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**Stabilization via Currency Board**

by

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# **Stabilization via Currency Board**

**by**

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## Abstract

The breakdown of the Argentine currency board in early 2002 produced a number of obituaries that often quite rashly declared the country's monetary constitution since 1991 the main responsible for its recent near-catastrophic economic collapse. Contrary to such rather one-sided negative ascriptions to the currency board system, the intention of this paper is to give a comprehensive and balanced description of the currency board model in theory, as well as to name its functioning conditions under today's economic and political conditions prevailing in developing and transforming countries. It will become clear that the success of a currency board in terms of lasting stabilization of an economy not only depends on its initial design (e.g. the choice of the anchor currency, of the exchange rate, the legal and institutional fixings) but also on an ongoing process of economic and institutional reform that extends from a general macroeconomic and especially public sector streamlining to banking sector reforms, product and labour market deregulation, and to a general realignment of the economy towards export-orientation and international competitiveness. The extent to which these reforms are tackled and completed decides over the degree to which the economy is able to absorb real shocks without incurring high economic and social adaptation costs, hence over the degree to which a country is able to benefit from the currency board's strengths without falling victim to its potentially severe weaknesses.

Along with some basic reflections about the concept and motivation of modern currency boards, sections 1-3 give a brief overview over the historical background of the currency board idea as well as of its implementation. Section 4 focuses on the constitutional elements of a currency board, while section 5 provides the core of the discussion of pros and cons of currency boards, depicting the system's strengths and weaknesses as well as the conditions under which they materialize. Section 6 will discuss under which circumstances a currency board is a good choice for a country, and ask

whether less strict stabilization policies might be able to deliver the hoped-for benefits less costly. Some problems related to the questions of duration and termination of currency boards are addressed in section 7. Finally, section 8 will give a brief exposition of the idea of dual currency boards as a theoretical extension of the currency board model which promises to eliminate one of the biggest immanent threats to a currency board.

## 1 The Currency Board Idea

The costs of following a sensible monetary rule are the price to pay for the bad reputation that stems from a past of broken trust and for the future economic development that regaining credibility will eventually bring about. (Carlos E. Zarazaga<sup>1</sup>)

### 1.1 What is a Currency Board?

#### 1.1.1 The Term

It is important to be aware that the term “currency board”<sup>2</sup> originally describes the institution in the place (but not with all the tasks) of a central bank. A currency board in this narrow sense is nothing more than a monetary authority that issues money, keeps reserves, and on demand exchanges domestic currency against reserves at a fixed rate. The naming originates from the early days of currency boards when they were introduced as such institutions in British colonies in the 19<sup>th</sup> century, mostly established without any formal legal protection, and mainly relying on a long tradition of financial rectitude<sup>3</sup>.

In the course of history and with the evolution of monetary theory, the institution has lent its name to the monetary constitution of a country with a currency board. In this wider sense, a currency board comprises the legal framework of the monetary system as well as all the institutions that

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<sup>1</sup> Zarazaga (1995b), p. 21.

<sup>2</sup> The correct German translation would be “Währungsausschuss”, “Währungsrat”, or “Währungsamt”, although the English term is used nearly exclusively even in German literature. For Argentines, in contrast, the term “currency board” generally sounds unfamiliar; their currency board was generally referred to as “la convertibilidad” (from the name of the corresponding law “Ley de Convertibilidad”), simply meaning “convertibility”.

<sup>3</sup> See Hanke/Schuler (2000), p. 44.

implement it. The discussion of a currency board in this sense extends to a discussion of a whole economic system<sup>4</sup>. To make this perception more clear-cut, some authors use terms like “currency board system” or “currency board arrangement” for this wider meaning of the term. This paper uses the term currency board in both senses, i.e. as the institution’s as well as the monetary constitution’s name, according to the context of discussion.

Also, some authors distinguish between currency boards that in all details follow the orthodox design (then called “currency boards”) and currency boards that deviate from the orthodox concept in one or several respects, i.e. have somewhat modified rules (called “currency board-like systems”, or “quasi-currency boards”)<sup>5</sup>. Since most present and all “modern” (i.e. introduced in the second half of the 20<sup>th</sup> century) currency boards include at least some modifications as compared with the “pure” design<sup>6</sup>, this distinction shall not be made here, i.e. the term currency board shall comprise both orthodox and modified currency boards. With the chosen terminology this paper sticks to the most widespread use in economic literature as well as political discussion.

### 1.1.2 The Concept

A currency board can be defined as a special case of a rules-based monetary system<sup>7</sup>. Like every rules-based system, it is designed to avoid

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<sup>4</sup> See Fuhrmann (1999), p. 86.

<sup>5</sup> See Hanke/Schuler (2000), p. 46, and Zarazaga (1995b), pp. 16-7.

<sup>6</sup> The only orthodox currency boards still in operation are those of the Falklands, the Cayman Islands, and Gibraltar. As Dolmas and Zarazaga state, today no independent country operates an orthodox currency board. See Dolmas/Zararaga (1995a), p. 1.

<sup>7</sup> Recommendable general literature about currency boards comprises: Balino/Enoch (1997), Bennett (1994), Enoch/Gulde (1997), Enoch/Gulde (1998), Freytag (1998), Fuhrmann (1999), Fuhrmann/Richert (1995), Ghosh/Gulde/Wolf (1998), Gulde/Kähkönen/Keller (2000), Hanke (2000), Hanke/Schuler (2000), Humpage/McIntire (1995), O.V. (1997), Roubini (1998), Schuler (1992), Schuler (1998), Walters (1989), Williamson (1995), Zarazaga (1995a and c).

losses incurred by discretionary decision-making, and to gain from enhanced credibility through rules-governed politics. A currency board's main feature is the nominal anchor in the form of a legally fixed exchange rate, tying the domestic currency to a reserve currency<sup>8</sup>. This nominal anchor plays a pivotal role in the design not only of the monetary constitution, but also of the fiscal and structural disposition of a currency board country. As will become clear, with this legally fixed nominal anchor, a country undergoes severe self-restrictions in the use of policy tools.

The rule that governs the system is very simple: the monetary authority (the currency board) is allowed to issue domestic currency only against reserves at the fixed exchange rate. These reserves may consist of a foreign currency or of other external reserve assets. The reserves requirement implies that the domestic monetary base (notes and coins in circulation) always is 100% backed by reserves<sup>9</sup>. Increases in the monetary base can occur exclusively via corresponding increases in foreign reserves. Being subject to this rule, the monetary authority is deprived of some of the most important traditional central bank functions such as monetary regulation and lender of last resort activity. Furthermore, in tying money issue to existing reserves, deficit financing via the printing press is excluded, which is why fiscal policy in a currency board country is subject to hard budget constraints.

The main motivation for the adoption of a currency board is to produce price stability, especially in developing countries with long histories of inflation and devaluation, and in economies transforming from centrally planned to

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<sup>8</sup> The nominal anchor could also consist of two reserve currencies (as will be discussed in the section about dual currency boards), or a basket of currencies, or even include a peg to a reserve currency with some variability (e.g. a pre-announced crawl), as Williamson (1995) states. These options have until now stayed purely theoretical, and the notion of a nominal anchor for a currency board has generally always implied a fixed peg to one reserve currency.

<sup>9</sup> As is important to note, the 100% reserves requirement applies only for the monetary authority, and is not imposed on commercial banks.

market economies, both of which typically face the need to adopt strong institutional constraints on their ability to inflate<sup>10</sup>. As the combat of inflation not only requires policy measures but, far more important, their credibility, a currency board is designed to bring about a maximum of credibility of monetary policy. A stable currency will bring about lower interest rates: inflation as well as interest rates in a currency board country are supposed to approach the levels prevailing in the reserve currency country. Further effects of the choice of an exchange rate-based nominal anchor emanate from the requirement to earn reserves, hence to open up the economy and to strive for export-led growth. This in turn provides stimuli for fiscal, financial and structural real sector reforms<sup>11</sup>.

Although a currency board is based on a very simple and transparent rule, a variety of different elements can govern its design. Indeed, pure currency boards in reality rarely existed; most countries have modified “orthodox” design elements in order to reflect local necessities or to gain a limited degree of flexibility. E.g., in many currency boards the minimum reserves may be less than 100% (thereby allowing them limited credit against monetary liabilities), whereas others prefer to keep backing at above 100% (in order to gain some flexibility and reserves for limited lender of last resort operations). While bringing about some flexibility in monetary policy, such modifications generally bear a risk to the currency board’s sustainability because they introduce discretionary power and therefore potentially reduce its credibility.

These considerations illustrate the central conflict inherent in the currency board idea, namely that between credibility and flexibility of the system. This conflict regularly shapes discussions about costs and benefits of currency boards, in theory as well as in practice. Another source of dispute is raised by the question of whether and when to view a currency board as a merely

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<sup>10</sup> This is the motivation for modern currency boards. The background of the introduction of colonial currency boards is different, as will be sketched in the section about the historical development of currency boards.

<sup>11</sup> See Fuhrmann/Richert (1995), p. 1039.

transitional or as a longer-term arrangement. Although possible exit options may be considered before setting up a currency board, their explicit pre-determination (via escape clauses) might again risk an undermining of its credibility from the beginning.

