8) <i>De facto</i> crawling band that is narrower than or equal to $\pm 2\%$	
	(9) Pre-announced crawling band that is wide than or equal $\pm 2\%$	
	(10) <i>De facto</i> crawling band that is narrower than or equal to $\pm 5\%$	
	(11) Moving band that is narrower than or equal to $\pm 2\%$	
	(12) Managed floating	
	(13) Freely floating	
	(14) Freely falling	
	(15) Hyperfloating	

Sources: Levy-Yeyati and Sturzenegger (2005); Reinhart and Rogoff (2004).

Table 2: Fear of Floating and Fear of Pegging

		<i>De Facto</i> Classification	
		Fixed	Floating
<i>De Jure</i> Classification	Fixed	A	B
	Floating	C	D

causes of adverse effects on the balance sheet, particularly when countries have high debts in a foreign currency (Calvo and Reinhart, 2000). Alesina and Wagner (2006) presents one possible reason for fear of floating. They suggest that countries with relatively poor institutional quality are less able to stick to their announcements of fixing and abandon it more often. In contrast, countries with relatively good institutions display fear of floating, perhaps to signal their differences from those countries incapable of maintaining promises of monetary stability. Barajas et al. (2008) present another reason. These authors suggest that international capital markets might reward countries that are classified toward the flexible and once this “flexibility” is announced there appears to be no punishment for fear of floating.⁴

On the other hand, a country may manifest to have a pegged exchange rate, while in fact it carries out frequent changes in parity. This behaviour is called the “fear of pegging” phenomenon (Levy-Yeyati and Sturzenegger, 2005).⁵ Genberg and Swoboda (2005) suggest that countries actively using monetary policy instruments to stabilise their exchange rate may rationally not want to announce and commit to a fixed exchange rate due to the fear of being subjected to speculative attacks. The performance of each classification can be evaluated according to the matrix in Table 2, as proposed by Genberg and Swoboda (2005).

In this matrix, cell C represents the countries officially claiming to be on a floating exchange rate regime, however these countries have not allowed their exchange rate to

⁴For a discussion on “fear of floating” in terms of the optimal ex post monetary response to external shocks see Gallego and Jones (2005).

⁵Levy-Yeyati and Sturzenegger (2007) updated their data set to cover the period 1974-2004, and examined the relationship between exchange rate depreciations and growth and productivity in developing countries. Their results reveal that in most case (and increasingly so in the 2000s) intervention has been aimed at limiting appreciations rather than depreciations, often motivated by neo-mercantilist view of a depreciation real exchange rate as protection for domestic industries. The authors called this behaviour like the “fear of appreciation”.

float freely (fear of floating). While the countries in cell B represent the fear of pegging, the *de facto* regimes are more flexible than the *de jure* ones. Cells A and D correspond to cases where official and *de facto* classifications coincide. However, the frequency of observations that fall into these cells is much smaller than many would have assumed until recently (Reinhart and Rogoff, 2004; Levy-Yeyati and Sturzenegger, 2005).

The *de facto* classifications have become increasingly relevant over time in empirical research on exchange rate regimes. This new classification led to a re-evaluation of many hypotheses that had been tested using the *de jure* classification, and many results were overthrown. The most prominent *de facto* exchange rate arrangements are classifications made by Reinhart and Rogoff (2004) and Levy-Yeyati and Sturzenegger (2005). The new classification scheme constructed by Reinhart and Rogoff (2004) reclassified exchange rate regimes by focusing on market determined dual and parallel exchange rates as well as a statistical analysis of observed behaviour in the exchange rate for 153 countries over the period 1946-2001. If there is a parallel market in the country, they proceed to a statistical classification based on the percentage of the nominal exchange rate in absolute value and on the probability of remaining in a band of fluctuation. If there is a single foreign market, they test if the announced regime matches the statistical *de facto* classification. By combining official announcements, inflation performances and the volatility of exchange rate movements, they are able to distinguish among 15 *de facto* exchange rate regimes (see Table 1). These authors distinguish floating in countries with high inflation (freely falling) from other types of floating. They defined a category of “freely falling” rates when annual inflation equals or exceeds 40% and when, in these episodes of inflation, there is no official announcement of the exchange regime by the authorities.⁶ In the same way, they identified a special sub-category of freely falling, called “hyperfloats”. This last category refers to those episodes that fall under the classic definition of hyperinflation (50% or more of inflation per month) developed by Cagan (1956). These periods of macroeconomic instability and very high inflation rates are often reflected in high and frequent exchange rate depreciations.

The results represented in Reinhart and Rogoff (2004) suggest that since the 1980s over 50% of *de jure* floats are *de facto* pegs and approximately half of *de jure* pegs were floats. Moreover, they find numerous cases where the announced *de jure* band is

⁶Also, they label an exchange rate as freely falling during the six months immediately following a currency crisis, but only for those cases where the crisis marks a sudden transition from a fixed or quasi fixed regime to a managed or independently floating regime.

much wider than the *de facto* band. Similarly, Levy-Yeyati and Sturzenegger (2005)⁷ constructed a *de facto* classification based on data obtained on the behaviour of three variables: changes in the nominal exchange rate, the volatility of these changes and the volatility of international reserves from all IMF reporting countries over the period 1974-2000. They use cluster analysis to classify countries into four main groups of pegged, intermediate (crawling peg and dirty floats), flexible and inconclusive⁸ exchange rate regimes according to the following principle: pegged rate regimes should have low volatility in the exchange rate and in the change of the exchange rate but a high volatility of foreign reserves, as countries use reserve assets to intervene in the foreign exchange market and to stabilise the exchange rate. Intermediate regimes should have a medium level of volatility in the exchange rate, low volatility in the change of the exchange rate, and medium to high volatility in international reserves.⁹ In contrast, flexible rate regimes should be characterised by high volatility in the exchange rate and in its change rate but low volatility in international reserves, since the exchange rate is allowed to fluctuate freely, and interventions, which may cause high volatility in international reserves, should be less frequent. They label it inconclusive regimes, as the actual policy intention of the authority is difficult to infer when the foreign exchange market is tranquil. Their results suggest that 26% of the countries examined follow an exchange rate arrangement that is different from their *de jure* regime.

Other authors have proposed alternative methods in the classification of exchange rate regimes (Bailliu et al., 2001; Poirson, 2002; Shambaugh, 2004; Dubas et al., 2005; Frankel and Wei, 2008)¹⁰. Bailliu et al. (2001) developed a classification based on the level of volatility in the observed nominal exchange rate. These authors take into account external shocks and revaluations, finding substantial differences in how exchange rate regimes are classified, depending on the methodology used. They also find that over 50% of the countries identifying themselves as floaters are found to follow more rigid arrangements. In the same way, Poirson (2002), following the fear of floating approach, use an alternative flexibility index based on the movements in exchange rates

⁷Their analysis is based on the Holden et al. (1979) framework.

