Issues on the choice of Exchange Rate Regimes1
and Currency Boards – An Analytical Survey

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No 855

WARWICK ECONOMIC RESEARCH PAPERS

DEPARTMENT OF ECONOMICS

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Issues on the choice of Exchange Rate Regimes[1] and Currency Boards – An Analytical Survey

By Ashwin MOHEEPUT

[1] Excerpts from this paper were produced when I was an intern at the Bank of England in summer 2005. It reviews the literature on the choice and design of exchange rate regimes and harnesses policy-related material pertinent for institutions such as the IMF and Central Banks. Acknowledgements to staff in the Financial Stability Area of the Bank of England. All errors are mine.

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First Draft: *August 2006* This Draft: *April 2008*

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ABSTRACT

Currency boards have often been at the heart of monetary reforms proposed by the International Monetary Fund (IMF): they have been instrumental either as a short term crisis management strategy that successfully restores financial order for many countries seeking stabilization in the aftermath of prolonged economic crisis or as a way of importing monetary credibility as part of a medium / long term strategy for conducting monetary policy. As backbone of a credible exchange-rate based stabilisation programme, they have also been the linchpin of several heterodox or orthodox programmes aimed at mitigating hyperinflation. This paper attempts to synthetize our thinking about currency boards by reviewing their strengths and weaknesses and endeavours to seek real world examples to rationalise their applicability as opposed to alternative exchange rate regimes. Architects of international financial stability at the IMF or at central banks often ponder about the prerequisites for such programme to work well. These are also reviewed using appropriate economic theory where necessary. Finally, this paper sheds light on the best exchange rate regime that may be adopted in the intermediate term by those countries wishing to adopt a currency board, not as a quick fix solution to end an economic chaos but rather, as integral part of a long term monetary strategy.

Key Words: *Currency Boards, IMF, Crisis Management, Monetary Credibility, Heterodox / Orthodox Programs, Hyperinflation, Exchange Rate Regimes*

1. Introduction

Currency Boards always hog the hemlines during episodes of acute financial turmoil. Understand by this, an official exchange rate arrangement that combines four main features (Enoch and Gulde (1998), Gulde (1999)):

- The local currency is pegged to some foreign currency in the strongest fix that could be possible, short of outright '*dollarization*';

- The domestic monetary base (i.e stock of high-powered money) is fully covered by reserves of the foreign currency to which the local currency is pegged[2];

- Automatic convertibility of domestic currency into the foreign currency on demand;

- Strongest commitment to the system, effectively and duly guaranteed and enforced by Central Bank law e.g *convertibility law* in Argentina and the *central bank charter* of early 1990s, making Argentina's currency, then the austral, fully convertible into US dollars at the rate 10,000 australs per dollar, changeable only by act of congress[3].

In essence, a currency board can be viewed as a consolidated exchange rate and monetary package because of its direct implications for exchange rate and monetary management. For reasons that will be clear as we progress along with the discussion, it will be safe to view currency boards as a holistic package, including fiscal reforms as well. In addition to lowering interest rates (partly because of accompanying lower probability of devaluation[4] in the system), they derive much of their credibility from the "*legal and institutional changes that are needed at the time of their inception*" (Enoch and Gulde (1998)). This credibility stems from the establishment of an anchor that is neither overvalued nor undervalued and from the inception of commitment devices that impose some consistency of domestic polices with the external goal of maintaining the peg.

Legal commitment involves the enactment of central banking act that enforces the operational jurisdiction of the currency board. Examples of institutional commitment devices include the

[2] Expansions and contractions of the supply of base money (and the corresponding movements in interest rates) are determined by foreign exchange inflows and outflows.
[3] At the beginning of 1992, 1 peso replaced 10,000 australs. Subsequently, the exchange rate became 1 peso for 1 dollar.
[4] Lower interest rates are usually captured by narrowing interest spreads. For many emerging markets, this is captured by yield on Brady bonds less 5-year US Treasury bond yields. The probability of devaluation is smaller than that of a soft pegged exchange rate regime because of the stronger credibility and commitment to good monetary policy practice that currency boards command. It is important to note that devaluation is a possibility that is only used only under extreme conditions and that such possibility, no matter how small, is usually taken into account by architects who design the scheme. Devaluation is thus an 'exit door' policy option, in case the currency board arrangement imposes too many constraints on an economy that is buffeted by adverse shocks.

formal forbiddance to monetize government's budget deficits and strict prohibition to act as Lender-Of-Last-Resort (LOLR) to commercial banks that face temporary liquidity problems. Together these institutional changes, backed by well-defined and enforceable banking legislation, act as a successful coordination device for the public's expectations and ensure that these beliefs change for the better overnight and succeed in achieving the goals for which the currency board regime was set up.

The absence of any form of financing to the public treasury as well as to commercial banks, is what essentially distinguishes a currency board from a central bank. Table 1 summarises some of these differences.

Table 1 – Differences Between A Typical Currency Board Arrangement and Central Bank[5]

Currency Board versus Central Bank	
Typical Currency Board	**Typical Central Bank**
Usually supplies notes and coins only	Supplies notes, coins, and deposits
Fixed exchange rate with reserve currency	Pegged or floating exchange rate
Foreign reserves of 100 per cent	Variable foreign reserves
Full convertibility	Limited convertibility
Rule-bound monetary policy	Discretionary monetary policy
Not a lender of last resort	Lender of last resort
Does not regulate commercial banks	Often regulates commercial banks
Transparent	Opaque
Protected from political pressure	Politicized
High credibility	Low credibility
Earns seigniorage only from interest	Earns seigniorage from interest and inflation
Cannot create inflation	Can create inflation
Cannot finance spending by domestic government	Can finance spending by domestic government
Requires no "preconditions" for monetary reform	Requires "preconditions" for monetary reform
Rapid monetary reform	Slow monetary reform
Small staff	Large staff
Note: The characteristics listed are those of a typical currency board or central bank (applicable to developing countries only), not those of a theoretically ideal or exceptionally good currency board or central bank.	

Such absence implies that countries that move to currency boards, usually implement pre-requisite measures to discipline their public finance situations as well as rehabilitate their commercial banks[6]. This disciplining mechanism, whilst providing a benign attempt at changing public expectations for the better, nevertheless does not come without pitfalls. Currency boards do represent a straightjacket for policymakers and leave them with little flexibility in their arsenal of manoeuvres when it comes to responding to external shocks. This

[5] Material available from Hanke and Schuler (2000), "Currency Boards for Developing countries: A Handbook". Available on: http://users.erols.com/kurrency/intro.htm

[6] Being one of the 'extreme' forms of pegged exchange rate regimes, they ostensibly have all the advantages and drawbacks of soft pegs. These are listed in the Appendix. The point here, is that, in addition, due to these

weakness is atypical of the archetypal disadvantage of pegged regimes[7]: for economies that are strongly integrated in global capital markets, monetary policy cannot be used as a discretionary policy instrument to meet domestic objectives. For economies whose domestic interest rates are not tightly linked to world interest rates because of capital account restrictions, monetary policy is partially potent to influence output. Nonetheless, currency boards forego this advantage by restricting money supply by foreign reserves level. Fiscal rectitude is enforced as a safeguard mechanism that ensures that reckless or profligate fiscal policy does not impinge on the government's attempt to lower inflation rate.

Faced with a limited number of policy instruments on the demand side, any economic adjustments will have to come through the labour markets in the form of wages and price adjustments. Thus, if an economy faces extreme shocks that move its real exchange rate away from its equilibrium level, adjustments that typically require nominal exchange rates to change to correct that disequilibrium cannot be made. Such adjustments will have to come through changes in price and wage-setting mechanism that will ostensibly impinge on domestic activity and employment. Countries that move to currency boards thus need to display increased flexibility in their labour markets and in their price-setting machinery as potential contingency measures against shocks.

Table 2: Summary of Advantages and Drawbacks of Currency Boards

Advantages of currency board	Disadvantages of currency board
Credibility in monetary policy-making on three fronts: financial management, exchange-rate stabilization and monetary policy strategy	Loss of monetary sovereignty
Low interest rates due to lower probability of currency devaluation	No crisis management measures available to banks facing temporary illiquidity problems
Prompts reforms of banking system and of public finance due to absence of LOLR and of debt monetization	No room for adjustment to external shocks: nominal exchange rate cannot be used to respond to shocks that move the real exchange rate away from its equilibrium level. Due to monetary and fiscal restraints, there is little room for demand management policies when it comes to responding to external shocks. This response needs to be provided by labour market institutions. Thus, adjustments tend to take a longer time and are more painful

advantages, they also result in lower rates, greater credibility and act as a disciplining device for public finance and commercial banking because of the legal and institutional changes that accompany their inception.

[7] See Appendix for a general discussion of pegged regimes

Commitment devices that ensure sustainability and credibility of currency boards:

- Reform of banking system
- Setting up of contingencies (for banks and treasury) in case of financial crises
- Labour market flexibility and wage flexibility
- Peg is chosen at a level that is neither overvalued nor undervalued
- Reform of public finance situation

The credibility issue that surrounds the inception of such 'hard pegs', ensures that currency boards are not subject to speculative attacks on currency or banking crises on the same scale as soft pegs. The aggregate reserve constraint ensures the former. Ex-ante rehabilitation of the banking system ensures the latter. As such, judged from a cost-benefit analysis, it appears that performance-wise, currency boards 'pareto improve' on soft pegs in that they retain all advantages, deliver more in successfully anchoring expectations of private agents and contain the drawbacks of soft pegs.

In practice, the case for a currency board has actually been levelled on three fronts:

- **Financial Management Strategy -** Many emerging market economies have adopted currency boards as a *contemporary crisis management measure* and a *future crisis prevention mechanism*. Countries like Bulgaria (1997) and Argentina (1991) have used this argument to validate the inception of their currency board programmes. The anchor properties of the hard peg and the legal and institutional commitment mechanisms guarantee the former attribute while the disciplining influence induced by pre-requisite reform of institutions in the economy, result in the latter.