## 1.2 Currency Board vs. Other Fixed Exchange Rate Arrangements

A currency board is a special type of a fixed exchange rate arrangement. On the spectre of possible exchange rate regimes, which extends from the one extreme of freely floating exchange rates to the other extreme of definitely fixed exchange rates under a monetary union, the currency board is located between the less strict regime of fixed exchange rates (exchange rate pegged by commitment to an anchor currency, i.e. reversible at any time), and the stricter regime of official dollarization (predominant or exclusive use of a foreign currency as legal tender). Hence, short to official dollarization, a currency board is the most extreme option of exchange rate pegging a single country can chose<sup>12</sup>.

Official dollarization<sup>13</sup> is the closest relative to the currency board as it implies the same motivation and principle of importing the anchor's stability, and requires the same disciplined macroeconomic and structural policies. Accordingly, the strengths and weaknesses of dollarization equal those of a currency board, with the main difference being the higher degree of irreversibility of the former. The gains of dollarization in terms of transparency,

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<sup>12</sup> Participation in a monetary union requires bi- or multilateral agreement.

<sup>13</sup> Unofficial dollarization prevails when residents extensively use a foreign currency (in most cases the dollar) alongside or instead of the domestic currency, and/or hold foreign currency notes or bank deposits to protect against high inflation in the domestic currency. Official dollarization occurs when a government adopts a foreign currency as the predominant or exclusive legal tender.

credibility, monetary stabilization, and impetus for fiscal discipline therefore are supposed to exceed those of a currency board<sup>14</sup>.

Although a currency board also has much in common with a regime of conventional fixed exchange rates, the distinction between the two (besides the wider discussion of fixed vs. floating exchange rate regimes, which shall not be extended here<sup>15</sup>) is directly relevant for the understanding of the motivation and the rationale of a currency board. As with the relation between dollarization and currency board, the main advantage of a currency board over a system of purely fixed exchange rates is its higher implicit credibility<sup>16</sup>. This is mainly the effect of the high legal and procedural obstacles (often equalling the requirements for constitutional changes) in the way of modification or abolishment of the system, built-in to signal the high degree of self-commitment of the government<sup>17</sup>. Under purely fixed exchange rates, in contrast, changing the exchange rate is a simple administrative matter, and expectations of such a change can by themselves bring about the expected change.

Clad in legal hurdles, the higher credibility of a currency board is made up by the legally fixed and publicised self-restriction in the use of policy tools, mainly the exclusion of unbacked money issue. This precludes fiscal policy relying on the note press to finance budget deficits, and requires sound fiscal and monetary policies. Time inconsistency and credibility problems of

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<sup>14</sup> The two main shortcomings of dollarization as opposed to a currency board are that it requires the sacrifice of a country's own money, hence of a symbol of national sovereignty, as well as of any seigniorage income, as far as no bilateral agreement with the anchor country to share seigniorage income is sought. See Alesina/Barro (2001), p. 383, for some thoughts on possible compensation schemes between anchor and dollarized country.

<sup>15</sup> For a brief discussion of fixed vs. floating exchange rates see e.g. Hanke/Schuler (2000), pp. 67-8.

<sup>16</sup> See Alesina/Barro (2001), p. 382.

<sup>17</sup> See Eichengreen (1996), p. 238.

discretionary and/or (by self-commitment) rule-bound policies, though not extinguishable by a currency board, are reduced under a currency board as compared to a system of conventionally fixed exchange rates. The unwritten law of a currency board is, however, that the subordination of monetary and fiscal policy to the preservation of the fixed parity requires the acceptance of its costs, e.g. of prolonged periods of high interest rates or bankruptcies in the financial sector.

However, even constitutions can be changed, and credibility depends as much on attitudes as on rules and institutions. The simple self-commitment to a fixed exchange rate of one government may be as credible (or even more credible) as the legal exchange rate fixed by another, not complying, government under a currency board scheme. Credibility of behaviour has to add to the credibility of rules. Even for an established and stable currency board, a trade-off between rules and discretion similar to that of a conventional central bank may arise, e.g. in the question of the use of excess reserves<sup>18</sup>.

### 1.3 Currency Board vs. Central Bank

Typically, a currency board operates in place of a central bank<sup>19</sup>. Like the latter, it is a government-owned body separate from the ministry of finance, and has the monopoly of issuing notes and coins. A currency board, however, does not have the high degree of discretionary power a typical central bank today has. The powers and functions of both institutions differ fundamentally. The stylised T-accounts of both institutions offer an appropriate starting point for the discussion.

In its orthodox form, a currency board issues base money (cash, i.e. notes and coins denominated in domestic currency) solely in return for the reserve

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<sup>18</sup> See Zarazaga (1995b), pp. 19-20

<sup>19</sup> A currency board can also operate as a parallel issuer alongside an existing central bank, although such cases have been rare and do not exist today. See Schuler (1998), p. 1.

currency at the fixed exchange rate. Its balance sheet comprises on the liability side the amount of base money issued, and the net worth, i.e. reserves exceeding the amount of issued money<sup>20</sup>.

Sometimes, (unorthodox) currency boards also accept deposits of commercial banks or issue securities, both of which are subject to the same foreign reserve requirements as its notes and coins. In this case, the liabilities side also comprises those deposits. To simplify the exposition of the currency board, this section assumes the orthodox type, i.e. a currency board that issues notes and coins exclusively<sup>21</sup>.

The asset side of a currency board consists solely of reserve currency holdings. These reserve holdings are directly related to the balance of payments position of the country, as reserves are acquired through current account surpluses and/or net capital inflows. Since money issue is tied one-to-one to the foreign reserves position, the monetary base varies with the variations in the balance of payments: a balance of payments surplus leads to an increase in the foreign reserves position and subsequently, other things equal, to an increase in the base money (and via the money multiplier, the

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<sup>20</sup> This difference (the net worth of a currency board) is usually maintained in a certain proportion in order to guard against the risk of a decrease in the market value of the assets. As the reserves of a currency board are legally required to be highly secure and liquid, this margin does not have to be high. In most cases, where the net worth exceeds 5 to 10 percent of the money issue, it has to be transferred to the government by law. See Williamson (1995), p. 3.

<sup>21</sup> The addition of deposits and securities does not significantly change the analysis if they are interchangeable for their holders and subject to the uniform foreign reserve requirement. See Hanke/Schuler (2000), pp. 7 and 43.

money stock)<sup>22</sup>. Conversely, a shrinking money base is the consequence of a balance of payments deficit<sup>23</sup>.

Figure 1: Balance Sheet of a Currency Board

<b>Assets</b>	<b>Liabilities</b>
Liquid reserve currency assets	Notes and coins
	(Deposits of commercial banks)
	Net worth

In the long run, monetary growth in the currency board country approximates the monetary growth rate of the reserve currency country, as can be illustrated with the simplifying notion that, for a currency board country to acquire reserves, the reserve currency country has to issue more money than its public wishes to hold. This effectuates decreasing interest rates and rising prices in the reserve currency country, which in turn creates arbitrage opportunities and leads to a deficit in the reserve currency country. This deficit mirrors a balance of payments surplus in the currency board country, which causes its money supply to rise. Note that this adjustment process is completely automatic and includes no discretionary action by the currency board<sup>24</sup>.

The balance sheet of a typical central bank differs from a currency board's balance sheet in two main points. First, on the liability side, there are notes

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<sup>22</sup> Hence, money supply under a currency board works in the same way as it does under a gold (or gold exchange) standard in which the central bank does not sterilize movements in reserves.

<sup>23</sup> Note that a currency board country does not have to maintain current account surpluses to expand the money stock. Net capital inflows may more than compensate for a current account deficit and allow for monetary expansion as well.

<sup>24</sup> As Humpage/McIntire put it, the currency board country trades the loss of monetary sovereignty to the reserve currency country against the credibility and stability imported from the reserve-currency country. See Humpage/McIntire (1995), p. 5.

and coins as well as deposits of commercial banks, the sum of both constituting the monetary base, M0. Again, the net worth of a central bank balances the difference between assets and liabilities.

On the assets side, a central bank holds liquid reserve currency assets, needed to manage the exchange rate, be it pegged or floating. Unlike a currency board, it is typically not required to hold a fixed ratio of foreign reserves to liabilities<sup>25</sup>. More important, besides those foreign reserves, a central bank also holds domestic assets. These domestic assets consist above all of government debt, but may also comprise commercial bank or even state industry debt. As in the case of foreign reserves, a central bank normally buys domestic assets against money, i.e. increases in the monetary base. It may in this way finance fiscal deficits through money creation. It may also buy domestic assets to prevent the monetary base from shrinking, e.g. when it has to sell foreign assets to support the exchange rate, i.e. it can sterilize unwanted contractionary effects on the monetary base<sup>26</sup>.

Figure 2: Balance Sheet of a Central Bank

<b>Assets</b>	<b>Liabilities</b>
Liquid reserve currency assets	Notes and coins
Domestic assets	Deposits of commercial banks
	Net worth

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<sup>25</sup> There may be binding minimum ratios, but a central bank may hold any ratio in excess of these.