⁸For an analysis on this methodology see Levy-Yeyati and Sturzenegger (2002).

⁹To discriminate between crawling peg and dirty floats, two measures are made for the volatility of the exchange rate: the average of the absolute monthly percentage change in the exchange rate, and the standard deviation of the monthly percentage change in the exchange rate, both being calculated for a calendar year. Reserves volatility is measured by the average of absolute monthly change in net dollar reserves divided by monetary base of the previous month taken in dollars too.

¹⁰See Tavlas et al. (2008) for a survey on *de facto* regimes.

and international reserves. While Dubas et al. (2005) propose an econometric procedure for obtaining an “effective” *de facto* exchange rate regime classification. These authors employ the *de facto* classifications as outcomes of a multinomial logit choice problem conditional on measures of the volatility in a country’s effective exchange rate, a bilateral exchange rate and foreign reserves.

In order to investigate how a fixed exchange rate affects monetary policy, Shambaugh (2004) created a *de facto* coding system which focuses exclusively on the volatility of the exchange rate and divided regimes into pegs and non-pegs. On the other hand, Bérnassy-Quéré et al. (2006) presents an empirical method to identify *de facto* exchange rate. They define an exchange rate basket peg as any stable linear combination of the variations of bilateral exchange rates against the dollar, the euro and the yen. Similarly, Frankel and Wei (2008) proposes a new approach to estimate countries’ *de facto* exchange rate regimes. They suggest estimate simultaneously the implicit currency weight in the basket that anchors the home currency, when the hypothesis is a basket peg with little flexibility, and the degree of flexibility around that anchor, when the hypothesis is an anchor to the dollar or some other single major currency, but with a possibly substantial degree of flexibility around that anchor.

In addition, critics constantly moved away from the official International Monetary Fund classification itself to construct a *de facto* classification system in 1999.¹¹ The new IMF classification combines the available information on exchange rate and monetary policy framework, and the formal or informal policy intentions of authorities with data on actual exchange rates and reserve movements to reach an assessment of the actual exchange rate regime. However, it can be argued that the new IMF classification system is still one of the *de jure* regimes, since it still relies heavily on official information and looks mainly to the behaviour of official exchange rates.¹²

In spite of the fact that the evolution of exchange rate arrangements and the association between exchange rate regimes and economic performance looks very different when viewed through *de facto* schemes, this does not imply that official regimes are irrelevant; even if they are not always coincide with the *de facto* regimes. Official regimes are likely to guide the financial market expectations on exchange rate developments and affect international financial policy decisions. Also, the use of interest rates and the change in gross international reserves as a proxy for intervention in exchange rate markets has serious drawbacks. In some countries, movements in central bank foreign

¹¹See IMF (1999) for details.

¹²See Reinhart and Rogoff (2004).

reserves can be linked to reserve management strategies, the servicing of foreign debt or payments for bulky purchases such as oil imports, and not necessarily for an exchange rate stabilisation motive. Interest rates in many countries are set administratively. As a consequence, the statistics and reality might diverge for data on foreign exchange reserves (Bubula and Otker-Rober, 2002; Ghosh et al., 2002).¹³

In summary, *de facto* measures vary considerably, depending on the methodology used to assess regimes. However, all these methodologies lead to the same conclusion: *de facto* exchange rate regimes are different from *de jure* regimes, and the discrepancies between the two are not uncommon. The most complete *de facto* exchange rate classifications are made by Reinhart and Rogoff (2004).

2.2 Theoretical Considerations

The theoretical literature on the selection of an exchange rate regime is vast and can be divided into two broad categories: classical and modern theories.¹⁴ In the classical exchange rate literature the choice is often portrayed as being either a completely fixed exchange rate regime or a fully flexible one. The general presumption in this kind of literature is that the prices of commodities are relatively sticky compared to exchange rates, implying that shocks to the economy may lead to fluctuations in economic activity. Major contributors in early literature include Friedman (1953), Fleming (1962) Mundell (1961, 1963), McKinnon (1963), and Kenen (1969), among others. Friedman (1953) argued that, in the presence of sticky prices, floating rates would provide better insulation from foreign shocks by allowing relative prices to adjust faster. Moreover, Mundell (1963) explored the role of capital mobility in the choice of exchange rate regimes. With this approach, known as exchange rate policy and the absorption of real and nominal shocks, the choice between fixed and floating depends on the sources of the shocks, whether they are real or nominal, and the degree of capital mobility. In an open economy with capital mobility a floating exchange rate provides insulation against real shocks, such as a change in the demand for exports or in the terms of trade, because under a floating rate system the exchange rate can adjust quickly helping to restore equilibrium, as in Friedman (1953), rather than requiring price level changes. On the contrary, a fixed exchange rate is desirable in the case of nominal shocks such as a shift

¹³See Rogoff et al. (2003) for a comparison of the main features of various *de facto* classifications.

¹⁴For a survey on the issue of exchange rate regime choice for both industrial and emerging countries from an historical perspective see Bordo (2003). Wickham (1985) provides a survey of the literature on optimal exchange rate regimes for small open developing countries.

in money demand, because money supplies automatically adjust to changes in money demand without requiring interest rate changes or price level changes (Mundell, 1963; Fleming, 1962).¹⁵

The key assumption in the Mundell-Fleming framework is that perfect capital mobility implies international arbitrage across countries in the form of uncovered interest parity. This model concludes that it is impossible to simultaneously achieve the three domestic goals: exchange rate stabilisation, capital market integration and independent monetary policy. Otherwise known as the impossible trinity (or the trilemma).

Similarly, Boyer (1978), Henderson (1979) and McKinnon (1981), following the analysis of Poole (1970) on optimal monetary policy instruments, argue that fixed exchange rates perform better in terms of output stability in the presence of monetary shocks originating in the domestic economy, while flexible rates perform better in the presence of real shocks (terms of trade, natural disasters, etc.)¹⁶. Their analysis suggests that countries exposed to a large supply of side shocks should opt for flexible exchange rates, while countries suffering from large monetary and financial market disturbances should peg their exchange rates.