- **Disinflation Strategy –** Some economies have embraced currency boards as an *exchange-rate based stabilization mechanism* that seeks to credibly lower expectations of inflation overnight, especially in cases when this inflation level is very high and dismantles all financial and contractual arrangements of the economy. In these circumstances, the population generally avoids using the domestic currency in financial transactions because of lack of intrinsic purchasing value for the currency. The destabilization of domestic financial contracts results in the absence of any lower bound on the inflation rate. As such, any mechanism that correctly coordinates the private sector's expectations on the right outcome, will be deemed to be credible. The success of the implementation of that credible coordinating mechanism depends on the time horizon being considered to reduce inflation.

  The old adage involved in mitigating hyperinflation holds sway: *High inflation may always and everywhere be a monetary phenomenon but the end of all high inflation is*

always and everywhere a fiscal phenomenon. In the long term, the legal change that is enshrined in the domestic country's central banking legislation together with monetary constraint and the disciplining device of enhanced fiscal rectitude, contain the seeds of an implicit device that can successfully subdue inflation. Private agents who rationally anticipate the intertemporal link between monetary constraint and fiscal rectitude, will lower their expectations and successfully bring inflation to zero. Since introduction of such fiscal restraint may take time to be implemented, it is the announcement of future monetary and fiscal discipline that complements the legal changes made to central bank law and that adds impetus to credibility at the shorter end of the time horizon.

- **Monetary Strategy -** Countries that lack the domestic financial infrastructure that is required to successfully run a floating regime with well-defined monetary policy, have sought to derive the benefits of added credibility and *disciplining mechanism* inherent in a currency board by introducing it as part of a long term monetary strategy that aims at stabilizing interest rates and exchange rates. For those countries, the existence of unbroken contracts acts as a non-negligible lower bound on the inflation rate that can be attained. The requirements for successful stabilization here go beyond the frontier of legislation changes. Legal factors, institutional factors and the exchange rate peg, if appropriately designed, help piggy back on the partner economy's credible monetary policy. At the same time, it provides a mechanism that ensures that the peg will be operative in an environment that is devoid of currency crises or of governmental budget crashes possibilities.

For some countries that have chosen to adopt the currency board as long term monetary strategy, the existence of non-dismantled contracts means that it may be rather more difficult to lower inflation expectations as quickly as under the disinflation category. These economies may still face moderately high inflation before their currency boards become fully operative. Others may fail to pre-commit to reduce their inflation rates because of idiosyncrasies of their economies. These countries are likely to face unwarranted costs in the run-up and may find the transition to a currency board extremely painful. To assuage the severity of these transitions, some form of 'interim' regime is highly recommended. This paper will eventually throw light on the best form of interim regime that may be adopted.

Section 2 reviews the debate between fixed and floating exchange rate regime and explores the structural features that may favour the adoption of a particular category of exchange rate regime. Section 3 explores the notion of credibility that underpins the role of currency boards in its triple role of short term financial management of the macroeconomy, in exchange-rate based disinflation programmes and in long-term monetary management. Section 4 provides a synopsis of the pre-requisite institutional and structural features needed before a currency

board becomes fully operative and successful in the mission it has been setup to achieve. Section 5 explicates the best form of the interim regime needed while countries implement necessary reforms before tying their monetary hands permanently. Finally, Section 6 concludes.

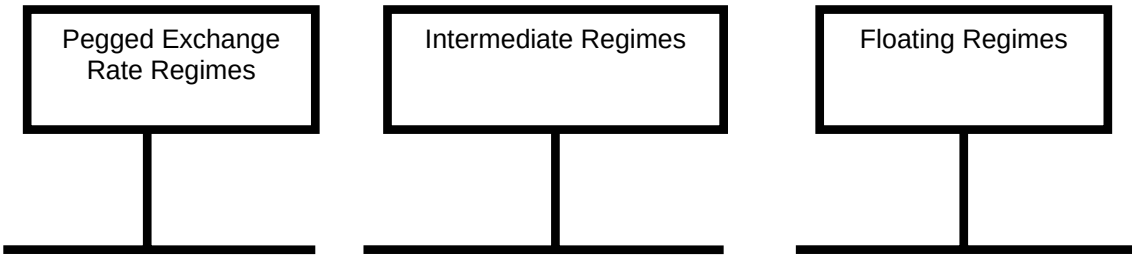
2. Fixed vs Floating Exchange Rate Regime Debate

The fixed vs floating exchange rate regime debate has long haunted architects of the international global financial system, keen to find ways to make the global financial system more robust and resilient to potential instabilities. Ultimately, this debate boils down to two questions:

- Are the features of the economy compatible with a fixed or a flexible exchange rate system in the first instance?
- Given the adoption of a particular form of exchange rate regime, what factors ensure its smooth operation i.e how can credibility be achieved?

If the whole gamut of exchange rate regimes is viewed as a line that connects ‘hard’ pegs (currency boards, full dollarisation and monetary unions) on one side and pure floats on the other (pure floats, central bank independence and inflation targeting), with a variety of intermediate arrangements (bands, pegs, crawls) in between, then the choice of the most appropriate exchange rate regime depends on the interplay between structural features, the overriding objectives for which the exchange rate regime has been set and how these objectives affect the resulting institutional setup that is needed for the regime to be viewed as ‘credible.’

Table3[8]: Exchange Rate Regimes - Classified



Hard Pegs – Regimes where the irrevocable peg is supported by institutional and policy commitments (c*urrency boards, dollarisation, monetary unions)*	**Soft Pegs –** Regimes where the authorities aim to defend a pre-determined value / path of an exchange rate without the institutional commitment to fully devote monetary policy to the sole objective of maintaining the peg (s*ingle pegs, basket pegs, crawling pegs, crawling bands)*	**Tightly Managed Floats –** Regimes where authorities attempt to keep exchange rates stable by heavily monitoring or controlling exchange rate movements, without a commitment to a predetermined path	**Pure Floats –** Freely floating regimes (coupled with central bank independence and inflation targeting)

Being one of the 'extremes' under the notion of hard pegs, currency boards seem appropriate for countries whose structural features are designed to suit and accommodate some sort of fixed exchange rate arrangements in the first instance. These structural features can be taxonomised as follows:

(i) Trade structure and pattern

- High openness of economies to trade of goods and services with a dominant trading partner (with trade accounting for a high proportion of GDP);

[8] **Source:** Andrea Bubula and Inci Otker-Robe (2004): "The Continuing Bipolar Conundrum", Finance and Development, March 2004 issue

- Trade is dominated by products whose prices are denominated in domestic currency terms and characterised by constant terms of trade (e.g manufactured goods).

(ii) Domestic financial sophistication and extent of integration

- Low degree of integration into the global financial system with flows of 'hot' money being low by developed country standards;
- Low degree of domestic financial sophistication and inadequate financial infrastructure in the form of poor and thin financial markets[9];

(iii) Inflation Stabilisation

- Because of high inflation or monetary disorder, inflation stabilisation is an attractive objective and the country is willing to give up monetary independence for the sake of imported credibility that anchor provides;
- If inflation stabilisation is the main objective, country can pre-commit to reduce the inflation rate ex-post, once the peg has been adopted.

(iv) Domestic Shocks

- Economy has propensity to face financial / monetary shocks more than real shocks. Fixed regimes are more attractive from an output stabilization perspective.

(v) Successful pre-conditions for adoption of fixed exchange rate regime[10]

- Flexible labour markets and the wage-setting process, being unhindered by complex contractual arrangements;
- Fiscal Flexibility to respond to shocks but overall rectitude maintained;
- High level of international reserves;
- Similar shocks as partner country;
- Country's financial system extensively uses currency of partner country;

Most countries adopting some form of fixed arrangements for their currency regimes, exhibit two or more of the above stylized facts, although option (v) seems to be less evident among less developed countries under fixed exchange rate arrangements.

[9] There are many ways financial markets may be weakened: illiquid bond / debt market, narrow foreign exchange markets, undercapitalised banking systems, banks with balance sheets depicting large currency mismatches, lack of prudential regulatory and supervisory structure.

Table 4: Fixed v/s Floating Debate – Template

Economic Facts	Fixed Exchange Rate Regime	Floating Exchange Rate Regime
Lack of credibility in inflation-stabilization ex-ante	✓	
Inability to pre-commit to low inflation rates ex-post		✓ **Note 1**
Increased integration in global financial markets	**Note 2**	✓
Domestic financial sophistication	**Note 3**	✓
Trade as % of GDP (High)	✓ **(A)**	
Agricultural exports as % share of trade		✓ **(B)**
Manufacturing exports as % share of trade	✓ **(C)**	
Monetary Shocks	✓	
Real domestic shocks		✓
External shocks		✓ **Note 4**
Liability dollarisation (financial and banking structure)	✓ **Note 5**	✓ **Note 6**
Flexibility of labour markets	✓	
Fiscal flexibility	✓	

Note 1: Countries that cannot pre-commit to low inflation rates ex-post usually choose some form of compromise between anchor properties of fixed and accommodating properties of flexible regimes. Arrangements that fall into this category include crawling pegs, crawling bands and adjustable pegs.

Note 2: Fixed exchange rate regimes are compatible with increased integration if and only if the domestic banking system is strong enough to resist any interest changes needed to defend the peg.

Note 3: Domestic financial sophistication is taken to mean the existence of a deep and broad market for foreign exchange, the market for foreign exchange derivatives instruments, institutional requirements such as independent central banks and inflation targeting.

Note 4: External shocks include oil price hikes, global interest rate fluctuations, volatility in terms-of-trade

Note 5: Fear-of-Floating argument

Note 6: Floating regimes may have a disciplining influence by limiting the extent of future liability dollarisation.

(A) To economize on transaction costs and minimise exchange rate risks.
(B) Agricultural exports are denominated in foreign currencies (exports volumes are insensitive to fluctuating exchange rates) and subject to volatile terms-of-trade.
(C) Manufacturing exports are denominated in home currencies (exports are thus sensitive to exchange rate changes) and stable terms-of-trade.