<sup>26</sup> As Humpage/McIntire point out, this power to sterilize may be an advantage in the case of temporary balance of payments imbalances. If, however, the underlying causes of a balance of payments deficit are of structural and long-term nature, sterilization can worsen capital outflows, nourish speculations of devaluation, and aggravate the situation. In such cases, the discretionary power of a central bank provides no advantage over the rule-bound currency board. See Humpage/McIntire (1995), p. 5.

As pointed out, a currency board has no discretion in monetary policy: it sells and buys foreign currency against domestic money according to the needs of the private sector, i.e. it acts completely passively. A central bank, in contrast, has the discretionary power to change the monetary base not only through foreign exchange transactions but also through the purchase or sale of domestic assets. It has also the power to change the exchange rate, to alter the foreign reserves ratio, or the regulations for commercial banks, powers that are inexistent for a currency board<sup>27</sup>.

The discretionary power of a central bank includes lender of last resort activities to bail out banks in stress and so prevent or mitigate financial crises. Such lender of last resort activity is largely precluded for a currency board (or at least limited to a degree that is made possible by excess reserves earmarked for this purpose). This limitation makes a sound banking system a significantly more vital interest under a currency board than under a central bank.

A currency board relies on a legally or even constitutionally fixed exchange rate. Central banks may operate under pegged or floating exchange rates, with pegged exchange rates typically not defined by law, and being subject to alterations at the will of the central bank or government.

A typical currency board does not regulate commercial banks. In most cases, it is the ministry of finance or a separate regulating office that passes banking regulations. Central banks, in contrast, often regulate commercial banks. The most basic form of regulation is the imposition of reserve requirements, according to which commercial banks are required to hold reserves in certain proportions of their liabilities at the central bank. Such reserve requirements are not imposed on banks under an orthodox currency board. Since the currency board does not guarantee the convertibility of bank deposits into notes and coins, commercial banks themselves are, in the

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<sup>27</sup> See the sections discussing monetary policy options of non-orthodox currency boards.

absence of reserve requirements, responsible for holding enough notes and coins to be able to satisfy their depositors' conversion requests<sup>28</sup>.

A currency board receives interest from its assets (reserves invested in highly liquid and secure foreign currency assets), but it does not pay interest on its liabilities (notes and coins issued). This interest income represents the currency board's gross profit (gross seigniorage). The deduction of the expenses of issuing notes and coins and of maintaining them in circulation generates the currency board's net profit (or net seigniorage)<sup>29</sup>. A central bank earns seigniorage from interest surpluses as well; they stem both from foreign and domestic assets. However, the most important source of seigniorage for a central bank may be inflation, caused by discretionary increases in the money supply<sup>30</sup>. As already pointed out, a currency board cannot create inflation, which is why this source of seigniorage is inexistent for a currency board.

Since a currency board is a very simple institution with very few and closely circumscribed functions (issue of notes and coins and their conversion on demand, based on strict rules), its activities are transparent and easy to monitor. A central bank, in contrast, has discretion in its activities and is by itself a market participant and speculating institution, which is why its actions often are opaque or even sometimes need secrecy to be successful.

The rule-bound and transparent nature of a currency board makes it a politically sterile institution, whereas a central bank is, or may be, prone to political pressure, even if formally independent. The rules and transparency of a currency board give it a high degree of institutional credibility, which a central bank has not. The credibility of a central bank can at best be built up

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<sup>28</sup>Put in the terms of monetary aggregates, under a currency board, M0 is backed 100% by foreign reserves, whereas broader measures of money supply, such as M1, M2, and M3, are not.

<sup>29</sup> See Hanke/Schuler (2000), pp. 61-2.

<sup>30</sup> For a concise definition of the so called "inflation tax" earned by a central bank see Roubini (1998), pp. 11-13.

over years and decades through self-commitment and conduct, but there is no built-in credibility to begin with.

## 2 Excursus: Doctrinal History and the Currency Board Idea

A review of the main characteristics of the century-old debate over competing monetary theories and their opposing policy advices delivers valuable insights for the understanding of the ideological background of the currency board idea.

Much of the history of monetary theory reflects the struggle between the opposing mercantilist and classical camps. They lent their respective arguments to the views the Anti-Bullionist and Bullionist, later the Banking and Currency School adherents brought forward in the 19<sup>th</sup> century. Since then, depending on the economic problems prevailing at a time, the two camps have alternated in dominating the discussion. When unemployment was seen as the main problem, mercantilists with their prescription of cheap money to stimulate real activity have tended to prevail, whereas classicals with their view of inflation as a purely monetary phenomenon were dominant in times when price stability was the main concern. Even today, mercantilist and classical views continue to compete for the more accurate explanation of the function of money and corresponding policy advices.

The following section will summarize the basic elements of this debate, focussing on the standpoints of mercantilists and classicals, and extending them to the famous English Banking-Currency controversy of the nineteenth century. While the debate continued and appeared in new editions in the twentieth century under Keynesian vs. monetarist flags, the early controversies already include the central aspects that are relevant for the understanding of the theoretical background of the currency board idea and of its supposed benefits as well as its drawbacks. It will become clear that the paradigm behind the currency board idea is directly derived from classical quantity views of money<sup>31</sup>.

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<sup>31</sup> Indeed, the first proposal in the 20<sup>th</sup> century to install a “modern” currency board came from John Maynard Keynes, then a Ricardian, who in 1918 designed a currency

## 2.1 Doctrinal Positions: Mercantilist vs. Classical Views

The mercantilists' views take their origin in the pre-classical era of the 16<sup>th</sup> to 18<sup>th</sup> century<sup>32</sup>. Two outstanding proponents were John Stewart Law and Sir James Steuart. Their main argument was that a nation's wealth was constituted by its stock of precious metals. Countries without natural resources of precious metals (mainly gold) would have to accumulate their wealth through foreign trade. Accordingly, the mercantilist policy prescription included protectionist policies in order to achieve a permanent trade balance surplus matched by corresponding inflows of specie from abroad<sup>33</sup>. This prescription was based on an anti-quantity theory of money which held that (1) money stimulates trade, (2) price-level and inflation are determined by real cost-push forces, (3) the interest rate is a purely monetary variable, determined solely by supply and demand of money and indicating the degree of scarcity of money, (4) cash not used for trade purposes is absorbed in idle hoards, (5) the money stock is endogenous, i.e. prices and real activity determine the amount and/or velocity of circulating money, so that the money stock passively adapts to the needs of trade, (6) overissue of money is impossible when money is backed by the nominal value of real property (land or commercial papers), and (7) discretion is superior to rules in the conduct of monetary policy.

Contrary to the mercantilists' proposition of wealth, classicals held that the wealth of a country consisted in its productive resources such as land, labour and capital, as well as in the efficiency of their use. Both Adam Smith and David Ricardo stated that an optimal allocation of resources was best achieved via free trade rather than via mercantilist protectionism, thereby realizing comparative advantages resulting from specialization and division of

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board with a sterling-backed rouble for war-ridden and inflation-plagued North Russia. See Hanke (2000), p. 52.

<sup>32</sup> For an overview over the mercantilist vs. classical debate, see Humphrey (1998).

<sup>33</sup> See Spahn (2001), pp. 63-8.

labour. Classical monetary theory held that trade balance surpluses could not be permanent, as a country's additional specie would raise domestic prices, thus diminishing exports and stimulating imports until trade balance equilibrium would be restored (David Hume called this the "price-specie-flow-mechanism"). Similarly, according to the classical view, scarcity of money could not exist, since a country's trade could be driven with any quantity of money, on the ground that prices ultimately adjust proportionately to any change in the money stock.

Cost-push theories of inflation were rejected, as price increases were exclusively seen as resulting from increases in the money stock. Any rise of factor costs, e.g. of wages, would make labour-intensive goods more expensive, thereby reducing expenses for capital-intensive goods, which would lead to a cheapening of the latter. In the classical view, cost-pushes lead to a change in relative prices rather than to general inflation.

The mercantilist "money stimulates trade-doctrine" was shown by the classicals to be valid at best in the short run. Changes in the money stock in their view could initially affect output and employment because of the stickiness of prices (prices fail to adjust immediately due to imperfect information of price-setters) and because of distribution effects (additional money is initially concentrated in few hands and disperses only gradually). Eventually, however, prices would adjust fully to the new money stock and output would return to its initial level, so that, in the long run, money would be neutral.

Discretion in monetary policy was deemed to be destabilizing: the classicals doubted the knowledge and motivation of policy authorities. They advocated rules in order to stabilize real activity and to facilitate automatic adjustment mechanisms. One such rule was the gold standard: with a fixed currency price of gold and an assumed fairly steady gold price of goods, money prices of goods could be stabilized, and money could reliably function as unit of account and medium of exchange, rather than providing a source of financial crisis, as the mercantilist prescription would do in the classical view.

The mercantilist fear of deficient aggregate demand was – in classicals’ eyes – unfounded. They argued that the act of production itself included the remuneration of factors, and thus the creation of the incomes necessary to buy the products off the markets. Factor incomes would either be spent or saved, with saving, via its translation to investment, eventually also leading to spending. In this way, each supply would create its own demand<sup>34</sup>. Permanent underemployment of resources could not occur in their view.