On the other hand, Mundell (1961) stressed the fundamentals of optimal currency area (OCA) theory, defining the characteristics of areas for which it is optimal to have a single currency regime.¹⁷ The OCA approach weighs out the trade and welfare gains from a stable exchange rate against the benefits of exchange rate flexibility as a shock absorber in the presence of nominal rigidities. According to Mundell (1961), the advantages of fixed exchange rates increase with the degree of economic integration among countries.¹⁸ Based on Mundell (1961), McKinnon (1963) advanced the criterion of the openness of an economy. He also points to economic size and openness as important

¹⁵This model was extended by Dornbusch (1976), a study demonstrating that sticky nominal output prices can induce overshooting behaviour in exchange rates.

¹⁶See Broda (2004) and Ramcharan (2007) to recent evidence to support this idea.

¹⁷An OCA can be defined as a region for which it is optimal to have its own currency and its own monetary policy.

¹⁸Bayoumi (1994) provides a formal OCA model with microeconomic foundations and Melitz (1995) developed a theory on optimum currency area based on the idea of selecting monetary union partners with which the covariances of equilibrium real exchange rates is low. His model has been extended to compare choices between regimes of pegged rates, currency boards and dollarization. In addition, Alesina and Barro (2002) and Alesina et al. (2002) examined theoretically and empirically the determinants of OCAs. While Edwards (2006) evaluated optimal currency area criteria from a Latin American perspective, and Tavlas (2009) presents a critical survey on the benefits and costs of a common currency area in Southern Africa.

fundamentals of OCA theory and argues that small and open economies are more likely to adopt fixed exchange rate regimes than large and relatively closed economies.¹⁹

In the same way, Kenen (1969) argued that product diversification in trade should be considered a major determinant of whether an area or not should adopt a fixed exchange rate regime. A country is more likely to adopt a fixed exchange rate regime, if its trade is heavily concentrated on a particular currency area. Kenen (1969) also suggests that countries with very concentrated production structures are more likely to adopt flexible exchange rates than countries with highly diversified production, as exchange rate changes are almost equivalent to changes in the relative output prices and are, therefore, more useful to cope with the demand shocks from the former. In general, OCA theory suggests that countries which are highly integrated with each other in terms of trade and other economic and political relations and have a high degree of symmetry in their business cycles are likely to constitute an OCA.²⁰

The collapse of the Bretton Woods system in 1973 set the stage for more diversified choices in exchange rate regimes (from pure floats through many intermediate arrangements to hard pegs like currency boards, dollarization, and currency unions), and opened the door to modern literature on the subject of exchange rate regime selection. A part of this literature emphasises the credibility aspects of monetary policy and exchange rate regimes mainly to combating inflation and avoiding financial crises.

The environment of high inflation in many countries at the end of the 1970s and during the 1980s introduced a new approach to exchange rate selection, focused on the transmission of inflation between countries and the use of exchange rate policies to achieve low inflation rates. Building on the theory developed by Barro and Gordon (1983a,b) on monetary policy credibility, some of the literature of the 1980s developed the idea that a fixed exchange rate could help import credibility of low inflation policies from a foreign central bank.²¹ Numerous authors emphasised the credibility gains of

¹⁹Some authors point out that foreign shocks are more important in countries that are more open, increasing the appeal of floating rates as a shock absorber (Mussa et al., 2000).

²⁰Additional OCA criteria, such as the degree of labour mobility, wage flexibility or the existence of fiscal transfers among the members, relate to the cost of processing the necessary adjustments in the case of asymmetric shocks among member countries when independent monetary policy has been foregone.

²¹Velasco (1996) presents a survey on the sustainability of fixed exchange rates considering a dynamic version of the Barro and Gordon framework, and Benigno and Missale (2004) present an open economy version of the Barro and Gordon model.

adopting a peg arrangement.²² The main argument in favour of fixed rates is their ability to induce discipline and make the monetary policy more credible because the adoption of lax monetary (and fiscal) policies would eventually lead to an exhaustion of reserves and the collapse of the fixed exchange rate system implying a big political cost for policy-makers. In the same way, some empirical studies introduced considerations on optimal macroeconomic stabilisation, adding proxies for various types of shocks (Melvin, 1985; Savvides, 1990, 1993). These authors find that the presence of domestic nominal shocks raises the likelihood of a currency peg, while real shocks reduce it.

On the contrary, another line of research supporting the floating exchange rate was initiated in the late 1970s. This line has been based on the theoretical work on credibility and time-inconsistency of Kyndland and Prescott (1977). According to this approach, floating regimes provide maximum discretion for monetary policy, but discretion comes with the problem of time-inconsistency. That is, if a government tends to misuse its discretion and cannot keep its promise of low inflation today, it will be difficult to get people to believe its future policy announcements. As a result, governmental restraints need to be established to ensure that discretion is not misused and economic policies are consistent and sustainable so as to avoid episodes of inflation. Therefore, designing a set of domestic institutions that will produce low inflation and long run expectations of low inflation is consistent with the monetary independence associated with floating exchange rates (Svensson, 2000). Several hypotheses, factoring in various institutional and historical characteristics, like the independence of the central bank were then developed as an approach to the exchange rate regime selection (Cukierman et al., 1992; Tornell and Velasco, 1995). The idea is that, independent central banks' use of inflation targeting probably solves the time-inconsistency problem bringing credibility for monetary policy without abandoning the floating exchange rate (Larraín and Velasco, 2001). Similarly, countries with a history of high inflation could adopt a fixed exchange rate regime or a currency board, but without the appropriate fiscal institution it would not be enough to secure credibility. The attraction of a pegging regime would be lowered as the degree of independence afforded to the central bank increases (Rogoff, 1985). Other studies have emphasised the trade-off between credibility and flexibility (Rogoff, 1985; Edwards, 1996; Frankel, 1996). According to this argument, a flexible regime allows a country to have an independent monetary policy, providing the flexibility to accommodate domestic and foreign shocks, while a fixed exchange rate regime reduces the degree of flexibility to accommodate such shocks but imparts a higher degree of

²²See Giavazzi and Giovannini (1989), and Dornbusch (2001), among others.

credibility (Giavazzi and Pagano, 1988; Mendoza, 2001).