[10] Similar to proposals of Mundell's (1961) Optimal Currency Area (OCA).

Feature (i) (*Trade structure and pattern,* pp10*)* encapsulates idiosyncratic shocks that characterise the trade sector. Fluctuating terms-of-trade have a non-negligible impact on the economic performance of highly open island economies through the income effect.

One instance in which this matters for the choice of the exchange rate regime is the resulting implication of excessive exchange rate fluctuations on trade volume for countries that have a high trade-GDP ratio. This matters for debt sustainability considerations of these economies if the Net-Present Value of debt to exports ratio is used as primer gauge of their future solvency stance. Another potential relevance is the nature of the main exportable product and the currency-denomination of pricing policy. Many small island economies that rely extensively on tourism receipts as their main exportable, opt for flexible arrangements if tourism services are priced domestically in dollars[11] and fixed regimes if these services are denominated in home currency[12]. It is thus not strange that, using the trade argument, Caribbean island economies peg their currencies to the US dollar under their currency board.

Table 5: Countries embracing Currency Boards[13]

Currency Boards and Currency Board-like Systems as of June 2002				
Country	**Population**	**GDP (US$)**	**Began**	**Exchange rate / remarks**
Bermuda [UK]	63,000	$2 billion	1915	Bermuda $1 = US$1 / Loose capital controls
Bosnia	3.8 million	$6.2 billion	1997	1.95583 convertible marks = 1 euro / Currency board-like
Brunei	336,000	$5.6 billion	1952	Brunei $1 = Singapore $1 / Currency board-like
Bulgaria	7.8 million	$35 billion	1997	1.95583 leva = 1 euro / Currency board-like
Cayman Islands [UK]	35,000	$930 million	1972	Cayman $1 = US$1.20
Djibouti	450,000	$550 million	1949	177.72 Djibouti francs = US$1 / Currency board-like
Estonia	1.4 million	$7.9 billion	1992	8 kroons = 0.51129 euro / Currency board-like
Falkland Islands [UK]	2,800	unavailable	1899	Falklands £1 = UK£1
Faroe Islands [Denmark]	45,000	$700 million	1940	1 Faroese krone = 1 Danish krone
Gibraltar [UK]	29,000	$500 million	1927	Gibraltar £1 = UK£1
Hong Kong [China]	7.1 million	$158 billion	1983	Hong Kong $7.80 = US$1 / More orthodox since 1998
Lithuania	3.6 million	$17 billion	1994	3.4528 litai = 1 euro / Currency board-like

[11] Fluctuating currency does not affect the demand for tourism because of dollar pricing policy. These economies have the option of keeping their exchange rate fixed or allowing it to fluctuate. While a flexible regime will not affect demand for tourism, it allows economy to respond to shocks – which is not possible under a fixed regime.
[12] With prices denominated in home currency terms, demand for tourism will be sensitive to fluctuating currency changes. A fixed regime will do a better job at stabilising overall demand.
[13] Available on: http://users.erols.com/kurrency/intro.htm. Kurt Schuler Copyright ©

Economies in transition that adopt the currency board and, for which the trade argument is relevant, include Bulgaria (Lev pegged to the Deutsche Mark (before 1999)), Brunei whose currency is pegged to the Singapore dollar, Namibia and Swaziland whose currencies are pegged to the South African Rand. Through a harmonised trade and cyclical pattern with the partner economy, external shocks to the system are mitigated and the need to implement drastic and painful policy or structural adjustments will not be necessary. In cases where countries exhibit a diversified trade pattern or structure, the option of policymakers is to adopt a compromise regime that juxtaposes the anchor properties of a currency peg and the desire to display reasonable flexibility in responding to particular trade shocks. Countries in this category choose to peg to a basket of currencies, representing the country's major trading partners.

The second and third features encapsulate the inherent and much documented notion in the academic literature on the choice of exchange rate regimes: the "*impossible trilemma*" – you cannot have fixed exchange rate regimes, perfect capital mobility and monetary policy independence at the same time ! In addition to lost monetary sovereignty, countries that are deeply integrated into the global financial system, run the risk of facing speculative attacks on their currencies. Capital flows have nowadays become very responsive to changing fundamentals or to adverse shifts in market sentiment. The various episodes of financial turmoil in early 1990s in Europe, are nothing but a poignant reminder of this. Liberalisation of the financial system in the presence of explicit government guarantees and lack of adequate macroeconomic and regulatory / supervisory policies, have resulted in pegged regimes being fragilised on a large scale. Countries that have underestimated this powerful law of international finance, have ostensibly paid a high price. Evidence abounds in the East Asia debacle of 1997. The dangers of this financial fragility are even made more intricate when one realises that a country caught in the quagmire of financial depression, with persistent capital outflows and facing the prospect of a serious threat of an attack on its currency, cannot use monetary policy in order to restore macroeconomic and structural balance.

To cope with the subtleties of a potential crisis looming, these countries must have strong domestic financial infrastructure that will enable them to muster resources they need to withstand large interest rate changes needed to stall capital outflows. Alternatively, they may need to impose capital controls as a way of restoring their ability to use monetary policy for domestic purposes or they may contemplate moving to some flexible exchange rate arrangement.

Table 6: Risks facing a country that adopts a pegged exchange rate regime: Threats to credibility and sustainability

Threats to sustainability of a pegged regime include:

- Risks associated with increased global market integration - *speculative currency attacks and impotence of monetary policy*
- Risks of increased capital flows – *pre-requisites for successful defense of the peg require interest rate hikes which may fragilise the banking system*
- Pre-eminence of external shocks – *inability to use nominal exchange rate as policy instrument. Labour market must display flexibility to absorb these shocks*
- Inability to pre-commit to low inflation rates ex-post – *risks of real currency appreciations and of the resulting current account deficits. The subsequent reliance on inflows of foreign capital, especially short-term debt, makes economy oversensitive to interest rate differentials.*

Note: Reasons for inability to pre-commit to low inflation rates include: inflation inertia due to sluggish adjustment in wages and prices, Balassa -Samuelson (1964) productivity-differentials hypothesis and excessive reliance on seigniorage money to finance the budget deficit.

Corollary 1: A country facing a high (low) degree of international capital flows, will prefer to adopt a flexible (fixed) exchange rate regime;

Corollary 2: A country with a high degree of international capital mobility can adopt a fixed exchange rate regime, if and only if, its banking and financial system are strong enough to resist any extreme adjustments (in the form of higher interest rates) needed to ward off a speculative attack against the peg;

Corollary 3: A country with a low degree of international capital mobility can adopt a flexible regime, provided it has a strong domestic financial system and a deep, broad and liquid foreign exchange market.

Economies that are in the radar screens of foreign investors, need to protect themselves against the dangers of currency or real exchange rate misalignments caused by disruptive capital flows, either by ensuring strong domestic financial system or, at least, have some regime of capital flows restrictions like a Chilean-type of taxes on capital inflows[14]. If they do not, the threats to the viability of the currency board system and the perenity of its success as a credible exchange rate regime, will be severely put into question. Alternatively, they may allow their currencies to move within a narrow band against the foreign currency of the dominant partner country. Argentina's inception of a currency board, was an attempt to convince the world that it would refrain from the option of an inflationary policy in the future. Similarly, Estonia and Latvia, with no record of monetary disorder after decades of Soviet Rule, hoped to piggy back on low inflationary reputations by setting up a currency board after

[14] Stanley Fischer (2001) argues that caution must be exercised as to the type of capital controls, since they serve different purposes. Controls on capital inflows are made to prevent excessive capital inflows from leading to currency overvaluations or to influence the distribution of capital inflows towards long term capital and away from short run disruptive capital inflows; controls on capital outflows are essentially undertaken to prevent devaluation

independence. Currency boards may also originate as a legacy of the colonial era as a mechanism that allows the imperial ruler to run the colony's monetary policy and benefit from seigniorage money created in that colony e.g Hong Kong Monetary Authority.

Table 7: Why does the exchange rate regime matter for an Emerging Market Economy (EME) ?

Stylized facts of many emerging market economies (EMEs):

1. Lack of domestic financial sophistication
2. Increased integration in global financial markets
3. Trade structure dominated by diversified trade portfolio or manufacturing
4. Liability dollarisation is a feature of corporate and banking balance sheets
5. History of monetary disorder / high inflation

	Fixed Exchange Rate	**Floating Exchange Rate**
Credibility Argument	Lack of domestic financial sophistication	Financial prerequisites for a float are existent e.g central bank independence and inflation targeting
Disinflation / Exchange-Rate Stabilization Program	History of acute monetary and financial disorder. Country is willing to tie its monetary hands for sake of increased credibility in form of, say, a currency board	Country cannot pre-commit to reduce inflation ex-post but wants to compromise between stability (anchor properties of peg) and flexibility (allowing exchange rate to change in a way that maintains real exchange rate constant). Flexible arrangements that fall in this category include crawling-pegs, adjustable pegs
Insulation Argument	Manufacturing exports where goods are priced in home currency and face constant terms-of trade	Agricultural exports where goods are priced in foreign currency and face fluctuating terms-of trade **Note 2**
	Pre-eminence of monetary shocks	Pre-eminence of real shocks
Balance Sheet Effect due to Liability Dollarisation	"Fear of Floating" Argument	To discourage quasi-insurance situation created by peg. Floating regime acts as a disciplining device that discourages the country to borrow in foreign currency in the future
Financial Fragility Argument	Country can adopt fixed regime, provided that it has the financial resources and resilience to withstand any large interest rate hikes that are necessary to defend the peg. In other circumstances, country can have control over monetary policy by adopting capital controls.	Open economy trilemma: With fixed exchange rate regime, there is no monetary souvereignty and speculative currency pressure may exist with increased global integration. Floating regimes can accommodate monetary independence and offer little ground for speculative currency pressure.

Note 1: The above table summarises the theoretical arguments for adopting a particular exchange rate regime for an EME characterised by stylized facts (1)-(5). Material inside the box depicts the general features of the economy that will validate the adoption of a particular form of an exchange rate regime under a given argument.