Classicals saw the interest rate as a real magnitude determined by productivity rather than as a merely monetary phenomenon. Accordingly, monetary control could not permanently influence the “natural” rate of interest. An increase of money supply could initially depress the loan rate of interest, but, as prices started rising, loan demand would also rise, which eventually would lead to higher interest rates again.

Finally, classicals argued that John Law’s recommendation of a nominal backing of money through a linkage to the nominal value of real assets would render prices indeterminate, as random shocks raising prices of the assets would lead to monetary expansion, which itself could bid up asset prices again, and so on. Price stability in their view required a different principle of monetary limitation.

Table 1 summarizes the key points of discussion in the mercantilist vs. classical debate that constituted the base of the famous Banking-Currency controversy.

Table 1: Mercantilist vs. Classical Doctrines

	<b>Mercantilists</b>	<b>Classicals</b>
Source of wealth	Precious metals	Productive resources
Prescription to achieve wealth	Protectionism in order to achieve permanent trade balance surpluses	Free trade in order to achieve optimal allocation of resources

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<sup>34</sup> This is Jean Baptiste Say’s “law of markets”.

Nature of money	Money stimulates trade	Money is neutral
Determinants of prices	Real cost-push forces	Stock of money
Nature of the interest rate	Purely monetary magnitude, influenced by changes in the supply of money	Real magnitude, not susceptible to monetary changes
Excessive money	Absorbed in idle hoards, not causing inflation	Causing prices to rise proportionately
Determination of the money stock	Endogenous (causality running from prices and economic activity to money: “reverse causality”)	Exogenous (causality running from the exogenously set money stock to prices)
Overissue of money	Impossible (“real bills doctrine”)	Possible, leading to price-level increases
Monetary policy prescription	Discretion	Rules

## 2.2 The Bullionist and Banking-Currency Controversies

### 2.2.1 The Early 19<sup>th</sup> Century Bullionist Controversy

The Bullionist controversy emerged in the early 19<sup>th</sup> century focussing on the question of whether paper money should be convertible into gold on demand. This debate later led to the so-called Banking-Currency School controversy of the 1840s, which again laid the ground for a debate over the nature of money that in many ways is still continuing today.

In the United Kingdom of the 18<sup>th</sup> century, private banks issued banknotes that circulated as money<sup>35</sup>. These notes included a claim on gold bullion held

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<sup>35</sup> For a detailed historical description and analysis of the Bullionist Controversy, see Laidler (1989), as well as Spahn (2001), pp. 69-83.

by the bank. The conversion of paper money to gold was granted at any time since banks issued notes on the basis of gold reserves they actually held in their vaults.

At the end of the 18<sup>th</sup> century, a major bank run occurred in Britain following rumours of the landing of French troops on English soil. Customers hurried to their banks and demanded conversion of their notes into gold bullion. The British government subsequently averted a major banking crisis by allowing banks to suspend convertibility temporarily. Since convertibility was not restored immediately<sup>36</sup>, banks continued issuing notes without respecting their convertibility into gold.

These events triggered an intellectual debate among lawyers, bankers, and statesmen over the question of whether convertibility into gold should be maintained or not. The “Bullionist” group demanded convertibility whereas the “Anti-Bullionists” argued for the maintenance of the prevailing status of suspension.

The Bullionists<sup>37</sup> argued with the temptation for banks to “overissue” notes without the duty to grant convertibility. This would lead to an excess supply of money, hence to a cheapening of money and to inflation. The Anti-Bullionists<sup>38</sup> argument was based on the mercantilist “real bills doctrine”, stating that banknotes were issued by banks against merchants’ bills of exchange, i.e. according to the “needs of trade”. Provided that the repayment of these bills was secure, there could be no excess issue of banknotes since they merely accommodated real transactions. Even if excess issue should happen, excessive banknotes would eventually return to the banks in exchange for deposits or gold or in the repayment of loans, as the so-called “reflux principle” brought forward by the Anti-Bullionists held. Thus, inflation could never be the result of any excess issue<sup>39</sup>.

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<sup>36</sup> Convertibility remained suspended from 1797 to 1821.

<sup>37</sup> Famous Bullionists were Henry Thornton, John Wheatley, and David Ricardo.

<sup>38</sup> Leading Anti-Bullionists were Richard Torrens, Bosanquet, and James Mill.

<sup>39</sup> See Laidler (1989), p. 64.

History first seemed to support the Bullionists: the early 1800s saw a period of inflation, peaking in 1814. Anti-Bullionists saw in it the result of government purchases during the Napoleonic wars. The Bullionists argued for a resumption of convertibility, which was eventually restored in 1821. However, during 1815 to 1830, a prolonged period of deflation was recorded in the wake of the end of the Napoleonic wars. Thus, historical evidence was far from clearly supporting one of the views.

### **2.2.2 The 1840s Banking-Currency Controversy**

The restoring of convertibility in 1821 had raised the question on whether the note issue of the convertible gold-standard currency required further regulation to prevent overissue. The predecessors of the Currency School – the Bullionists – had argued that such control was not necessary. Overissue would lead to domestic price increases, making British goods more expensive, which in turn would lead to increased conversion into gold in order to buy the relatively cheaper foreign goods. The ensuing drain on gold would force banks to restrict their issue, causing the money stock to contract and prices to fall to the initial level, and eventually give halt to the gold drain. Convertibility had been seen as its own guarantor.

However, history seemed to contradict this position: several monetary crises in the 1820s and 1830s had shown that the classical adjustment mechanism was far from self-correcting. Pure convertibility still had left banks with discretion in the trade-off between safety and profits since they faced no minimum reserve ratio. This had led to continued note issue in spite of concomitant gold outflows and to subsequent violent contractions sending monetary shocks throughout the economy.

The Currency School proponents therefore concluded that banks' discretion in the note issue should be removed. Their proposal was to require a one-for-one change in issue with the change in gold reserves, and thereby to realize the “principle of metallic fluctuation” for a mixed (paper and coin) currency. Overissue, which via the balance of payments mechanism and the

gold drain could threaten convertibility and create procyclical fluctuations, in their eyes could be prevented with this rule.

The debate seemed to be brought to an end by the Banking Act of 1844 which installed a fractional convertibility: for a fixed amount (equalling the amount of circulating money), one third of the value had to be covered by gold, whereas new issues of banknotes had to be 100% covered by gold<sup>40</sup>. The act also installed a monopoly of note issue, and split the Bank of England into a note-issuing Issue Department and a deposit-taking Banking Department<sup>41</sup>. The gold reserve requirement intended overexpansion to be corrected automatically, instantaneously and smoothly. It embodied the direct policy application of the classical price-specie-flow-mechanism.

The Currency School supported the act as it limited the amount of note issue, and thus in their opinion prevented inflation. Leading supporters of the Currency School<sup>42</sup> revived the Bullionists' arguments. Proponents of the Banking School<sup>43</sup> argued against convertibility. Their argument was that in reality banks issued notes according to the needs of trade ("real bills doctrine"), and that a possible overissue would instantaneously return to the banks ("law of reflux"), and thus contained its self-correction. Changes in prices and production in their view required banks to accommodate varying loan demands via corresponding variations in their note issue. Expansion in the note issue therefore was seen as the result rather than the cause of price

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<sup>40</sup> The amount of 14 billion pounds, equalling two thirds of the estimated money in circulation, was regarded as the "hard core" of circulation that would probably never return to the banking system, and was not subject to the convertibility requirement. Apart from this unbacked amount, any note issue had to be fully backed by gold reserves. See Schuler (1992), pp. 10-1.

<sup>41</sup> See Spahn (2001), pp. 80-3.

<sup>42</sup> They included Lord Overstone, James R. McCulloch, Thomas Joplin, Samuel M. Longfield, and former Anti-Bullionist Richard Torrens.

<sup>43</sup> Famous Banking School adherents were Thomas Tooke, John Fullarton, and the young John Stuart Mill.

inflation. In addition to the concepts of cost inflation, reverse causality, and passive money, further mercantilist propositions completed their anti-quantity theory of money: (1) excess specie reserves are absorbed in idle hoards without affecting the amount of money in circulation, so that gold drains in international gold flows can solely be fed by corresponding reductions in excess reserves, (2) the causes for gold drains are not to be sought in domestic inflation, but rather in real balance of payments shocks, (3) changes in the money stock are compensated by changes in the stock of money substitutes, so that the total circulation remains unchanged, with the effect that any control of the volume of gold and notes is impossible, and (4) discretion is superior to rules in monetary policy, for rigid rules prevent banks from responding flexibly to changing needs of trade and to financial crises.<sup>44</sup>

In the aftermath of the 1844 Banking Act, convertibility had to be suspended three times<sup>45</sup>, lending some credibility to the Banking School's arguments. However, gold parity to note issue was generally maintained until World War I.

### **2.2.3 Findings with Hindsight**

The Banking-Currency School debate and the ensuing historical experience in retrospect revealed several findings. First, the Currency School's prescription of a control of the volume of gold and notes failed insofar as it did not include the control of deposits, which formed a growing part of the circulating medium<sup>46</sup>. Therefore, since there was no reserve requirement for deposits, even after 1844 banks possessed significant room for discretionary control over deposits. Second, Currency School proponents

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<sup>44</sup> A third, mostly neglected, group of participants in the debate was the Free Banking School, which favoured a system of free competition of banks including in the field of note issue, and which accordingly denied the need (and usefulness) of a central bank. See Schwartz (1989), pp. 44-46.