More recent theoretical and empirical literature considers the influence of political variables on exchange rate regime choices. This approach to exchange rate determination uses exchange rate rules as a policy crutch in credibility challenged economies.²³ The policy crutch is intimately related with the credibility gains of adopting a fixed regime when countries have a weak institutional credibility. Governments with a low inflation bias but low institutional credibility have difficulty in convincing the public of their commitment to nominal stability and may adopt a fixed exchange rate as a policy crutch to reduce inflationary expectations. In addition, some authors argued that a fixed exchange rate disciplines the government because any fiscal excess might result in a currency crisis.²⁴ Conversely, other researchers suggest that a flexible exchange rate system has advantages from a politically economic point of view, as flexible rates lower the political costs of exchange rate changes (Aghevli et al., 1991; Edwards, 1996; Edwards and Savastano, 1999; Poirson, 2002). Poirson (2002) points out that when a country lacking political stability has an incentive, *ceteris paribus*, to let its exchange rate float, it would be difficult for the government to gather support for the unpopular measures that may be required to defend a fixed regime. Edwards (1996) introduces variables that measure the degree of political stability and the strength of the government. He finds that weaker governments and political instability tends to increase the likelihood of flexible exchange rate regimes. His results contradict the policy crutch approach.

Moreover, the issue of exchange rate regime selection has also been analysed from a point of view incorporating their influence on economic performance, mainly its impact on inflation and growth (Ghosh et al., 1997, 2002; Rogoff et al., 2003; Levy-Yeyati and Sturzenegger, 2001, 2003b; Bailliu et al., 2001, 2003; Husain et al., 2005; De Grauwe and Schnabl, 2005; Cruz, 2007; Bleaney and Francisco, 2007, among others). Earlier studies indicate that, compared to floating regimes, pegged exchange rate regimes are associated with lower inflation and slightly lower output growth. In addition, some research suggests that countries with fixed exchange rates can achieve price stability, but this presents some problems reaching other macroeconomic objectives, particularly fiscal balance, competitiveness, and growth (Nashashibi and Bazzoni, 1993). More recently, some studies found pegged regimes posed no significant impact on inflation but confirmed the lower correlation between pegged regimes and per capita output

²³The precursors are based on Barro and Gordon (1983b).

²⁴See Aghevli et al. (1991), Levy-Yeyati et al. (2003) and Cruz (2007), among others.

growth.

On the other hand, many empirical studies took into account the level of a country's debt, the ability of a country to borrow in its domestic currency and international reserves for the selection of an exchange rate system. However, the results of these empirical studies are not robust in terms of the choice of an exchange rate regime (Juhn and Mauro, 2002).²⁵ In that order, the balance sheet exposure of exchange rate changes in financially dollarized economies has been studied by recent literature (Calvo and Reinhart, 2001; Calvo, 2001). Effects on the balance sheet in financially dollarized economies are particularly relevant in countries with important foreign liabilities (private or public), because they may be more prone to fixed regimes (either *de jure* or *de facto*) owing to the inherent currency imbalance and the deleterious impact of pointed nominal depreciation in the currency on the solvency of financial institutions (Levy-Yeyati et al., 2003).

The optimal choice of an exchange rate regime has been analysed from the point of view of fiscal policy sustainability. The exchange rate regime plays an important role in determining external debt and debt service burden, as well as the sustainability of both. Firstly, because of its direct effect on their size and, secondly, because of its effect on competitiveness and growth particularly in developing countries which have a large amount of debt denominated in a foreign currency (Tornell and Velasco, 1994; Calvo et al., 2003). Large depreciations lead to a growth in public sector debt and to substantial deteriorations in the sustainability of fiscal positions. Early literature suggest that fixed exchange rate regimes provide more fiscal discipline than flexible exchange regimes do since fiscal profligacy is deterred by the risk of losses in foreign reserves or the build-up of public debt. However, in countries with a pegged exchange rate and a tax base highly dependent on international trade, an overvaluation of the real exchange rate would tend to undermine tax revenues and results in a widening of the fiscal deficit (Tanzi, 1977; Nashashibi and Bazzoni, 1993). Futhermore, some authors explore the hypothesis that the selection of an exchange rate regime following a sudden stop in capital flow may be influenced by fiscal costs (Calvo et al., 2003; Galindo and Izquierdo, 2003).

Until recent years, many studies favoured intermediate regimes (e.g. adjustable pegs and exchange rate bands) as an optimal choice in the face of the presumably dominant trade-off between credibility (associated with fixed exchange rates) and flexibility (associated with floating regimes). However, the general trend towards full or

²⁵See also, Velasco (1996) and Benigno and Missale (2004).

large capital mobility has shifted attention on to the implications of capital movements in the choice of exchange rate regimes.²⁶ The currency crises of the 1990s (European Monetary System in 1992, Mexico in 1994, East Asia in 1997, Russia in 1998, Brazil in 1999, Turkey and Argentina in 2001) involved combinations of some form of intermediate exchange rates with high capital mobility (Hausmann et al., 1999).²⁷ Those combinations are exposed to speculative attacks resulting from fundamental policy inconsistencies (Krugman, 1979) or self-fulfilling expectations that arise in the context of multiple equilibria (Obstfeld, 1996).²⁸ Some authors highlight the inconsistency between fiscal policy fundamentals and the exchange rate peg that leads to currency crises (De Kock and Grilli, 1993; Daniel, 1997, 2001; Corsetti and Mackowiak, 2005, among others). On the other hand, several studies suggest that countries exposed to large capital flows (countries with an open capital account) must avoid unstable exchange rate regimes and are left with two corner solutions: a hard currency peg (such as a currency board, dollarization or monetary union)²⁹ or pure floating exchange rate regimes. This point of view has been called the “hollow-out hypothesis” or the “bipolar view”³⁰ (Eichengreen, 1994; Obstfeld and Rogoff, 1995; Fischer, 2001).

Over the course of the 1990s, the bipolar view has become a new orthodoxy in the selection of an exchange rate regime. Some empirical research points out that since the early 1990s there has been a continuous fall in the number of countries that maintain some type of intermediate exchange rate regime, and a continuing rise in the number of countries with both pure floating rates and hard pegs. This polarisation has led some authors to conclude that intermediate exchange rate regimes in countries open to

²⁶In the 1990s, two major trends changed the conventional analysis of optimal exchange rates. Firstly, surges in capital flows once again led to the rapid growth of debt stocks in emerging economies and secondly, the type of flows changed substantially, as initially the most significant part of these increasing flows (and debts) were portfolio flows. When these flows started to decline (after 1998), foreign investment flows become dominant.

²⁷Early studies of Holden et al. (1979) point out that higher capital mobility increases the likelihood of fixing the exchange rate.

²⁸Important factors that reduce the risk of speculative attacks are the availability of foreign currency reserves to defend a fixed exchange rate, and the consistency of macro economic policies. Sustainable public finances are a key factor in this regard.

²⁹It is worth noting from the outset that a monetary union and dollarization are conceptually distinct, a monetary union involves the establishment of a new central bank that can be administered by representatives from all the countries using the new transnational currency while dollarization, in contrast, implies the adoption of the currency of another country.