Note 2: EMEs can adopt both fixed or floating regimes under this argument. However, while both regimes will leave volume of exports unaffected by exchange rate fluctuations (given foreign currency denomination of domestic pricing policy), floating regimes pareto improve on fixed regimes by providing an extra leeway to respond to external shocks.

of the currency precipitated by a herding behaviour of investors in moments of panic and to give allow country to have independent control over monetary policy.

Table 8: Why does the exchange rate regime matter for small island economies ?

Stylized facts of small island economies:

1. GDP < $ 10 bn
2. Trade dominated by one product (high % of GDP) e.g pre-eminence of tourism sector
3. Low integration in global financial markets
4. Lack of domestic financial sophistication
5. Liability dollarisation ?

	Fixed Exchange Rate	Floating Exchange Rate
Policy Instrument Argument	No possibility of using the exchange rate as policy instrument **Note 1**	N / A
Insulation Argument	Manufacturing exports (stable terms-of trade) OR	Agricultural exports (volatile terms-of trade) OR
	Dominance of Tourism sector where pricing of services is in home currency OR	Dominance of Tourism sector where pricing of services is in foreign currency OR
	Pre-eminence of monetary shocks	Pre-eminence of real shocks
Liability Dollarisation	Fear-of-Floating	N/A
Credibility Argument	Lack of domestic financial sophistication and low integration in global financial markets	Financial sophistication and all prerequisites for a successful inflation target

Note 1: With highly open economies whose imports are characterised by existence of exchange-rate pass-throughs, a currency devaluation is accompanied by inflation . As a result, there is no impact on the real exchange rate. Attempts to use devaluation to improve the current account balance or to influence output, remain futile

Currency boards are much favoured among small island states[15]. It is not hard to see why: for one, this seems to portray their economic loyalty to their colonial ties. Small island economies have a high proportion of trade as a % of GDP and, as aforementioned, their trade is often dictated by the price of one main agricultural product. As a matter of convenience, they must earmark a sufficiently high amount of foreign exchange reserves to finance much of that trade (many countries use the reserves-imports cover ratio (defined in terms of number of months of imports that can be covered by the reserves level) in order to gauge the strength of the reserves level). A comparison of the reserves-GDP ratio to the high-powered money-GDP ratio in the economy, suggests that in many instances, the reserve level is already high enough to cover the full monetary base (the two ratios could be interpreted as roughly equivalent). Thus, instituting a currency board regime can be effectuated without much transition or set-up cost. This problem may prove to be acute for large and relatively closed economies. These economies do not keep their foreign reserve level at a high level because

[15] Hanke and Schuler (2000) argue that the concept of 'large' or 'small' economies is disturbingly confusing and is not relevant to analysis of exchange rate regime choice. They argue, *"…..Even accepting the terms "large," "small," "open," and "closed" as meaningful for monetary policy, experience suggests that the objection has no practical significance for the currency board system. Currency boards have been successful in small, open economies such as Hong Kong and large (populous), closed economies such as Nigeria and British East Africa, which initially had little trade with the outside world. Currency boards opened previously closed economies by providing sound currencies that encouraged trade….."* (Section 6, 'Does size matter ?')

of relatively lower weight of trade in the economy. Thus, there is not much to provide for in contingency terms. But the relatively large size of the economy means that the level of monetary base is high. Thus there is a huge gap between the foreign exchange reserves-GDP ratio and the high powered money-GDP ratio. Setting up a currency board may mean incurring enormous setup costs with non trivial implications. The notable exception to this rule is Argentina (1991) whose economy is much larger than small island economies. Many would nonetheless argue that the convertibility law and the central bank charter (the two legal underpinnings for Argentina's currency board) were enacted at a time when Cavallo was running out of options and any drastic measures would seem to work[16].

There has also been proposals for large economies (such as Ukraine and Russia) to form currency boards to end their prolonged periods of distress. Indonesia fretted with the idea of instituting a currency board during the onset of the East Asian crisis of 1997. Aside from the fact that some of these economies are relatively closed and that financial fragility (in the form of weakened banks and firms with Soft Budget Constraints (SBC)) has somewhat been lessened, these economies face structural costs, associated with their intrinsic transition features. Both Russia and Ukraine are trying to seek accession to the EMU. To be successful in this endeavour, they must satisfy the prerequisite criteria for convergence, both, in the macroeconomic and structural fronts. Transition problems will mean that if their inflation levels display a strong element of inertia[17], they could face the danger of having overvalued currencies and the accompanying costs in terms of mounting current account deficits and great reliance on short term external finance. To converge, their productivity levels must be higher than those of current EMU states. This could feed into higher price of non-tradables and lead to (temporary) inflation divergence and add an extra dimension to the inflation bias story. The rule of thumb here is that, as a price to pay, these economies will have to accept living with the bitter reality of high inflation, even temporarily, until they have converged to standards dictated by productivity bias of the "Balassa-Samuelson" effect (1964)[18].

[16] In 1991, Peronist president, Carlos Menem appointed Domingo Cavallo, a Harvard graduate, as his economy minister. Under the Cavallo Plan, stringent fiscal reforms were introduced and a currency board system was setup, backed by genuine political will. The currency board had an impressive impact on inflation, which dropped from over 800% in 90s to around 5% in mid 90s.

[17] Reasons for high inflation inertia include, amongst others: excessive reliance on government seigniorage finance (in the face of a shaky tax revenue collection system); higher productivity in tradable goods sector than that of main partner countries a la Balassa-Samuelson (1964); strong wage-price spiral through institutional setup, excessive capital inflows. The issue of higher productivity is highlighted in the main text. High inflation inertia (through the slow convergence of prices to international standards) explains why exchange rate pegs adopted with a counter inflationary aim, may lack credibility. In practice, failure to bring fiscal rectitude underpins this lack of credibility.

[18] (Taken from Szapary: Finance & Development, June 2001, Volume 38, No. 2): The **Balassa-Samuelson (1964) effect** arises because the growth of productivity differs among sectors, while wages tend to be less differentiated. Typically, productivity growth is faster in traded goods sector than in non-traded goods sector such as services. To the extent that faster productivity growth in traded goods sector pushes up wages in all sectors, the prices of non-traded goods relative to the price of traded goods will rise. Szapary (2001) uses this argument to assert that accession countries experienced faster productivity growth than EU countries during the catching-up process. Hence, other things being equal, the consumer price index will rise faster in the former than in the latter.

Architects of currency boards must not be oblivious to such factors when deciding upon its design. Economies in transition must make provision for allowing their inflation rates to deviate for a while, with the hope that they will eventually fall and converge to international level. In the interim process with an inflation rate which is above that of their main trading partner, these economies are almost likely to face high current account deficits. Given the fact that these economies are almost likely to attract short term inflows and a significant proportion of these inflows are likely to be intermediated through their banking systems, this should be accounted for in the design of a currency board scheme.

Policymakers must be wary of judging the economic circumstances and making comparisons based on those circumstances. Russia and Ukraine were not facing economic chaos at the time when proposals were being made for them to implement currency board arrangements. Their contractual systems were unaffected in real terms and their requirement for instituting a currency board stemmed essentially from the need to import external credibility. In economies that do not face financial disorder but that nonetheless want to adopt the currency board as part of a long term monetary strategy, the presence of unaffected contracts and unblemished institutions means that the arrangement needs to be underpinned by the right accompanying setup to be viewed as credible. Another economy in transition, Bulgaria, successfully mitigated its hyperinflation in 1997 relatively quickly through a currency board but had different reason for instituting such a scheme: that of ending the economic chaos and bringing financial discipline. With hyperinflation hitting high, all contractual arrangements in Bulgaria were dismantled. There is no floor acting as a lower bound on prices. Gulde (1999) argues that the currency board ended the economic turmoil ‘almost overnight’ in Bulgaria because of its positive impact on expectations. Whilst these idiosyncrasies do not apply unequivocally to the debate, it must be pointed out that the impact of high inflation on the real value of contracts matters for determining the speed of adjustment of any exchange-rate based stabilisation program.

In general, moving to a currency board as part of a long-term monetary strategy, needs successful implementation of certain necessary pre-conditions that must be fulfilled in order for the board to operate smoothly without frictions. Prominent among these conditions include the need to decide on the appropriate choice of some ‘interim’ exchange rate regime that must be adopted to ensure that the transition to the currency board is as smooth as possible. This temporary regime must be easy to administer, quick to implement and, most importantly, help contain any costs incurred while moving to a currency board.

3. Credibility Issues in Choice of Exchange Rate Regime

Credibility in the art of monetary policymaking and macroeconomic management, is restored by a mechanism device that correctly anchors the expectations of the private sector on the right outcome. An exchange rate regime, together with an appropriately designed institutional setup, can provide this credible anchor. The literature on the relationship between exchange rate regimes and the notion of credibility in monetary policy is typically divided into two groups: those who favour the "extremes" (extreme hard pegs and pure floats) or so-called "corner solutions" including Stanley Fischer and those who advocate the so-called "intermediate" arrangements (crawling bands, crawling pegs, adjustable pegs, managed floats, soft pegs to single or basket of currencies) like John Williamson.

Alongside currency boards in the line of the hard pegs and possibly, with much tighter restrictions, lie Monetary Unions and Dollarisation as two alternative ways of deriving credibility under hard pegs. Monetary Unions, like the European Monetary Union (EMU) and the Western African Economic and Monetary Union (WAEMU), have goals nested in long term ambitions that necessarily span beyond the confines of economics orthodoxy to embrace frontiers as wide as the political or social spectrums. Deeply rooted in the desire to form such unions, lie the possibility of enhanced intra-region trade, the possibility of having a wider market enabling firms to reap benefits from scale economies, the dynamic implications for investment resulting from greater cross-country corporate activities and the lower transaction costs and exchange rate risks associated with a single currency.