<sup>45</sup> In 1847, 1857, and 1866.

<sup>46</sup> See e.g. Spahn (2001), p. 84, and Schuler (1992), p. 11.

refused to recognize the necessity of lender of last resort rescue in coping with financial panics. By the end of the nineteenth century it was widely accepted that liberal lending was the best way to deal with internal drains, which were caused by panic-led demand for gold and Bank of England notes<sup>47</sup>.

On the other hand, the Banking School's real bills doctrine, which claimed that note issue tied to loan demand for productive purposes would prevent inflation, always suffered from not being able to close its open front: the sequence of rising production prices, correspondingly rising loan demand and note issue to finance the same level of real transactions was indefinite – inflation justified the monetary expansion necessary to sustain it. The real bills criterion failed to limit the quantity of money in existence<sup>48</sup>.

### **2.3 The Currency Board and Classical Monetary Theory**

The above outline of the century-old debate identifies the currency board idea as a clearly classical one<sup>49</sup>. With the currency board's main targets of disinflation and stabilization, pursued via self-restriction in monetary (and, effectively, fiscal) policy, its location within the doctrinal spectre is evident. Although direct reference to the Currency School's ideas was rare in the official documents setting up early colonial currency boards, the historical analysis of the debates surrounding them leaves no doubt about their intellectual origins<sup>50</sup>.

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<sup>47</sup> The Bank of England accepted the doctrine of the lender of last resort in 1890 following the Baring Brothers crisis. See Schuler (1992), p. 12, and Spahn (2001), p. 86.

<sup>48</sup> See Schwartz (1989), p. 43.

<sup>49</sup> This is also made clear by Sir John Hicks, who describes the currency board idea as a direct product of classical monetary theory developed by David Ricardo: „On strict Ricardian principles, there should have been no need for central banks. A currency board, working on a rule, should have been enough.” Hicks (1967), pp. 167-8.

<sup>50</sup> See Schuler (1992), pp. 8-12.

Partly anticipating the following chapter, it is telling to review the fate of the currency board idea since its origins, as it goes in parallel with the history of economic thought, and with the development of political powers implementing it. Up to the 1950's, industrialised nations by and large kept to the gold standard, and imposed ideologically corresponding monetary constitutions, currency boards, on their colonies. Growing independence of colonial territories, the stress and eventual abandonment of the Bretton Woods system, and the surge of Keynesian thought all played major roles in the decline of the currency board idea since the 1950s. The ensuing decades-long inflation and deficit spending experience of industrialised and developing countries alike triggered the surge of classical monetary theory and the primacy of price stability in the 1980s. Classical monetary theory has since largely set the tone in monetary policy in industrialised as well as developing countries. The financial experience of countries that had departed from currency boards without being able to install credible alternative monetary policies, however, proved to be dismal<sup>51</sup>. This experience, complemented by the breakdown of the Soviet bloc and the emerging transformation task for its economies, prepared the ground for a renaissance of the currency board idea in the 1990s, which, despite the near-catastrophic collapse of Argentina's currency board in early 2002, still seems to be lasting.

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<sup>51</sup> Walters ascribes their degeneration to a large part to the abolishment of currency boards: "It is difficult to avoid the conclusion that the financial instability brought in train by the abrogation of the currency board system has played a considerable role in this process." Walters (1989), p. 110.

### 3 From Colonial to Present-Day Currency Boards

#### 3.1 Rationale of Colonial Currency Boards

Currency boards were first established and got most widespread in British colonies in the 19<sup>th</sup> century. While a currency board had been proposed for the Province of Canada as soon as 1841<sup>52</sup>, the first currency board to be introduced was that of Mauritius, in 1849. The design of the currency boards was implicitly based on the ideas of the Currency School. According to one contemporary, currency boards were meant to “unite the ‘advantages of cheapness and convenience which belongs to a paper currency’ with the ‘steadiness and uniformity of value, of a metallic currency, ... [thus, they] ought to be so regulated that the amount in circulation should vary according to the laws which govern the latter’.”<sup>53</sup>

Before the establishment of currency boards, notes and coins of the imperial power were used in the colonies, where they served as a stable means of exchange and as a store of value. These were in most cases issued locally<sup>54</sup>, by chartered colonial or imperial banks, which were granted the right to issue Bank of England notes. However, their note issue was limited by legal restrictions in the maximum amount and in the denomination of notes. This caused frequent (and artificial) note shortages in some colonies. Economic theory and government policy of the time regarded those restrictions as necessary, and were opposed to unrestricted issue for fear of inflation.

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<sup>52</sup> See Schuler (1992), p. 14.

<sup>53</sup> Earl Grey, British Secretary of State for the Colonies, cited after Gunasekera (1962). See Balino/Enoch (1997), p. 2.

<sup>54</sup> Walters assumes that Bank of England notes were issued only in Britain, with the consequence that the risk of loss or destruction of notes in the colonies and the complications of replacing worn notes delivered a major argument for the establishment of currency boards. See Walters (1989), pp.109-10.

Regulated, monopolistic issue by a monetary authority, the currency board, seemed to provide the solution<sup>55</sup>.

Hence, the main motivation for the establishment of currency boards was to give the colonies a monetary framework that provided stability of currency, and that eased monetary, trade-related transfers between imperial power and colony<sup>56</sup>. Moreover, with currency boards, the colonies were given a certain degree of independence by granting them their own, locally issued, currency, as well as the source of income from seigniorage, which was obtained by investing reserves in interest-bearing, secure, and sufficiently liquid assets.

Early currency boards differed from later currency boards in several respects. Initially, British currency boards redeemed their notes in gold or silver coins only. The West African currency board, introduced in 1913, was the first to redeem in pound sterling, and with this became the prototype for later (also non-British) currency boards, all of which adopted the sterling (or other currency) exchange standard<sup>57</sup>. Another difference between earlier and later currency boards refers to the type of assets allowed as reserves. Most early currency boards were allowed to invest in foreign, i.e. imperial or other non-colonial, government securities, but not in securities of their own colony. Later, currency boards were typically allowed to hold local securities up to a certain degree, which meant a deviation from the strict currency board design towards more central bank-like options<sup>58</sup>.

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<sup>55</sup> See Schuler (1992), pp. 13-4.

<sup>56</sup> E.g., a money transfer from the colonial power (Britain) to the colony basically works as follows: the payer in Britain deposits reserve currency notes with the Bank of England, which again deposits them with the currency board in the colony. The currency board changes the notes into the local currency at the fixed parity and pays them out to the payee (or the payee's branch bank). This transaction causes the money supply in the colony to expand by the transferred amount. A payment from the colony to Britain works in reverse, causing the colonial money supply to shrink.

<sup>57</sup> See Schuler (1992), p. 18.

<sup>58</sup> See Schuler (1992), pp. 35-6.

### 3.2 Currency Boards Since 1849

Shortly after the introduction of the first colonial currency board on Mauritius in 1849, the New Zealand currency board was established in 1850, followed in the late 19<sup>th</sup> and early 20<sup>th</sup> century by many Asian, African and Middle Eastern currency boards<sup>59</sup>. Besides in almost all British colonies all over the world, currency boards also operated in Argentina (1902), the Philippines (1903), then a U.S. colony, and Panama (1904). Later non-British currency boards include North Russia (1918)<sup>60</sup>, Danzig (1923), Ireland (1928), Somalia (1950), Lybia (1950), Sudan (1957), North Yemen (1964), and Swaziland (1974). In French colonies, systems similar to currency boards were put in place (the so-called “Instituts d’Emission”), notably in the still existing CFA-Zone, which consists of West and Central African countries in Currency Union, with the CFA-franc linked to the French franc.

The currency board system reached its greatest extent in the 1950s. By then, currency boards operated in approximately 50 countries, most of them (former) British colonies, among them the economically important territories of Hong Kong and Singapore, as well as New Zealand. After the 1950s, the currency board system experienced a swift decline. By 1974, it had shrunk to 10 countries, again nearly all existing or former British colonies. The reason for this decline was that most territories with currency boards, after having gained independence, quickly sought to underline their independence by creating their own sovereign currency and installing central banks. This trend was also fed by the conviction, prevailing among economists and politicians at the time, that monetary arrangements with central banking better fit a country’s economic, especially development, needs, and were superior to the

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<sup>59</sup> Schuler (1992) gives a comprehensive study of the history of currency boards, also containing a complete list of currency boards (excluding currency boards established after 1990), pp. 107-12.

<sup>60</sup> Interestingly, this currency board was instigated by John Maynard Keynes, and installed by the British Treasury. See Williamson (1995), p. 5.

currency board system, which then was perceived as rather antiquated<sup>61</sup>. In the period between 1974 and the 1990's, the only newly established currency board was that of Hong Kong, installed in 1983 and still operating today<sup>62</sup>.

The 1990's, finally, saw a renaissance of the currency board idea. This revival was closely related to the acknowledged quality of currency boards to bring about currency stability. Currency boards were no longer seen as monetary constitutions adequate for dependent economies, but were rather perceived as a means to provide stability for countries that suffered major structural and political breaks, as well as for developing countries with long records of political and economic instability. The breakdown of the Soviet Union and the emergence of a number of new economies in the former East, as well as the independence of post-war Ex-Yugoslavian countries, yielded constellations in which the currency board idea gained new attraction.