³⁰It is also referred to as the missing middle, or the hypothesis of the vanishing intermediate regime.

international capital flows (with open capital accounts) or integrating their domestic capital markets with global capital markets are not sustainable for extended periods, and that these countries should move away from the middle towards both extremes of the exchange rate spectrum (Eichengreen, 1994; Obstfeld and Rogoff, 1995). Hence, they must either float freely or fix truly and thus find credibility under a hard peg regime.³¹

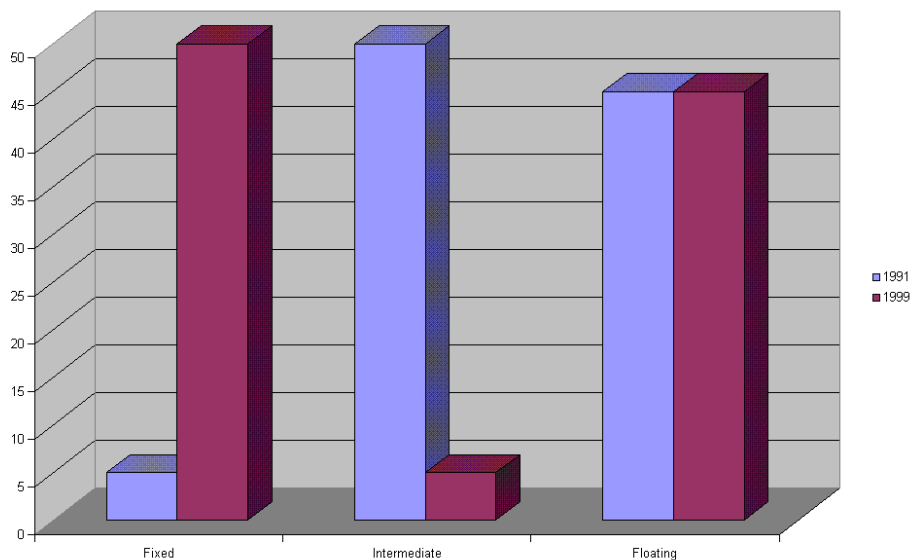
The first empirical work on the bipolar view was undertaken in Caramazza and Aziz (1998). These authors point out that 87% of developing countries had some type of pegged exchange rate in 1975, but this proportion fell to well below 50% in 1996. They also suggest that countries in the 1990s opted more for flexible exchange rates than hard pegs.³² Similarly, Fischer (2001) documented the case for the hollowing-out hypothesis or bipolar view by examining the evolution of exchange rate regimes in a large sample of countries in the period between 1991 to 1999. His work shows a trend in moving away from intermediate regimes and towards floating regimes, but there is no evidence to suggest that the intermediate exchange rate regime is disappearing, except for industrialised countries (see Figure 1). Nonetheless, that increase in the number of pegs in industrialised countries (from 5% to 50%) in the 1990s is mainly related to the introduction of the Euro Zone and some transitional economies (Rogoff et al., 2003).

On the other hand, the study developed by Fischer (2001) indicates that the number of emerging market countries with intermediate regimes declined from 21 countries (64%) in 1991 to 14 countries (42%) in 1999. Likewise, the number of developing countries with intermediate exchange rate regimes decreased from 62 countries (59%) to 48 countries (36%) in the same period (see Figure 2 and 3, respectively). In both cases the increase in floating was more important than fixed regimes. However, the work developed by Fischer (2001), like most studies on exchange rate regimes up until that moment, is based on the *de jure* scheme or the official classification of exchange rate regimes. On the contrary, some empirical studies using the *de facto* classification had no founded support for the bipolar view (Masson, 2001; Bubula and Otker-Rober, 2002; Rogoff et al., 2003; Bérnassy-Quééré et al., 2006). Bubula and Otker-Rober (2002) using a monthly database on IMF *de facto* classifications find that intermediate regimes have been more prevalent than suggested by the *de jure* classification in the period

³¹Some studies indicate that the currency crises of the 1990s and increasing capital mobility brought the impossible trinity hypothesis to the forefront and resulted in the bipolar view of exchange rate regimes (Fischer, 2001).

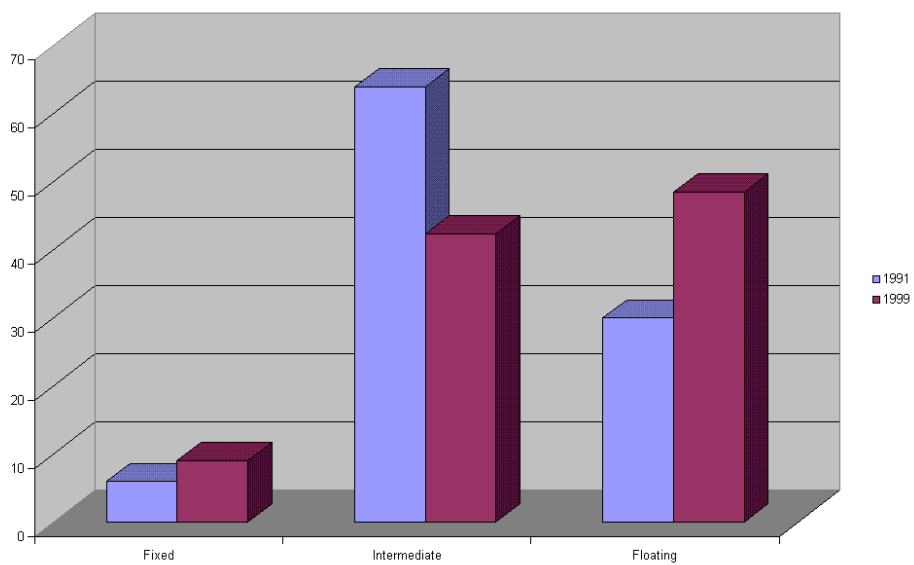
³²A similar conclusion is also reached by Larraín and Velasco (2001) and Frankel (2003).