A number of microeconomic and structural criteria will altogether define whether a group of countries exhibit any syndrome of cyclical and structural convergence - the prime test determinant of accession of prospective countries to a monetary union. These criteria have carefully been taxonomised by Mundell (1961) in an optimal currency area theory and include, amongst others, the degree of trade openness and pattern of trade between prospective members, symmetry of shocks, labour market flexibility and the existence of a federal system that promotes equality in growth among all members through taxes and transfers for the whole region. Structural features (e.g structure of corporate finance for firms, level of private indebtedness of households, structure of the housing market[19]) can also potentially be added

[19] A country's housing market may affect the decision as to whether it must join a monetary union or not. This was particularly relevant for the UK for three reasons: (1) The ratio of house price to income has important implications for wealth and macroeconomic performance – if this ratio is volatile, then it can lead to output changes that differ in terms of cyclical timing with existing EMU countries; (2) Many home-owners incur substantial level of private indebtedness when purchasing their homes (the UK has the highest proportion of mortgaged-homeowners in Europe): their financial situation is very much contingent on monetary policy and hence interest rates. As such, an inappropriate level of interest rate could spark off financial disaster amongst households. In a monetary union, the interest rate level set by the supra-national monetary authority, will cater for the economic interests of the whole region, rather than for the interest of one specific member country alone. The

to this list. The political costs of ignoring these are often high and are only accounted for, in the aftermath of a severe financial collapse.

Table 9: Monetary Unions

Individual advantage lies in collective benefits from being in groups (positive spillover effects from group to country) and group advantage lies in 'contribution' from each member (positive spillover effects from country to group)

Theory of Optimal Currency Areas (OCA)

1) Extent of trade integration and coherence of economic structure (and convergence of patterns of trade cycles)
2) Symmetry of economic shocks facing countries
3) Labour market and wage / price flexibility
4) Fiscal transfers across regions

For countries that suffer from sudden financial disorders and that need a quick mechanism for restoring credibility, it is inconceivable to imagine how forming part of a monetary union can prove to provide a short term remedy to restore credibility in the financial system. For one, countries must satisfy the Mundell (1961) criteria, as outlined above. Most monetary unions enshrine these conditions in their legislation and portray them practically as tests for convergence which prospective entrants must satisfy in the short / medium term. Notwithstanding the time constraints that this entails, the need to adhere to prudent economic policies (e.g budget restraints) that may compromise serious domestic aims for the sake of convergence, makes any government question the validity of monetary unions. On the other hand side, the political costs of waiting that long before all economic tests for convergence have been met, are often too high to warrant joining a union. Forming a union requires looking out for credible partner with the same regional and political ambitions and seeking to derive joint benefits from an enlarged economic space.

Competing closely with monetary unions high in the list of hard pegs, is 'Dollarisation' or simply the notion of adopting the dollar (or any major currency) as official legal tender. For many years the largest economy to be officially dollarized was Panama, which has used the U.S. dollar officially since 1904. In early 1999 the government of Argentina stated that it sought a formal agreement with the United States to become officially dollarised. Argentina or any other country can become officially dollarised even without a formal agreement but there may be economic and political benefits to a formal agreement. Ecuador also fretted with the idea of embracing dollarisation[20] in 2000 and has abandoned its currency, the Sucre, in

EMU interest rate levels may be set at a level that is inappropriate for the UK. On these grounds, a monetary union is clearly not warranted as option; (3) An interaction between (1) and (2) can often lead to financial fragility of banks and to financial disintermediation. Judged by the results of these three structural "sub-tests", the decision for the UK to stay out of the EMU, can be rationalised.

[20] The Economist, 2000

favour of the dollar[21]. About 30 dependencies and independent countries currently have official dollarization.

Table 10a: List of economies embracing Dollarization [22]

Economy	Population	GDP ($bn)	Political status	Currency	Since
American Samoa	67,000	0.5	U.S. territory	U.S. dollar	1899
Andorra	68,000	1.2	independent	euro (formerly French franc, Spanish peseta), own coins	1278
British Virgin Islands	21,000	0.3	British dependency	U.S. dollar	1973
Cocos (Keeling) Islands	600	0.0	Australian external territory	Australian dollar	1955
Cook Islands	21,000	0.1	New Zealand self-governing territory	New Zealand dollar	1995
Cyprus, Northern	140,000	0.8	de facto independent	Turkish lira	1974
East Timor	857,000	0.2	independent	U.S. dollar	2000
Ecuador	13,200,000	37.2	Independent	U.S. dollar	2000
El Salvador	6,200,000	24.0	Independent	U.S. dollar	2001
Greenland	56,000	1.1	Danish self-governing region	Danish krone	before 1800
Guam	160,000	3.2	U.S. territory	U.S. dollar	1898
Kiribati	94,000	0.1	independent	Australian dollar, own coins	1943
Kosovo	1,600,000	?	U.N. administration	euro	1999
Liechtenstein	33,000	0.7	independent	Swiss franc	1921
Marshall Islands	71,000	0.1	independent	U.S. dollar	1944
Micronesia	135,000	0.3	independent	U.S. dollar	1944
Montenegro	700,000	1.6	semi-independent	euro (partly "DM-ized" since 1999)	2002
Monaco	32,000	0.9	independent	euro (formerly French franc)	1865
Nauru	12,000	0.1	independent	Australian dollar	1914
Niue	2,000	0.0	New Zealand self-governing territory	New Zealand dollar	1901
Norfolk Island	2,000	0.0	Australian external territory	Australian dollar	before 1900?
Northern Mariana Islands	75,000	0.9	U.S. commonwealth	U.S. dollar	1944
Palau	19,000	0.1	independent	U.S. dollar	1944
Panama	2,800,000	16.6	independent	U.S. dollar, own balboa coins	1904
Pitcairn Island	42	0.0	British dependency	New Zealand, U.S. dollars	1800s
Puerto Rico	3,900,000	39.0	U.S. commonwealth	U.S. dollar	1899
San Marino	27,000	0.9	independent	euro (formerly Italian lira), own coins	1897

[21] Administrators of the United Nations announced in 2000 that the dollar would be the official interim currency of East Timor which got independence from Indonesia in that same year.
[22] Available on: http://users.erols.com/kurrency/basicsup.htm. Kurt Schuler Copyright ©

Tokelau	1,500	0.0	New Zealand territory	New Zealand dollar	1926
Turks and Caicos Isands	18,000	0.1	British colony	U.S. dollar	1973
Tuvalu	11,000	0.0	independent	Australian dollar, own coins	1892
U.S. Virgin Islands	120,000	1.8	U.S. territory	U.S. dollar	1934
Vatican City	1,000	0.0	independent	euro (formerly Italian lira), own coins	1929

Table 10b: Officially Dollarized (US$) Economies, June 2002

Economy	Population	GDP ($bn)	Political status; other remarks	Since
American Samoa	67,000	0.5	U.S. territory	1899
British Virgin Islands	21,000	0.3	British dependency	1973
East Timor	800,000	0.4	Independent	2000
Ecuador	13,200,000	37.2	Independent	2000
El Salvador	6,200,000	24.0	Independent	2001
Guam	160,000	3.2	U.S. territory	1898
Marshall Islands	71,000	0.1	Independent	1944
Micronesia	135,000	0.3	Independent	1944
Northern Mariana Islands	75,000	0.9	U.S. commonwealth	1944
Palau	19,000	0.1	Independent	1944
Panama	2,800,000	16.6	Independent; issues own coins	1904
Pitcairn Islands	47	0.0	British dependency; also uses New Zealand dollars	1800s
Puerto Rico	3,900,000	39.0	U.S. commonwealth	1899
Turks and Caicos Islands	18,000	0.1	British colony	1973
U.S. Virgin Islands	120,000	1.8	U.S. territory	1934

A country wishing to dollarize its economy will face long term costs that are too great to warrant its inception as part of a short / medium-term policy package. Dollarization is the right choice for countries that are well integrated in trade and finance with the US or that whose financial system extensively use the dollar (e.g financial contracts characterised by liability dollarization). For these economies, the ability of the government to create money through seigniorage is limited, given the extensive use of dollars in the financial system. Thus, the costs of relinquishing seigniorage revenue by moving to full dollarization, are minimal. Another category of countries which may find it relatively less costly to move to full dollarization includes those for which the use of currency devaluation as 'exit' option in crisis periods, proves futile. Countries that fall into this category include those with high exchange rate pass-through parameter (so that a currency devaluation is accompanied by inflation which offsets the effect on competitiveness) or those characterised by balance sheet effects (so that a currency devaluation is contractionary).

Table 11: Devaluation Policy - conditions under which devaluation policy can be used as policy instrument

Currency devaluation can be used to
- stimulate output
- stimulate the current account (boost up reserves level)
- increase competitiveness of home goods

A. Circumstances under which a currency devaluation is contractionary

- Balance sheet effect due to liability dollarization
- Re-distribution channel
- De-collateralisation channel
- Deflation channel
- Marshall-Lerner pessimism

(Note: the last circumstance applies primarily to the current account. All the rest applies to output)

B. Circumstances under which a currency devaluation is neutral

- (concerns the current account primarily) Economies with trade accounting for a very high % of GDP and characterised by high exchange rate pass-through parameter
(Devaluation – inflation - no change on competitiveness)

- (concerns output primarily) Economy characterised by real wage rigidity
(Devaluation – inflation – nominal wages)

C. Circumstances under which a currency devaluation is expansionary

(Demand-Side)
- Interest rate channel
- Expenditure-switching channel

(Supply-Side)
- Economy characterised by less than full real wage rigidity

Under dollarization, the country forfeits the ability to use currency devaluation as policy instrument. The economy will be subject to the vicissitudes affecting the US economy and its economic cycles will portray intimate movements and cyclical mappings with those of America[23]. But, the accompanying loss of monetary sovereignty and the inability to disburse emergency funding to the banking system in crisis times, may prove to be unabashedly high. If a short / medium term financial disorder requires quick-fix solutions with so many strings and whistles, then it is more convenient to leave these frailties as they are. Such a disorder requires a solution that compromises between credibility in the monetary management, flexibility in operation of the regime and versatility to minimise the costs of its adoption. Judged by these criteria, currency boards seem to do better than dollarization.