Among the transforming countries of the former Soviet block, Estonia introduced its currency board in 1992 (backed by the German mark, now the euro), Lithuania followed in 1994 (first backed by the US-dollar, since 2002 by the euro), and Bulgaria in 1997 (German mark, now euro). Bosnia and Herzegovina introduced their new currency, linked to the German mark, now euro, under a system resembling a currency board in 1998.

Among the inflation-plagued developing countries, Argentina was the sole to introduce its (latest) currency board in 1991, with the objective to stop hyperinflation and to open its hitherto closed economy<sup>63</sup>. This is the only recent case of a currency board that had to be abandoned under stress in early 2002. Further Latin American countries recently chose a similar, if

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<sup>61</sup> At the time, currency boards were even regarded by some as manipulative monetary mechanisms of colonialism or neo-imperialism. See Walters (1989), p. 111.

<sup>62</sup> Hong Kong gave up its second currency board, which had been established in 1945, in 1974.

<sup>63</sup> In Argentina, currency boards had already been operating from 1902 to 1914, and from 1927 to 1929.

stricter, path through outright dollarization (as did Ecuador in 1999 and El Salvador in 2001).

Today, currency boards are operating on the Bermudas, the Cayman Islands, the Falkland Islands, in Gibraltar, on the Faroe Islands, in Brunei Darussalam, Djibouti, Estonia, Lithuania, Bulgaria, and Hong Kong. Systems resembling currency boards are operating in the Eastern Caribbean, the CFA-Zone, in Singapore, Latvia, and Bosnia-Herzegovina<sup>64</sup>.

Furthermore, during the 1990s, economists recommended to introduce currency boards for countries such as Mexico (after the 1995 crisis), Peru, Brazil, and Russia.

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<sup>64</sup> See Hanke/Schuler (2000), pp. 41-2.

## 4 Constitutional Elements of a Currency Board

### 4.1 Anchor Currency

The choice of the anchor currency should be guided by several considerations. First, the anchor currency should be selected among stable currencies with deep and developed financial markets that offer a broad range of international financial instruments. The anchor currency therefore should be one of the few large international reserve currencies<sup>65</sup>, which include the dollar and the euro (with the yen being a further, but recently questioned candidate). A long record of low inflation, high credibility, full convertibility, and low real interest rates are the qualities that make them likely to continue their good performance. With the choice of a stable anchor currency, the currency board country strives to import the stability of the chosen reserve currency.

Within this set of possible anchor currencies, the most important criteria centre around the question of which reserve currency is best able to shelter the currency board country from real shocks inside and outside the currency area. This is a crucial question, since the currency board country is deprived of monetary policy options to deal with such shocks and therefore has to minimize these risks as far as possible. The best choice of anchor currency is given when (1) as many countries as possible, whose enterprises compete with those of the currency board country, share the peg to the reserve currency, i.e. form a single currency area with the reserve currency, when (2) a high proportion of the external trade of the currency board country takes place with the reserve currency country, and when (3) the production patterns of the currency board country differ significantly from those of the reserve currency country. As Freytag (1998)<sup>66</sup> shows, within these three criteria, the

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<sup>65</sup> Few currency boards have chosen other than one of the international reserve currencies. This happened mostly for historical reasons, e.g. in the case of Brunei that is pegged to the Singapore dollar. See Enoch/Gulde (1997), p. 4.

<sup>66</sup> See Freytag (1998), pp. 5-11.

requirement of a high proportion of bilateral trade with the reserve currency country seems to be the least indispensable, i.e. if it is not met, the damage caused by real shocks is smaller than if another of the three is not met<sup>67</sup>.

Expected future shifts in trade patterns should be taken into consideration as well when choosing an anchor currency. While a basket of reserve currencies might best reflect the trade patterns of a country and might provide a better shelter against external shocks, its disadvantages in terms of minor transparency and higher obstacles to credibility as well as higher transaction and management costs make it rarely seem a preferable option for a currency board country<sup>68</sup>.

Finally, the domestic acceptance of the reserve currency may also provide an argument for the choice of the anchor currency. An economy already penetrated by a parallel currency that is highly valued among market participants might decide to choose this currency as its anchor even if trade patterns would predict a different anchor currency. Such a constellation could again provide a case where the missing criterion of strong trade connections with the reserve currency country would not provide a sufficient argument against the choice of an anchor currency that otherwise meets the above criteria.

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<sup>67</sup> Suppose for this purpose a positive productivity shock in the reserve currency country with a subsequent appreciation of the reserve currency. Worst would be the effects for the currency board country if production patterns in the currency board country did not differ much from those in the reserve currency country, but the criteria of strong trade connections with the reserve currency country and a large currency area pegged to the reserve currency were given: a large part of external trade of the currency board country would suffer. If, however, the criterion of strong trade connections with the reserve currency country were missing, but the other two were given, the pressure of such an external shock would be significantly smaller (also smaller than under the third possible constellation, a large currency area missing) since only small parts of the currency board country's exports would be affected by the appreciation. See Freytag (1998), pp. 10-1.

<sup>68</sup> See Williamson (1995), p. 24.

The implications of the choice of reserve currency for the reserve country are also worthwhile considering. If the reserve currency has already been in wide use in the currency board country, the demand for it will probably decrease with the successful introduction of the currency board since people now can safely change their reserves into domestic currency. At the same time, the demand of commercial banks might rise as a consequence of reserve requirements or intensified capital flows, so that the net effect may be unclear. However, most currency board countries are small in economic terms, and the typical reserve currency economies are big and their currencies in global use, so that the initial monetary effect of a currency board on the reserve currency country usually will be small<sup>69</sup>.

## 4.2 Fixed Exchange Rate

The determination of the exchange rate is an important as well as difficult issue. Doubtlessly, the “appropriate” exchange rate is ideally identical with the exchange rate determined by market forces<sup>70</sup>. However, an undervalued exchange rate (as compared to the appropriate exchange rate) potentially entails several advantages: (1) The amount of foreign exchange needed to provide full backing of the monetary base is reduced, and (2) a built-in “cushion” of undervaluation can be designed to compensate ex ante for an expected real exchange rate appreciation during the initial phase of the currency board, and so to protect the currency board from a preventable overvalued exchange rate from the beginning. (3) Finally, an undervalued exchange rate may facilitate exports (although the question of a competitive exchange rate is seldom an issue in a country adopting a currency board with

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<sup>69</sup> See Hanke/Schuler (2000), p. 55.

<sup>70</sup> Where the market rate is not clearly detectable, e.g. because of restricted foreign exchange markets, a brief period of unrestricted floating of the domestic currency may precede the determination of the exchange rate in order to have an indication for the unrestricted market rate.

the typically preceding accelerating inflation and devaluation cycles<sup>71</sup>. On the contrary, the consideration that too expensive imports might hamper a modernization of the economy might again speak against an undervalued exchange rate<sup>72</sup>).

An appreciation of the real exchange rate in the early phase of a currency board is likely to occur because of four facts. (1) A certain degree of inflation inertia will persist during the first months after introduction of a currency board, which is produced by lags in the adaptation of expectations of market participants and by structural rigidities (e.g. backward-looking indexation clauses, or overlapping contracts)<sup>73</sup>. (2) Concomitant measures at the time of fixing the exchange rate, such as price liberalizations, may produce price effects and prevent inflation from immediately going down to the level prevailing in the reserve currency country. (3) The growth rate in the currency board country may exceed that in the reserve currency country, which causes demand for labour, goods, and services, and hence their prices, to rise. (4) Net inflows of capital may increase demand and create inflationary pressure<sup>74</sup>.

However, there are drawbacks of the tempting option to fix the exchange rate at an undervalued level. The most important is that by starting the currency board with an over-depreciated exchange rate, the credibility of the arrangement might be reduced from the beginning. The choice of a parity that is significantly below the prevailing exchange rate therefore bears the risk of giving an impulse to domestic inflation, which by itself would re-establish the previous real exchange rate.

Full foreign exchange backing can not only be obtained through the choice of a depreciated exchange rate, but also through a variation in the definition of

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<sup>71</sup> See Bennett (1994), p. 190.

<sup>72</sup> See Hanke/Schuler (2000), p. 49.

<sup>73</sup> See Williamson (1995), p. 21.

<sup>74</sup> See Freytag (1998), pp. 4-5.

reserves used<sup>75</sup>, as well as in the definition of currency board liabilities to be backed<sup>76</sup>. Hence, for a country lacking reserves, the choice of the exchange rate most likely involves a trade-off between a per se highly credible full covering of a broad set of domestic liabilities through a narrow set of reserves (with the concomitant, credibility-risking high degree of devaluation), and a less credible wider definition of reserves that back a narrower definition of liabilities (which necessitates a smaller devaluation)<sup>77</sup>. The decision whether and to which degree excess reserves for limited lender of last resort operations should be held from the beginning is closely connected and basically faces the same credibility conflict<sup>78</sup>. A feasible way to achieve the necessary foreign exchange backing may be to allow for international reserves being gradually built up or even to borrow the missing reserves through a medium- or long-term foreign loan. With strong underlying policies, the commitment to build up full reserve cover over time may be credible enough to grant sustainability of the regime.