Figure 1: Evolution of Exchange Rate Regimes: Developed Market Economies



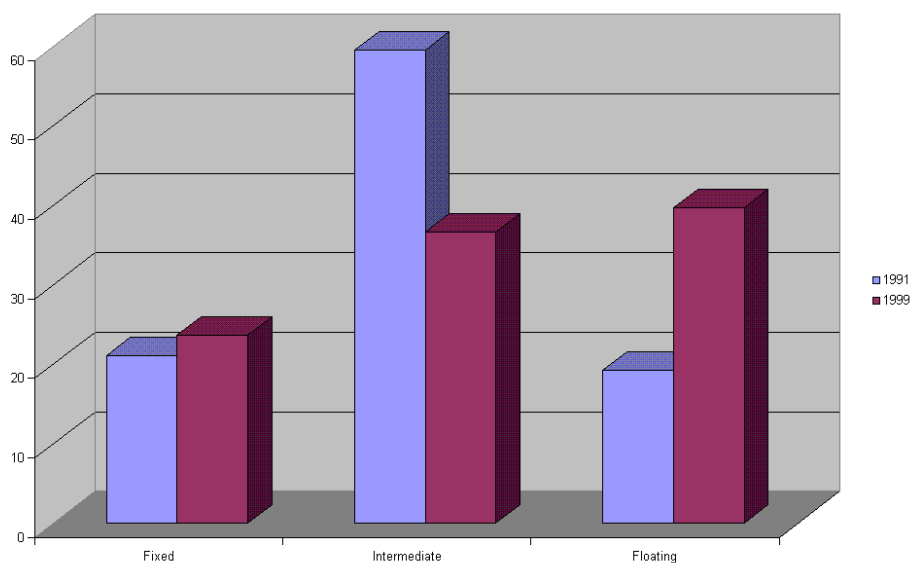
Source: Fischer (2001).

Figure 2: Evolution of Exchange Rate Regimes: Emerging Market Economies



Source: Fischer (2001).

Figure 3: Evolution of Exchange Rate Regimes: Other Countries



Source: Fischer (2001).

between 1990-2001. While Levy-Yeyati and Sturzenegger (2005) using their own *de facto* classification find evidence on bipolar view during the 1990s but not for countries with limited access to capital markets. According to their study, there is a reduction in the number of countries using intermediate exchange rate from 62% in 1991 to 32% in 2000. Nonetheless, the authors find important representations in each of the three categories (fixed, intermediate, and floating). Their results also suggest that the recent increase in the number of *de jure* floats goes hand in hand with an increase in the number of *de facto* dirty float (fear of floating). On contrary, Bérnassy-Quére et al. (2006) using their own *de facto* classification find that intermediate regimes have been declining after 1997-1998 crisis, but to the only benefit of hard pegs, not of free floating regimes. However, the decline of intermediate exchange rate can be explained by the launch of European Monetary Union. These authors show that when Euro Area countries have been removed from the analysis, the proportions of free floats, intermediate regimes and hard pegs remain almost the same before and after the crises. Similarly, McKinnon and Schnabl (2004) show for the post-crisis East Asian countries that exchange rates are much less flexible than suggested by IMF classifications.

In addition, Bird and Rowlands (2005), using a *de facto* classification, examine the link between exchange rate regimes and IMF programmes (as a proxy to the balance of payment difficulties) and find strong evidence suggesting that countries with inter-

mediate exchange rate regimes are less likely to go to the IMF than others.

On the other hand, Frankel (1999) stressed that the relative difficulty in verifying intermediate regimes, particularly broad band regimes pegged to a basket of currencies, is also a critical factor in explaining why intermediate regimes are less viable than corner solutions. In addition, some authors suggest that intermediate regimes are, and will continue to be, a viable option especially for emerging markets (Frankel, 1999, 2003; Williamson, 2000; Masson, 2001; Bubula and Otker-Rober, 2002; Husain et al., 2005).³³ Moreover, Willett (2002) affirm that it is possible for intermediate exchange rate regimes to remain stable, but this requires exchange rates and domestic macroeconomic policies to be mutually determined in a consistent manner, and Bérnassy-Quééré and Coeuré (2002) illustrate how intermediate exchange rate regimes are potentially superior when there is a trade-off between stabilisation and disinflation. Notwithstanding, dollarization has perhaps become the leading theoretical and policy debate of the past ten years (Calvo, 1999, 2001; Hausmann and Powell, 1999; Calvo and Reinhart, 2001; Alesina and Barro, 2001; Dornbusch, 2001; Edwards, 2001). An important part of modern literature on exchange rate regimes, with its focus on central bank credibility, considers the adoption of a foreign currency (dollarization) as the domestic currency as a means to buy a credible policy of price stability.³⁴ Dollarization also eliminates the role of short-run discretionary government policies that can give rise to inconsistencies in policies, and avoids speculative attacks and currency crises.³⁵ Dollarization can be viewed as the extension to a fixed exchange rate regime, to the point where the possibility of parity changes is ruled out completely.³⁶

The OCA criteria developed by Mundell (1961), McKinnon (1963) and Kenen (1969) are the basis for countries to evaluate the adoption of dollarization (although the context is different from the original application of the OCA theory).³⁷ In addition, other studies have discussed the dollarization in terms of a dynamic general equilibrium framework

³³Williamson (2000) proposed alternative crawling band regimes satisfying the BBC rules: Basket, Band, and Crawl.

³⁴For a discussion on the pros and cons of dollarization see Alesina and Barro (2002); Chang and Velasco (2003); Levy-Yeyati and Sturzenegger (2003a); Berg and Borensztein (2003), and Cruz (2005), among others.

³⁵For a discussion on the conditions under which emerging countries will benefit from giving up their currency see Mendoza (2002) and Alesina et al. (2002).

³⁶The choice of dollarization is considered to involve a trade-off between credibility and flexibility.

³⁷OCA issues defined the debates that led to the European Monetary Union. However, the focus of the dollarization debate in developing economies differs substantially from that of the European Monetary Union debate.

(Mendoza, 2001; Schmitt-Grohé and Uribe, 2001). Dollarization leads to lower inflation and real interest rates but its impact on economic growth is not clear (Edwards, 2001; Edwards and Magendzo, 2001, 2003b).³⁸

In summary, in classic literature, the relative incidence of nominal and real shocks becomes a key criterion in the selection of an exchange rate regime. The issue stressed in modern literature takes two paths, while researchers in the 1980s concentrated on studying the implications of exchange rate regimes as stabilisation instruments (or as credibility enhancers), in recent years the debate has focused on how different regimes may act as external shocks absorbers or provide a shield against speculative attacks.

3 Assessing Exchange Rate Regimes

In this section, more recent empirical approaches used to evaluate the selection of an optimal exchange regime are reviewed. In general, there are three main approaches: economic performance, currency crisis, and optimal currency area criterion.