Table 12: Dollarization v/s Currency Boards

Dollarized economies :
1) Lower interest rates (zero risk of devaluation)
2) Complete loss of monetary sovereignty / No seigniorage
3) No exit option in crisis / troubled times

Characteristics of countries that may benefit from 'Dollarization'

- Well integrated with USA in financial and trade structure terms
- Economy already uses dollars extensively (e.g liability dollarization is present in the banking sector and in the corporate sector)
- Economy does not lose anything from 'losing' the 'exit option' e.g countries that cannot use nominal exchange rate as policy instrument because currency devaluation is contractionary or neutral

The other 'extreme' end of the exchange rate spectrum, pure free floating exchange rate regime, has also harnessed much support from academics and policymakers alike. The general consensus among advocates of pure free floats, is that the much sought credibility issue in monetary policy and the urgent need to restore financial order can also be obtained under pure floats, although the literature here has delved more deeply on issues surrounding monetary policy designing and derivation of optimal policy rules. In this realm, one can think of accompanying free floats with strategic issues like giving central bank operational or instrument independence from the government and establishing a clear mandate to achieve a particular level of inflation (inflation target).

One way in which central banks can showcase their commitment to adhere to the inflation target, is to refrain from targeting other nominal variables simultaneously (although, room must be allowed for central banks to manoeuvre if other macroeconomics variables such as the exchange rate fluctuations, can force the central bank to deviate from its target). This strategy of combining free floats with independence of central banks and inflation targeting, has borne fruits in many countries. From the initial pioneers New Zealand, UK, Canada and the US, this approach has received much adherence among emerging market economies like Brazil, Turkey and South Africa. The list of countries under this method, is poised to show a remarkable increase over the next few years. However, the sensitivity of results shown in the literature is very much dependent on the methodology adopted. What constitute a 'free float' (under the IMF's version of a free float) on paper may not necessarily be so in practice. Several countries have free floats but their central banks actually engage in reserve interventionist policies in order to keep their exchange rates within manageable level. In the debate on the relevance of currency boards, the pivotal issue of the structure of the economy (which validates whether a country should show more inclination to fixed rather rather than floating regime), cannot be bypassed.

[23] Ostensibly, most of the criteria for joining a Monetary Union still hold for countries showing any incline to dollarise their economy. The only difference is that, here, the notion of convergence must be with the US economy.

4. Preconditions for Exchange Rate Regimes to Work

It is an undeniable fact that the 1990s was plagued by a "hollowing-out" of intermediate arrangements, with an increasing number of emerging and developed countries moving towards extreme hard pegs or pure floats.

It is a fact that following the Mexican crisis of 1994, the East Asian crisis of 1997 and the financial crisis that swept across Russia and Brazil (1999), intermediate exchange rate arrangements such as soft pegs have been weakened. Fischer (2001) argued that:

"…of the 33 countries classified as emerging markets by J.P.Morgan or Morgan Stanley Capital International (MSCI), the proportion with intermediate regimes fell from 64% to 42% over the decade. By the end of the decade, 16 of these countries had floating rates and 3 had very hard pegs in the form of currency boards or no legal tender. The remainder had intermediate arrangements: 5 crawling bands, 1 horizontal band, 1 crawling peg, 7 fixed pegs. The hollowing out of intermediate regimes among emerging market economies has continued since the end of 1999, with Greece moving from a horizontal band to membership of Euro and Turkey from a crawling peg to a float.

Hollowing out was also evident among the developed economies during the 1990s, a process dominated by the creation of the euro and the demise of the European exchange rate mechanism. By the end of 1999, half of the economies characterised as developed by MSCI, had very hard pegs and almost half floating rates. Only one - Denmark – had an intermediate regime in the form of a horizontal band…..".

The rationale for this fragility of soft pegs lies with the growing cross-border linkages that have increased the exposure of countries with pegged regimes to volatile capital flows and speculative attacks on the pegs[24]. Emerging markets such as Chile, South Africa and Poland that has portrayed their loyalty to pure floating regimes have managed to avert financial crises of 1990s. Their strategy which consists of the adoption of pure free floats together with a strict regime of inflation targeting and central bank independence, has led to amazing results in terms of inflation management. Brazil and Mexico have, since recently, stepped into the bandwagon and have recorded spells of good and strong monetary management.

As highlighted in the introduction, the need to build exchange rate mechanism that can safely and effectively reduce inflation bias and improve on monetary management, relies on the design of complex safeguard mechanisms in the form of appropriate institutions. According to

Duttagupta et al. (2004), instituting a flexible exchange rate regime with clear inflation targeting mandate to an independent central bank requires several conditions. Authorities must ponder about the merits of adopting point vs interval targeting and about the need to set a timetable to give the central bank full operational and instrument independence. A timetable must be set to develop a deep and liquid foreign exchange market, a viable foreign exchange derivatives market. Above all, the nature of government involvement, if any, in foreign exchange matters, must be spelt out.

Under all circumstances, the timing of capital account liberalisation needs to be appropriate. Liberalisation before moving to flexibility may introduce the dangers of pegged regimes in the run-up to embracing floating rates. Liberalisation after adopting floating rate may risk introducing biases in exchange rate misalignments. An economy that is more open to inflows than outflows, for instance, may find its currency experiencing real appreciation biases if it liberalises after having moved to floating regime. Like any major overhaul of an economic system engineered to bring credibility through reform of economic institutions, these factors take substantial time to implement

Table 13: Risks in Moving from a Pegged Regime to a Pure Float:

(1) Exchange rate fluctuations pass-through on inflation - the need to develop a credible anchor for monetary policy and developing institutional prerequisites to accommodate that anchor

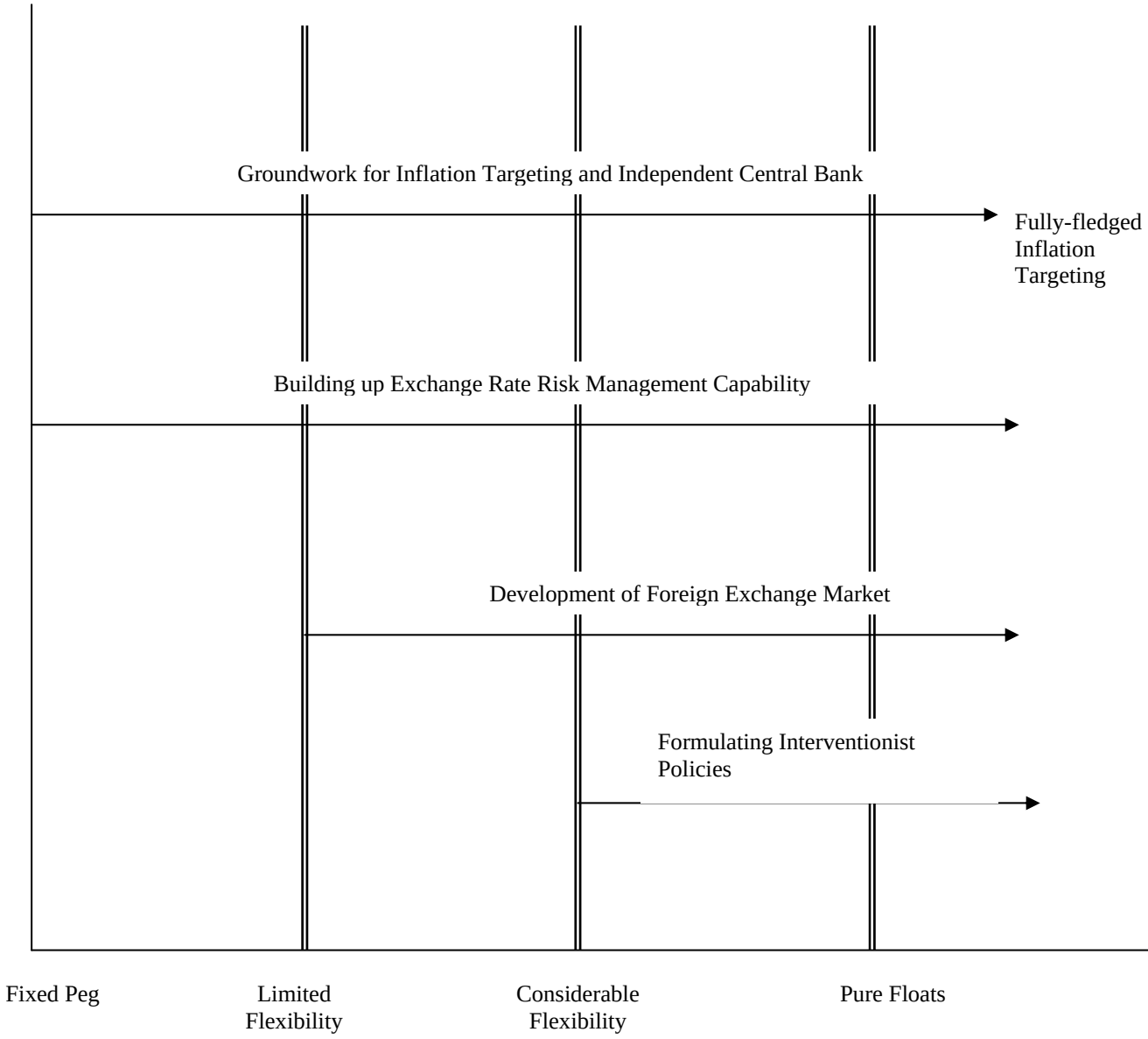
(2) Balance sheet effects due to exchange rate risks – Development of risk-management techniques / derivatives / limit exposures

(3) Timing of capital account liberalisation

- Liberalisation before flexibility ? Dangers of fragilising the pegged regime whilst in transition to flexibility
- Liberalisation after flexibility ? Risks of biased exchange rate misalignments depending on whether liberalisation is more geared towards inflows or outflows

[24] In a similar line of thought, the Bretton Woods system collapsed in the 1970s. High imported inflation from America, inconsistency between domestic and external aims, incapacity of domestic economic structure to support a fixed exchange rate regime, were all advocated as potential reasons for the breakdown of Bretton Woods..