A country adopting a currency board has to bear in mind that each detail deviating from the orthodox architecture of the currency board bears a potential to diminish its credibility and to evoke speculative attacks, so that costs and benefits have to be carefully appreciated. This is especially true for such an obvious and transparent issue as the degree of reserve backing. While some economists completely reject the adoption of a (however slightly) undervalued exchange rate<sup>79</sup>, it is certainly prudent to say that the degree of initial overdepreciation in setting the parity should be tightly limited in order to achieve maximum credibility while allowing for a small margin of inflation

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<sup>75</sup> Foreign exchange reserves can be specified net or gross, and can include or exclude long term debt.

<sup>76</sup> They may include solely currency in circulation, or (in the case of an unorthodox currency board) additionally deposits at the currency board.

<sup>77</sup> See Enoch/Gulde (1998), p. 5.

<sup>78</sup> See Bennett (1994), p. 201.

<sup>79</sup> See Hanke/Schuler (2000), p. 49.

inertia, but addressing structural problems as far as possible directly instead of indirectly via the exchange rate level.

### 4.3 Full Convertibility

A currency's function as a medium of exchange depends on its convertibility. There are different degrees of convertibility: (1) Cash convertibility means the ability of a currency to exchange bank deposits for notes and cash on demand. (2) Commodity convertibility is the ability of a currency to buy domestic goods and services. (3) Foreign exchange convertibility comprises the unrestricted ability of a currency to buy foreign goods and services, including foreign currencies.

A currency with all three types of convertibility has full convertibility. Most currencies of developed countries are fully convertible, while most developing countries have currencies with restricted convertibility. The most typical restrictions of foreign exchange convertibility refer to capital account transactions (the purchase of foreign financial assets), whereas current account transactions (the purchase of foreign goods and services) are generally less restricted. The arguments for capital controls centre around the fears of capital flight or on the contrary of massive foreign investment that increases domestic prices of nontraded goods and reduces the competitiveness of domestic exporters, and around the fear of moral hazard for domestic banks and industries that rely on a bail-out by the government through devaluation in the case of unsustainable capital burdens through foreign debt<sup>80</sup>.

Full convertibility is a constitutional element of a currency board because it is the precondition for the creation of a complete substitutability between local and anchor currency, for the reduction of country and currency risk premia, and hence for the successful import of stability<sup>81</sup>. To underline its commitment to full convertibility, a currency board should keep its exchange window open

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<sup>80</sup> See Hanke/Schuler (2000), pp. 21-2.

<sup>81</sup> See Fuhrmann/Richert (1995), p. 1035.

for anyone, including the public, and not impose any minimum or maximum exchange amounts. It should demonstrate that it stands ready under all circumstances to exchange currency board notes into the reserve currency. The currency board should not charge commission fees for the exchange, and keep trading spreads at zero or minimal, in order to minimize barriers to capital movements and arbitrage, and to keep the link to the reserve currency as close as possible<sup>82</sup>.

Unlimited convertibility does not mean that a currency board is responsible for the conversion of deposits denominated in local currency into currency board notes and coins, nor for their conversion into the reserve currency. This is the responsibility of banks. The currency board itself is only concerned with the convertibility of the notes and coins it issues<sup>83</sup>.

While in some cases an immediate establishment of full convertibility (including full capital account convertibility) may be possible, other cases may require a more gradualist approach. This may be necessary when the banking sector is very fragile, and when revealed illiquidities and insolvencies of banks under the rigid system of a currency board might trigger bank runs. The purchase of domestic currency might then be restricted to the use for current account transactions, and it might be required that foreign exchange earnings be kept in the country<sup>84</sup>. In such cases, the process of adjustment to monetary disequilibria has to work over trade volumes and current account effects, an adjustment that is less smooth and rapid than over capital flows. In the course of stabilization and strengthening of the financial sector, ongoing liberalization of capital transactions will be facilitated in order to allow for a closer adaptation to the lower reserve country interest rates and for a maximum degree of substitutability between local and anchor currency<sup>85</sup>.

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<sup>82</sup> See Hanke/Schuler (2000), pp. 58-9, as opposed to Enoch/Gulde (1997), pp. 21-3.

<sup>83</sup> See Schuler (1998), p. 2.

<sup>84</sup> See Bennett (1994), p. 202.

<sup>85</sup> See Enoch/Gulde (1997), pp. 25-6.

#### 4.4 Conduct of Monetary Policy

In its purest form, a currency board not only refrains from those components of monetary policy that imply discretionary elements, such as open market and lender of last resort operations, but also from any form of regulation or supervision of the financial sector. An orthodox currency board leaves financial institutions completely on their own, relying on the disciplining effect of the knowledge that there is no lender of last resort<sup>86</sup>. The currency board's credibility is based on the commitment to a completely passive conduct, and on the limitation of its responsibility to the provision of a fully backed money base.

However, the central role of foreign reserves makes a currency board country particularly vulnerable to external shocks. As it is deprived of active policy instruments to cope with such shocks, it is widely undisputed that a currency board should enact prudential regulations, which above all aim at structural and systemic characteristics of the banking system in order to make it as robust as possible and to reduce the need for situational support<sup>87</sup>. Reserve requirements and capital adequacy rules<sup>88</sup> are among the most undisputed elements of financial sector regulation. Additional prudential regulations may concern interest rate and liquidity risks, aiming at mismatches in the maturity structure of banks' assets and liabilities<sup>89</sup>. Of course, a strong

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<sup>86</sup> See Eichengreen (2001), p. 269.

<sup>87</sup> For transparency, credibility, and organizational reasons, a division of the institution currency board is advisable: a currency department then solely undertakes the tasks of exchanging domestic against reserve currency and holding the reserves, whereas a banking department is responsible for the monetary policy issues. See Fuhrmann/Richert (1995), p. 1038.

<sup>88</sup> Capital adequacy ratios are recommended to be fixed well above the Basle standard of 8 percent, and probably even above the 12 percent discussed for banks in emerging markets, given the greater riskiness of banking in developing economies and the higher need for self-reliance in currency board countries. See Enoch/Gulde (1997), pp. 13-4.

<sup>89</sup> See Balino/Enoch (1997), p. 21.

banking supervision, proper accounting standards, and stringent disclosure requirements are preconditions for the enforcement of such regulations<sup>90</sup>.

That said, although conflicting with a currency board's basic principle of limited discretion and even more clearly deviating from the "orthodox" currency board design, a certain capacity to deliver lender of last resort support might nevertheless be prudential in order to retain the ability to avert incipient banking crises, and to contain their possibly contagious effects, especially under conditions of uncertainty or large external shocks. Such lender of last resort capacity can, as long as it is funded by excess reserves set aside for this purpose, and follows specified rules, strengthen confidence in the domestic banking system and as a consequence lower intermediation spreads, without exposing the system too much to the imminent problems of reduced credibility and moral hazard<sup>91</sup>.

#### **4.4.1 Control of Private Money Creation**

A completely exogenous money supply and inflation rate would imply the absence of private sector money creation, as would be the case with a reserve requirement for commercial banks at 100%<sup>92</sup>. However, the 100% reserve requirement does not extend to commercial banks, and private money creation works under a currency board as in any two-tier banking system. Reserve to deposit ratios of commercial banks (the fraction of deposits held as reserves) as well as the currency-deposit ratio of the public (the fraction of deposits the public desires to hold in currency) are the determinants of the money multiplier, i.e. of the degree to which changes in the money base

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<sup>90</sup> Banking supervision should ideally be transferred to an independent agency. Where the currency board itself undertakes banking supervision, it should credibly demonstrate that currency board rules will not be circumvented in case of banking sector difficulties. See Enoch/Gulde (1998), p. 7.

<sup>91</sup> See Balino/Enoch (1997), p. 20.

<sup>92</sup> See Fuhrmann (1999), p. 95.

(which, under a currency board, mirror foreign reserve changes) translate into money stock changes in the economy<sup>93</sup>.

An orthodox currency board does not influence the money supply by imposing reserve ratios or by regulating commercial banks, but leaves its determination completely to market forces<sup>94</sup>. However, private money creation can be a source of instability: with a high money multiplier, capital inflows may translate into unacceptably high rises in domestic credit, capital outflows into sharp contractions of the money stock. Though the responsiveness of the money supply is a central principle in the currency board idea, a currency board may wish to dampen the expansionary as well as contractionary effects of foreign reserve movements by imposing minimum reserve requirements. Thus, on the macroeconomic level, reserve requirements can serve to control inflationary pressures, to reduce adaptation costs of the domestic economy, and so to enhance the currency board's sustainability. On the microeconomic level, they can help strengthen the financial sector by ensuring it holds sufficient reserves to meet liquidity demands of its customers, and by establishing additional liquidity buffers that may be needed to smooth out interest rate volatility or limit the risk of settlement failures. For a typical central bank, minimum reserve requirements are also an important instrument of discretionary control of the money supply: rises and reductions in the reserve requirements serve as brakes or accelerators for money growth. While this latter function sharply contrasts with the concept of a currency board, the setting of minimum reserve requirements, with the aim to keep the money multiplier adequate and constant<sup>95</sup>, is largely regarded as a prudential issue even for a currency board.