3.1 Economic Approach Criterion

Since inflation and growth may influence a government's choice of exchange rate regimes, some empirical studies have attempted to explain the impact of exchange rate regimes on economic performance. This empirical analysis can be grouped under two categories: country-specific studies and multi-country studies. Country-specific investigations have had a difficult time unravelling the independent effects of the nominal exchange rate regime on macroeconomic performance: the detection of regularity associated with a particular regime in one study was followed by a counter example in another study. Multi-country studies have also found it difficult to make generalisations. Ghosh et al. (1997, 2002); Levy-Yeyati and Sturzenegger (2001, 2003b); Rogoff et al. (2003); Husain et al. (2005); De Grauwe and Schnabl (2005) and Bleaney and Francisco (2007) conducted comprehensive multi-country studies.

Ghosh et al. (1997) examine the effects of the nominal exchange rate regime on inflation and economic growth using data from 135 countries during the period of 1960-1989.

³⁸Edwards and Magendzo (2003a) find that currency unions and dollarized countries have lower inflation than countries with a domestic currency, but dollarized countries have lower growth and higher volatility than countries with a domestic currency, while currency unions have a higher growth and a higher volatility than countries with their own currencies.

Their results suggest that both the level and variability of inflation is markedly lower under fixed exchange rates than under floating exchange rates. However, their study fails to find a robust link between growth and exchange arrangements. Similarly, Ghosh et al. (2002) confirmed that there is a negative association between fixed exchange rate regimes and inflation, but they not find evidence of a strong link between exchange rate regimes and economic growth. Conversely, Levy-Yeyati and Sturzenegger (2001, 2003b) demonstrate that developing countries with pegged regimes are associated with lower inflation than developing countries using floating arrangements, but pegged regimes are associated with slower growth.

Rogoff et al. (2003) study the link between exchange rate regimes and economic performance and their results suggest that, for countries at a relatively early stage of financial development and integration, fixed or relatively rigid regimes appear to offer some anti-inflation credibility gain without compromising growth objectives. On the contrary, for developed countries that are not in a currency union, relatively flexible exchange rate regimes appear to offer higher growth without any cost to credibility.

On the other hand, Husain et al. (2005) finds that developing countries adopting fixed exchange rate present low inflation than developing countries with flexible rates. Similarly, De Grauwe and Schnabl (2005) analyzes the impact of the exchange rate regime on inflation and output in South Eastern and Central Europe for the period between 1994-2004. Their results reveal a significant impact of fixed exchange rates on low inflation as well as a highly significant positive impact of exchange stability on real growth.

In the same way, Bleaney and Francisco (2007) examines the relationship between exchange rate and inflation and growth in 91 developing countries over the period 1984-2001. They distinguish three categories of the exchange rate regime: floats, easily adjustable peg (soft peg) and those where adjustment is harder (hard pegs, defined by use of a shared currency or a currency board system). Their results suggest that floats have similar growth rates to soft pegs and only slightly higher inflation; while hard pegs have lower inflation and slower growth than other regimes.

3.2 Currency Crises Criterion

Early empirical research on currency crises focuses on the description of stylised facts regarding the period preceding the currency crisis or on testing specific theoretical models of crises using standard econometric methods (signalling approach). However,

more recent empirical studies go beyond explaining the causes of a currency crisis. They do not differentiate between various indicators but consider a wide range of variables that can help in constructing a system for predicting a currency crisis.

Numerous empirical analyses use the technique of a discrete dependent variable (probit and logit) associated with a set of exogenous continuous variables in a currency crisis. While the dependent variable of a currency crisis remains a binary or multinomial variable the independent variables are continuous. This approach provides the possibility of evaluating a formal model the relationships between various indicators including exchange rate arrangements and the discrete occurrence of a currency crisis. The prediction model is simply interpreted as the probability of a currency crisis occurrence. Eichengreen et al. (1996) were among the first to use a probit regression; they applied it to data obtained on twenty industrialised countries in the period 1959-1993 in order to empirically identify the determinants of a currency crisis. One of the more important novelties introduced in their analysis is the contagion effect. These authors also use the definition of a currency crisis based on an index of speculative pressure.

Frankel and Rose (1996) applied probit regressions to yearly data for 100 developing countries in the period 1971-1992 and defined a currency crisis that only assumes the occurrence of successful speculative attacks. In addition, an important amount of subsequent research applied the binomial probit model but these empirical analyses differed in the choice of indicators, the sample of countries, the definition of a currency crisis, the prognostic time horizon and the frequency of used data.

On the other hand, numerous empirical studies have argued that probit models tend to lead to a limited definition of currency crises. Those authors have tried to resolve the problems inherent in the signalling approach and the discrete choice approach of currency crises using alternative models (Cerra and Saxena, 2002; Martinez Peria, 2002; Abiad, 2003; Arias and Erlandsson, 2005; Chen, 2005). Jeanne and Masson (2000) and Fratzscher (2002), among others, use the Markov-switching model developed by Hamilton (1990) in order to encompass the possibility of multiple equilibriums. The contributions of these models, in comparison to the models using the index of speculative pressure, is that the parameters evaluated in the model and the data obtained reveal the state of the economy, so the model does not depend on an arbitrary decision on the time of onset of the currency crisis, based on the signal provided by the index of speculative pressure. Similarly, a significant part of contemporary literature on the subject focuses on improving Hamiltons' framework to allow Time-Varying Transition Probabilities (TVTP) to study currency crises (Cerra and Saxena 2002; Martinez Peria

2002; Abiad 2003; among others).

In addition, Abiad (2003); Arias and Erlandsson (2005) and Chen (2005) construct early warning systems using a Markov-switching model with time-varying transition probabilities to help predict currency crises.

3.3 OCA Criterion

The theory on Optimal Currency Area (OCA) (Mundell, 1961), seeks to organise the economic considerations that motivate the choice of an exchange rate regime.³⁹ The OCA criterion argues that the symmetry of business cycles is an important argument for a common currency. An important part of empirical literature uses Structural Vector Autoregressions (SVAR) to measure the degree of synchronisations (symmetries) in business cycles and the contemporaneous correlation of shocks between countries. An interesting finding in papers using the structural VAR methodology is that results can differ, whether the focus is on the correlation of shocks or of business cycles. Another has looked at measures in business cycle synchronicity and at tests for the presence of common features or common cycles. Markov-switching ARs and VARs have also proved useful tools, following the work developed by Hamilton (1989) and Krolzig (1997); this procedure can also be used to identify a common cycle (Artis et al., 2004). The estimate of the so-called classical cycle, as distinct from the growth cycle, has also been carried out and is now making a comeback.

In summary, the literature on the subject suggests links between exchange regimes, macroeconomic performance and currency crises could be good indicators in determining the choice of an exchange rate regime. Establishing links between countries' exchange rate regimes and their macroeconomic performance will, of course, depend on whether those exchange rate regimes are classified as *de jure* or *de facto*. This is particularly true for emerging and developing countries where the *de jure* announcement to float, for example, has been known to not typically resemble a *de facto* fully floating exchange rate.