Table 14: Timetable for Moving from a Pegged Regime to a Floating Regime



For 'hard pegs' , the design of appropriate institutional reforms involves undertaking appropriate reforms of the public finance system, a rehabilitation of the banking system and the adoption of full flexibility in the labour market and in the price-setting machinery.

Countries that have utterly underestimated the importance of public finance reforms, have suffered the agony of having to live with a system that does not respond to their most pressing economic aims, often with disastrous medium term results. Because of the strongest fix provided by the regime, coupled with automatic convertibility, a currency board only helps to restore credibility if it is duly removed from the ambit of due accountability to the government. For this reason, countries that have met success with currency boards, are

actually those that have made it mandatory to have formal rules, enshrined in central bank law, that formally prohibit the financing of budget deficits.

Countries proceed by establishing a sophisticated treasury system and a deep and liquid market for debt as well as by improving their accounting standards. Because of poor financial infrastructure, the government in these countries find it costly to implement such changes and to raise finance. This generates into chronic monetary disorder and harnesses all ingredients susceptible of fuelling inflation. Typically, for the debt market to work, it is imperative that a proper savings culture is preached and that the whole mechanics of bond financing is made understandable to the public in a way that does not does not crowd out private sector investment and that does not jeopardise future ability for the government to generate revenue.

For countries seeking fiscal reforms and consolidation, the enactment of budgetary rules that prohibit excess government spending, is appropriate. Fiscal rules, when appropriately designed, help fulfil a short-term *fiscal stabilisation role* and a medium-term *fiscal discipline* purpose. The former implies that rules must not prevent the government from engaging in counter-cyclical policies where necessary. The latter has implications for fiscal sustainability and, ultimately, the national savings level and national debt.

What is special about currency boards that make the need for imposing fiscal rules stronger? Typically, the first generation models of currency crises point out some of the dangers associated with persistent budget deficits and monetisation of these deficits: if the domestic policies are inconsistent with the task of maintaining a soft peg, speculators will mount a speculative attack against the currency and wipe off all foreign exchange reserves, in what would seem to be the outcome of a rational play. Currency boards are stronger than soft pegs though ! The credibility notion in a currency board means that the possibilities of currency devaluation, are very low Therefore, we need a much more thorough theoretical paradigm to make the case for imposing fiscal rules stronger under currency boards.

The model of Sargent and Wallace (1981) on debt credibility can cast out some light in that realm. Sargent and Wallace (1981) argued that the government's monetary hands and fiscal hands are inextricably linked through the intertemporal budget constraint. With a currency board, the government's monetary hands being tied, it can only finance its spending through bond issues. To finance part of repayments that now fall due, the government issues further bonds and the whole process goes on, thereby giving it the nature of playing some sort of Ponzi-game. The danger associated with such a policy is that it brings closer, the date at which maximum 'tolerable' debt limit is reached and at which debt credibility collapses. The government will ultimately be forced to resort to monetary financing to meet up its spending commitment accumulated over years – which puts into question the whole purpose for which

the currency board has been set. The dangers associated here are twofold: firstly, such monetary financing is against the rules of the currency board – thus, if agents rationally assess that this is going to be the case in the future, they will never believe that the currency board will be successful in the first instance. Thus, the currency board may fail to adjust expectations correctly and engage the economy into a painful adjustment path which fails to deliver results; secondly, and in the same line of thought, if agents anticipate that the currency board is fragile and easily reversible, the currency board will fail to appear as a credible regime. Both factors compound each other and lead to a self-defeating purpose for instituting the regime.

In any regime that ties the government's monetary hands, provision must be made to prevent government spending from rising to unsustainable levels. This may be done through an appropriately designed system of fiscal rules. The interrelatedness and deep level of connections among countries under this form of extreme pegged regime, mean that the interdependence aspect must be taken into account when rationalising the case for imposing fiscal rules. These rules also have the role of mitigating a negative externality that one country's profligate fiscal policy may potentially have on its partner.

Flexibility in the labour market is an important prerequisite so that wages and prices will become the new shock absorbers. Countries usually take their own idiosyncrasies into account when deciding upon the best natural response. Less Developed Countries, for instance, may face hurdles when deciding upon making labour markets more flexible – in the form of trade union opposition. The low level of financial sophistication - as evidenced by weak financial markets (or virtual inexistence of bond markets) coupled with an economy riddled with underground economic activities and overwhelming tax evasions - means that governments do not rely on taxation or bond finance to collect revenue. Rather, the government almost always turns to the central bank to finance its activities through open market purchases. That provides an explicative power as to the disorderly high inflation rates in many Less Developed nations, not to mention the high degree of imported inflation pass-through and wage-price spiral.

Removing the power of the central bank to excessively monetise government fiscal deficits, is thus a strategy that needs careful and well articulated moves. To begin with, governments may show opposition to institution of such a regime as any attempt to dent inflation will inevitably mean deprivation of the opportunity to generate an inflation tax revenue of its own choosing – and thus, starve their treasuries. Contingency plans must also be enacted as insurance mechanism for ensuring a smooth transition to a currency board regime.

5. Best 'interim' regime in the run-up to Currency Boards

Whilst preparing to join the EU and seeking to meet the criteria embodied in the Maastricht Treaty, Central and Eastern European economies faced a conundrum about the choice of interim regime to ensure stability, maintain competitiveness and promote structural reforms. Different exchange rate regimes were adopted with varying degrees of success. Estonia enjoyed inflation rate close to the EU average, thanks to its currency board. The Czech Republic adopted a similar disinflation strategy with a pure float. Poland had a wide-band crawling peg while Hungary had a narrow band crawling peg.

Despite this diversity, Spazary (2001) argues that accession countries shared a number of features that made identification of some common interim regime relatively easy: *"…first, their wages and price of non-traded goods (were) lower than those of EU countries and in line with the Balassa-Samuelson effect (1964)*[25]*, will rise faster than prices in the latter as these transition economies catch up; second, their economies remain vulnerable to volatile capital flows; third, they faced structural price adjustments that go beyond the confines of the Balassa-Samuelson effect(1964) because of their ongoing structural reforms and liberalisation; fourth, because of the importance of trade in their economies, a small loss of competitiveness will translate into (permanent) deterioration of the Balance of Payments…"*

Given these features, a soft peg leads to stability but given real rigidities in the product and labour markets, was not tenable. A flexible exchange rate regime would have allowed for gradual appreciation of the real exchange rate in line with the Balassa-Samuelson effect (1964) but was not recommended given the short term international capital volatility these economies were exposed to. Some compromise could potentially have helped achieve the twinned goals of stability and orderly real appreciation. Most transition economists would recommend the adoption of some system of crawling peg for that endeavour.

For countries whose economic transition may be met with severe structural and macroeconomic difficulties, the costs incurred during transition may be contained by the appropriate design of some form of flexible arrangement. If low inflation is the overriding aim but the country cannot pre-commit to that low level, the adoption of some 'interim' regime, that could potentially minimise such costs without harming the main objectives enshrined in the arrangement, is highly recommended. A crawling peg or an adjustable peg regime is often recommended when inflation rate in a country is higher than that of its main partner economies and ability to lower inflation rate to the levels of these partner economies is not feasible in the short term because of pre-commitment problems.

The strategy consists of adopting a crawling peg system which is a system of allowing the peg to change (the so-called 'crawl') in line with inflation differentials, so that competitiveness (measured by the real exchange rate) is preserved and the need to have mini devaluations is minimised.

A crawling peg may be an "*active crawling peg*" system or a "*passive crawling peg system*". In an active system, the rate of crawl is pre-announced for up to one year in advance with the objective of influencing expectations and price-setting behaviour. It represents a gradualistic approach to disinflation that was adopted by Israel and Latin America in 1980s and Poland in 1990s. For such system to be effective in anchoring expectations, the rate of the exchange rate crawl must track the pathway of inflation as close as possible so as to avoid the need to have recourse to mini-devaluations. For this, the authorities must have a serious commitment to the arrangement and face costs from abandoning it. In a passive system, the exchange rate parity is adjusted for past inflation. This system has the advantage of avoiding the tendency for the real exchange rate to appreciate out of line of economic fundamentals and generate huge current account deficits. However, whilst it provides a stabilising effect for the real exchange rate, it does not help stabilise expectations

Crawling pegs may be less costly to the economy because they do not try to achieve credibility immediately; instead, the crawl can decelerate to a hard peg when the central bank seems to have enough credibility to maintain a hard peg without high real interest rates or extensive foreign-exchange controls. Another way in which a crawling peg may be less costly to the economy than a hard peg is that if expectations of inflation pervade behavior and long-term contracts, a crawling peg reduces the shifts of real wealth that occur with a suddenly imposed hard peg.

Crawling pegs also enable the economy to allow its inflation rate to deviate temporarily from that of its partner economies without inducing the dangers of a major currency devaluation – which can be potentially destabilising and pernicious to the ultimate objectives of setting the currency board. By keeping the currency well in control and by preventing serious misalignments, the right economic and structural setup is created. Through proper interaction with an appropriately designed institution and well articulated administrative changes, the right atmosphere is set for currency boards to work and achieve their long term desirable results[26].

[25] See footnote 18

[26] For a comprehensive overview of administrative and structural reforms needed in the prelude to a currency board, refer to Gulde (1999) "*The role of the currency board in Bulgaria's stabilisation*", Finance and Development, December Edition, IMF Publication

Table 15: Exchange-Rate based Stabilization Programs (disinflation strategies)

Rationale for failure of stabilization programs;

(1) Inability to pre-commit to low inflation rates

Why ?

- Balassa-Samuelson Myth (1964)
- Inflation inertia
- Public finance indiscipline e.g due to debt monetization or lack of alternative financing possibilities
- Initial price liberalisation

(2) Inability to bring fiscal restraint / fiscal rectitude e.g inconsistency of domestic policy aims with external goals of maintaining the peg (Tequila, Asia, Tablita)

Practical Ways of getting out of the doldrums:

- Crawling pegs / bands or Adjustable pegs - tries to adjust nominal exchange rates in line with inflation differentials so as to maintain the real exchange rate constant + avoid the need for mini currency devaluations

- Basket Currency pegs – maintains the anchor properties of the peg and allows adjustment to external shocks for countries with diversified trade portfolio

- Initiate 'hard' pegs that force consistency of domestic policies with the external goals of maintaining the peg (e.g currency boards)

The main disadvantage of a crawling peg is that it can accelerate, rather than decelerate to a hard peg. Countries that have tried crawling pegs have generally had higher inflation than other countries in their regions that have maintained harder pegs punctuated by occasional devaluations. A crawling peg does not change the governance or the incentives of the central bank, so it is little more credible than a hard peg. In addition, countries with very high inflation tend to have no long-term contracts in domestic currency because the domestic currency is not a reliable unit of account, so a sudden, credible end to inflation does not cause big shifts of real wealth from debtors to creditors. Consequently, a crawling peg has no significant advantage for a country with very high inflation (say, more than 100 per cent a year) compared to a hard peg. For a country with moderately high inflation (say, 20 to 100 per cent a year), whatever advantages a crawling peg may have can be duplicated by means of a parallel currency or by de-indexing indexed wages and prices.

One of the practical difficulties of crawling pegs (with bands) is that when the exchange rate is driven to the limit of the band, these arrangements work similar to and face the same difficulties as soft pegs. For emerging markets that are well integrated in global financial

systems, this makes them vulnerable to speculative currency pressure. The Currencies of Mexico (1994), Indonesia (1997), Russia (1998) were all in crawling band arrangements.

The approach adopted by South American countries to exchange-rate based disinflation strategy differed significantly across countries. However, it highlights some of the problems faced by countries when they fail to design the exchange rate system appropriately or implement its prerequisite measures. In late 1970s, Argentina, Chile and Uruguay turned to exchange-rate based strategy in the hope of taming inflation[27]. The *Tablita* was designed with the aim of bringing inflation down by featuring a declining rate of currency depreciation against the dollar. The rate of inflation decrease was lower than the declining depreciation rate. With home inflation exceeding that of the USA and currencies depreciating at a slower rate than inflation differentials, several countries experienced massive real currency appreciations e.g Argentina failed to stabilise inflation successfully in 1970s through a crawling peg. The rationale was mainly failure to bring fiscal rectitude and failure to implement prerequisites for the crawling peg to work.

Argentina's currency board, whilst successfully taming inflation rate from over 800% in early 1990s to under 5% in mid-1992, suffered a setback when continuing inflation in the first years of the convertibility plan, led to real appreciation of the peso by 30%. Brazil introduced a new currency, the Real, and shifted in 1995, to a fixed upwardly crawling peg system in the face of substantial real appreciation. Inflation dropped from 2,700% in 1994 to under 10% in 1998. The crawling peg system failed because of failure of Brazilian government to implement fiscal prudence. Inadequate measures to reduce debts and deficits also led to failure of crawling peg regimes in Mexico. Mexico initially fixed its peso to the US dollar at the end of 1985, moved to a crawling peg in 1989 and to a crawling band in 1991. The government kept a level ceiling on the peso's appreciation but, tablita-style, announced each year after 1991, a gradually rising limit on the currency's allowable depreciation. Despite this flexibility, the peso appreciated sharply in real terms and large current account deficit emerged.

The rationale for failure of crawling-pegs in Brazil and Mexico emerged essentially from their failure to reform their fiscal stance appropriately. When speculators attacked their currencies, interest rates rose significantly and the banking system and the government budgetary payments came under enormous pressure. Attempts by their governments to bail out the banking system led to contingent liabilities, which further exploded the budget. This event was in stark contrast with Chile. The Chilean government introduced a flexibly managed crawling peg system in 1980s but successfully avoided the woes of Mexico and Brazil through careful implementation of reform programmes prior to adoption of the crawling peg. Chile gave its central bank independence, recapitalised its banking system and adopted a sound regulatory and prudential supervisory infrastructure. A key element in the success of the Chilean

[27] The program was called '*Tablita*'

program was the adoption of the Chilean-type of tax. This is a requirement that every dollar invested in Chile needs to be accompanied by 30% non-interest bearing deposit. In a sense, this is a form of tax designed to discourage short term disruptive capital inflows - and, as such, make the economy immune to excessive real appreciation that accompanies short term inflows and excessive real depreciation that accompanies the future exodus of capital.

Evidence shows that countries that have tried to control inflation through some system of crawling-peg but that failed to match the rate of inflation decline with the rate of depreciation decrease, have suffered deep recession when the peg was abandoned. Countries with thin domestic financial system rely extensively on foreign currency borrowing (partly helped by the fact that they have pegged regimes – which ostensibly, encourages borrowing in foreign currency.) After abandoning the peg, they usually suffer a deep recession and high inflation[28]. A devaluation of the currency lowers the profitability of firms. It also increases the risks for banks that have lent money by reducing their collateral. This leads to moral hazard issues as the banks are faced with a high proportion of non-performing loans. To mount up a defence against the depreciation, the central bank increases interest rates (which leads to adverse selection among borrowers). For instance, Mexico (1988) had inflation of over 100%. Pegging to the dollar enabled it to reduce inflation to around 7-8% in 1994. Abandonment of the peg led to re-apparition of inflation of over 50%. Argentina (1990)'s currency board helped reduce inflation from over 1000% in 1989 to less than 5% by 1994. After collapsing, inflation was rampant again.

The decline in the number of countries under currency board regimes fits well into the ideology that, they have been viewed as medium-term measures to end economic chaos in those countries or as ways to cope with idiosyncrasies that require some credible tightening to begin with. Nonetheless, once credibility is restored, countries seemed to embrace the idea to remove this straightjacket and move to some flexible arrangements that can accommodate their internal and external goals. Currency boards could thus be viewed as the 'most flexible' among the extreme hard pegs, for that special reason. Countries may alternatively cherish the idea of adopting a currency board with a longer-term aim in mind. For these countries, the timing of appropriate prerequisite reforms is paramount.

[28] This is the "fear of floating" argument. Given that balance sheets are characterised by currency mismatches, they are exposed to currency risks. Countries that have a high pass through parameter and high degree of wage indexation (with deep-seated entrenched expectations of inflation) also suffer from that fear.

Table 16: General Characteristics of Economies adopting a particular Exchange Rate Regime

General (descriptive) characteristics of economies adopting a particular exchange rate regime	Exchange-Rate Regime
- Economies that want credibility required in the aftermath of a monetary disorder but that want to retain the flexibility of an 'exit' option in bad times and avoid the straightjacket of lost revenues and lost monetary sovereignty - Economies lack pre-requisites for floating regimes and institutional changes required for successful credible alternative (e.g inflation targeting)	CURRENCY BOARDS
- Economies are well integrated with USA; - Economy already uses dollars extensively (liability dollarization is an all encompassing reality); - Economy cannot take advantage of exchange rate as 'exit' option for adjustment to external shocks	DOLLARIZATION
- Economy cannot pre-commit to lower inflation rates ex-post	CRAWLING PEGS
- Economy wants to maintain credibility advantages of a peg but wants a mechanism that provides adjustment to external shocks - Economy has a diversified trade structure	BASKET PEGS
- Economy looks for political and economic advantages involved in harmonising trade and monetary regimes: individual advantage lies in being members of a larger economic space	MONETARY UNIONS
Economy wants to enjoy advantages of monetary independence whilst being integrated in global financial markets. Exchange rate can be used as a response to external shocks Pre-requisites for inflation targeting satisfied: central bank independence, no commitment	PURE FLOATING REGIMES + INFLATION TARGETING

to alternative targets, reactive monetary policy to exchange rate fluctuations (as long as these influence the target), mechanism for forecasting future inflation levels	

6. Conclusion

This essay reviews the literature on currency board arrangements and highlights the rationale behind adopting such extreme form of arrangements. We have classified countries into three categories – those that adopt currency boards to end a financial chaos overnight, those that wish to adopt a credible medium-term exchange-rate based stabilization programme and those that wish to use currency boards as long term monetary strategy. We argue that for economies with a short-term horizon, currency boards deliver fast results. For economies with a medium and long-term perspective, institutional factors must be present as pre-requisites for currency boards to work. We argue that these institutional factors are needed to ensure consistency of domestic policy aims with the external goal for which the currency board arrangement has been set up. For those economies wishing to import long term monetary credibility, we rationalise the case for the adoption of a crawling peg system, as temporary arrangement, that will help maintain benefits and contain costs of transition to a fully operational currency board.

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8. Appendix

Table 17 : Benefits and Drawbacks of Pegged Exchange Rate Regimes

Benefits	Drawbacks
Credibility / Anchor / Disciplining device - anchor for private expectations and monetary policy - exchange-rate based stabilization programme	Open-economy trilemma – no independent monetary policy is possible
For economies that face relative pre-eminence of financial shocks, pegs can help achieve output stabilization	Speculative currency attacks with enhanced global financial integration
If pegged regimes comprises a group of regional countries, there is considerable economy on transaction costs and exchange rate risks	Targeting a monetary variable (i.e the exchange rate) in the face of changing variables, can be de-stabilising for banks if successful targeting means big interest rate fluctuations
For economies that lack domestic financial sophistication and whose liabilities are denominated in foreign currencies, a peg may help dissuade the “fear-of-floating” argument	Pegs provide no room for adjustment of nominal exchange rate in face of external shocks that move the real exchange rate away from its equilibrium level
	In cases involving imported inflation, pegs present countries with a dilemma: either stabilize the inflation rate or stabilize the exchange rate but not both.
	Pegs are not appropriate for economies that want credibility device but that cannot pre-commit to reduce inflation rate ex-post (see Note 1 after table 1).
	Pegs usually present countries with the option of using currency devaluations as last resort policy instrument, in crisis times. However, there is little use of that advantage if devaluations are contractionary by nature.