4 Conclusion

The literature on the selection of exchange rate regimes can be divided into two main groups: classical and modern. Classical literature refers to earlier studies which ex-

³⁹See Dreyer (1978) and Heller (1978) for early empirical work on the OCA approach.

amined systematic differences between floating and fixed exchange rate regimes. The analysis in these studies is closely related to the literature on the choice between fixed and flexible regimes based. Firstly, on the nature of the shocks generated by changes in trade flows and by a deterioration in terms of trade and secondly, on the optimal currency area theory. This period was characterised by strict controls on capital flows, relatively stable exchange rates, low inflation, high growth and a rapid increase in trade.

The breakdown of the Bretton Woods system, the periods of high inflation in the 1970s and 1980s and the currency crises that occurred in the international financial market in the 1980s and 1990s led to a second significant development in this literature. The relevance of the exchange rate regime for macroeconomic performance became a key issue in international macroeconomics and the choice between alternative regimes focused on the trade-off between credibility and flexibility.

The financial deregulation in domestic economies and the reductions of barriers to financial flows initiated in the 1970s took the form of rapidly expanding financial flows among mature economies and, later, between them and developing economies. The debate on exchange rate regimes has become increasingly concerned with the need to mitigate the potential deleterious effects of abrupt change in the direction of capital flows and hence with the question of exchange rate regime sustainability and credibility of domestic policies. The succession of currency crises in the second half of the 1990s has led to a polarisation in the exchange rate regime debate between what has come to be known as a “bipolar view” or “corner solution”. However, the evidence found in this literature reveals that the popularity of intermediate regimes declined in the 1990s. It is unclear at this point whether they are in the process of becoming extinct. In effect, the stronger evidence for the bipolar view comes from industrialised countries where most have adopted exchange rate regimes at one end of the two extremes. However, for emerging and developing countries, intermediate regimes remain an option (though less so than a decade ago). Moreover, some studies using alternative classification schemes do not find important bipolar views, contrary to those studies based on official classifications.

An important part of the modern literature on exchange rate regimes, with its focus on central bank credibility, considers that adopting a foreign currency (dollarization) as the domestic currency buys a credible policy of price stability and avoids speculative attacks and currency crises. Some empirical evidence confirmed that dollarized countries have lower inflation than countries with a domestic currency, but dollarized countries have lower growth and higher volatility than countries with a currency of their own.

In this context of increasing capital flows and large external shocks, the exchange rate debate is focusing on the trade-off between inflation and growth.

To conclude, the empirical and theoretical literature on the relationship between the selection of exchange rate regimes, currency crises and fiscal stances has developed progressively in the post-war period, becoming clear that the choice of an optimal exchange rate regime is one of the most complicated issues addressed by economists today. This paper has examined the distinct exchange rate classifications and surveyed the theoretical and empirical literature on the selection of exchange rate regimes. While some consensus has appeared to take shape in terms of the theoretical debate on exchange rate regime choice determinants; empirical evidence suggests no such consensus has formed here.

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Table 3: Main Characteristic of Different Categories of Exchange Rate in the *De Jure* Classification

	Main Features	Main Advantages	Main Disadvantages
Currency Union	A group of countries using a common currency issued by a common regional central bank.	The time inconsistency problem is reduced by requiring a multinational agreement on policy.	There is no scope for independent monetary policy. Member countries suffering asymmetric shocks lose a stabilization tool.
Dollarization	A foreign is used as the only legal tender. Monetary policy is delegated to the anchor country.	Dollarization reduces (eliminates) the time inconsistency problem. Not prone to currency crisis	Under dollarization external shocks cannot be buffered by exchange rate movements, imposing costs if business cycles are asynchronous; while seignorage revenues decline. Central bank lose its role as lender of last resort
Currency Board	Strict exchange rate regime supported by a monetary system based on legislative commitment to exchange domestic currency for a specified foreign currency at a fixed rate. Domestic currency is issued only against foreign exchange.	The system maximizes credibility and reduces the time inconsistency problem.	External shocks cannot be buffered by exchange rate movements, imposing costs if business cycles are asynchronous. The scope for lender of last resort activity is restricted to excess reserve holding and fiscal mechanisms. Requires high reserve holding. Low seignoriage.
Continued...			

	Main Features	Main Advantages	Main Disadvantages
Conventional Peg	Fixed to another single currency or currency basket.	The time inconsistency problem is reduced through commitment to a verifiable target. Devaluation option provides potentially valuable policy tool in response to large shocks. Allows high inflation countries to reduce inflation by moderating inflationary expectations (if the peg is credible).	Provides a target for speculative attacks. High international reserves are required
Crawling Peg	The exchange rate is adjusted periodically according to a set of indicators.	An attempt to combine flexibility and stability. Allows high inflation countries to avoid severe real exchange rate overvaluation.	Prone to currency crisis if the country is open to international capital markets. Among variants of fixed exchange rates, it imposes the least restrictions, and may hence yield the smallest credibility benefits. The credibility effect depends on accompanying institutional measures and record of accomplishment.
Bands	Exchange rate is allowed to fluctuate within a band; endpoints defend through intervention, typically with some intra-band intervention. An attempt to mix market-determined rates with exchange rate stabilizing intervention in a rule-based system.	Provides a limited role for exchange rate movements to counteract external shocks and partial expectations anchor, retains exchange rate uncertainty and thus motivates development of exchange rate risk management tools.	A band is subject to speculative attacks. does not by itself place hard constraints on monetary and fiscal policy, and thus provides only partial solution against the time inconsistency problem.

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	Main Features	Main Advantages	Main Disadvantages
Managed Float	Exchange rates are determined in the foreign exchange market. Authorities can and do intervene, but are not bound by any intervention rule. Intervention may be direct (sterilized and non-sterilized) or indirect through changes in interest rates, etc. Often accompanied by a separate nominal anchor, such as an inflation target.	The arrangement provides a way to mix market determined rates with exchange rate stabilizing intervention in a non rule based system.	Lack of transparency of central bank behavior (because criterion for intervention is not disclosed) may introduce too much uncertainty. High foreign reserves are required.
Pure Float	The exchange rate is determined in the market freely by demand and supply.	Adjustments to shocks can take place through exchange rate movements. Eliminates the requirement to hold large foreign reserves.	Does not provide an expectations anchor. Discretion in monetary policy may create inflationary bias; time inconsistency problem arise unless addressed by other institutional measures.