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<sup>93</sup> See Walters (1989), pp. 111-2.

<sup>94</sup> For a detailed description of money supply under a currency board see e.g. Hanke/Schuler (2000), pp. 26-39, Humpage/Owen (1995), pp. 3-5, or Zarazaga (1995a), pp. 1-2.

<sup>95</sup> A typical phenomenon during stabilization or transformation processes is the increase of non-cash payments and a reduction of the currency-deposit ratio of the public.

If, as pointed out above, a currency board accepts the need for a certain lender of last resort capacity, the interest earned on foreign reserves held by the currency board to back banks' (unremunerated) reserves can be used to build up excess reserves earmarked for this purpose. Moreover, a currency board may wish some degree of discretion by keeping the option to adjust reserve ratios on an ad hoc basis in case of liquidity crises<sup>96</sup>. Again, the conditions of such adjustment should be transparent and well-defined ex ante in order to maximise the currency board's credibility.

However, the requirement for banks to hold high and unremunerated reserves with the currency board reduces their profitability, and so may put the banking sector's soundness at risk. Liquidity requirements, while serving the same macro and microeconomic purposes, may offer an alternative, especially when there is a risk of systemic liquidity crises<sup>97</sup>. Allowed to hold the required fraction of liabilities as liquid reserves within the banking system, banks can earn interest on their reserves, which strengthens their profitability. Liquidity requirements can be fine-tuned in a way that some of the liquidity risk that otherwise would imply externalities can be internalised: higher liquidity requirements can be imposed on liabilities that have short maturities, are volatile, or are close substitutes for foreign assets. A further advantage over reserve requirements is that banks can be allowed to deposit their liquidity reserves abroad. Thus, they can be given broad responsibility for the management and use of their liquidity reserves, which is likely to contain moral hazard more than with reserve requirements, and therefore may limit the need for discretionary central bank intervention<sup>98</sup>.

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Higher reserve requirements for banks can prevent increases in the money multiplier with the potentially destabilising effects. See Fuhrmann/Richert (1995), p. 1038.

<sup>96</sup> See Balino/Enoch (1997), p. 20.

<sup>97</sup> See Balino/Enoch (1997), p. 23.

<sup>98</sup> In addition, systemic stability can be enhanced via the imposition of an autonomous deposit insurance fund with limited coverage, funded by the banks themselves. Moral

#### 4.4.2 Clearing and Day-to-Day Monetary Operations

As pointed out, the design of a pure currency board does not include any engagement in operations with the financial sector other than the exchange of foreign reserves against domestic currency. As this implies a complete loss of control over interest rates, a country with an orthodox currency board has to rely on a functioning financial sector, that is able to provide for a proper and timely allocation of liquidity and a smooth adaptation to interest movements. In the absence of a strong and sophisticated financial sector, it may again be justifiable to deviate from the orthodox principle in the design of payment systems and monetary arrangements in a way that allows coping with the limitations imposed by the currency board while sticking to its commitment to refrain from discretionary action<sup>99</sup>.

For example, allowing banks to hold their settlement accounts with the monetary authority and granting their unconditional convertibility at the official exchange rate facilitates a smooth handling of liquidity fluctuations. To facilitate the provision of fully backed liquidity for commercial banks, the currency board may use foreign exchange swaps, which facilitate short-term capital flows and promote interest rate arbitrage<sup>100</sup>.

More conflicting with an orthodox currency board design are provisions of standing liquidity facilities (for instance a Lombard window) or conventional open market operations. While they can be used to facilitate settlements, meet daily changing liquidity requirements and promote the adaptation of domestic interest rates to changes in foreign interest rates, the implied room for discretion potentially can undermine a currency board's credibility. It is

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hazard can be limited by making insurance premiums dependant on the riskiness of each bank's portfolio. See Hanke/Schuler (2000), p. 66.

<sup>99</sup> See Bennett (1994), p. 199-200.

<sup>100</sup> While this intention does basically not contradict a pure currency board's objective, there is some risk that swaps may be used to postpone necessary policy actions, hence that they offer some discretionary leeway, and that they would be costly should the exchange rate peg have to be changed. See Balino/Enoch (1997), p. 20.

important that such facilities are not used to gain control over the level of interest rates, since this would interfere with the mechanism through which banks equilibrate the distribution of monetary assets and liabilities. Accordingly, such operations have to be limited in scope and clearly defined.

#### **4.4.3 Lender of Last Resort Function**

As already pointed out, a pure currency board does not include any room for lender of last resort operations. In signalling that the maintenance of the fixed exchange rate is the overriding goal, the abstinence from intervention is an important determinant of the credibility of a currency board. It is thought to promote the soundness of the banking system by enforcing market discipline, limiting moral hazard and inducing banks to limit their risk exposure.

It is, however, impossible to obtain a complete reduction of banks' risk to failure. This is especially true where the banking system is (still) weak or where it is exposed to adverse external shocks. The risk is that a financial crisis undermines the currency board's political backbone and finally leads to its collapse. Most currency boards, therefore, hold a limited "safety margin" of excess reserves, kept aside for interventions in accordance with the currency board rules in order to gain some flexibility<sup>101</sup>.

Unlike with other features of a currency board, the trade-off between credibility and flexibility does not seem so obvious for the lender of last resort issue. As long as sufficient reserves are available, some flexibility can, on the one hand, strengthen confidence in the domestic banking sector, add credibility to the currency board, and enhance its sustainability. On the other hand, it may limit its transparency, which might work against its credibility

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<sup>101</sup> Given a sound financial sector, the foreign exchange set aside for lender of last resort support can also originate from a common pool of commercial bank funds. Other possibilities to ensure the availability of funds in case of need are mutual support agreements with monetary authorities of other countries, or lines of credit with foreign banks, guaranteed by the currency board on behalf of domestic banks. See Balino/Enoch (1997), p. 23.

again. It might signal investors that the stability of the domestic banking system is deemed a goal superior to the maintenance of the exchange rate, which might evoke capital flight<sup>102</sup>. The exposure to moral hazard, a problem inherent in any constellation where economic agents can expect to be bailed-out in case of liquidity problems, is a further danger. It cannot be completely excluded<sup>103</sup>, as even under a credible currency board it can be rationally expected that in the case of a systemic crisis authorities will eventually rescue banks in order to limit the damage and to prevent a collapse of the currency board.

These challenges for a currency board's sustainability can be limited to the degree that the excess reserves held for this purpose are strictly confined and rules for their use are transparent and clearly defined. Besides the general need for proper prudential regulations and supervisory arrangements designed to reduce the need of lender of last resort operations in the first place, even these operations should rather address systemic problems in the banking system than bail-out single insolvent banks<sup>104</sup>.

Another possibility is to transfer the lender of last resort function to the government, or even leave it to world capital markets<sup>105</sup>. Again, as with the currency board itself engaging in limited lender of last resort activities, the government will be able to deliver such support only to the extent that it disposes of foreign reserves, ideally accumulated over time through profit transfers from the currency board, or granted from external creditors. The advantage of such a constellation may be that the strict separation of the lender of last resort function from the currency board may increase the credibility of the arrangement<sup>106</sup>.

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<sup>102</sup> See Eichengreen (1996), p. 239.

<sup>103</sup> See Dolmas/Zarazaga (1996), p. 2.

<sup>104</sup> See Bennett (1994), p. 201.

<sup>105</sup> See Dornbusch (2001), p. 239.

<sup>106</sup> See Humpage/McIntire (1995), pp. 8-9, and Hanke/Schuler (2000), p. 65.

A further and potentially very important factor limiting the need of lender of last resort operations is a high proportion of branches of foreign-owned banks within the domestic banking sector<sup>107</sup>. Branches of foreign banks generally face an elastic supply of reserve currency from their parent. Moreover, branching generally encourages diversification within the banking sector and the development of interbank lending markets. Thus, an open and minimally regulated banking sector reduces the likelihood of banking crises and the need for lender of last resort assistance<sup>108</sup>.

#### **4.5 Conduct of Fiscal Policy**

As pointed out, a pure currency board issues money solely on the base of foreign reserves, and does not hold domestic assets. This means that any form of government financing through the monetary authority is precluded. As any fixed exchange rate regime, a currency board has to rely on the support of fiscal policy. Given the main motivation of a currency board to stop inflation, beforehand typically created through extensive central bank financing of the government, this restriction represents a cut that is elementary for the establishment of a currency board's credibility<sup>109</sup>.

Before the adoption of a currency board, governments typically faced soft budget constraints, i.e. were able to obtain funding through fresh money printed by de facto dependant central banks. Now they have to do without the previously earned inflation tax to finance fiscal deficits and instead have to rely on "open" sources of tax income<sup>110</sup>. This means that they are forced to consolidate budgets via tax increases and/or spending cuts, or to attract funds

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<sup>107</sup> A currency board, by largely eliminating exchange rate risk, is supposed to generally encourage branch banking, especially with large, global banks headquartered in the reserve country.

<sup>108</sup> See Humpage/McIntire (1995), p. 8.

<sup>109</sup> See Enoch/Gulde (1998), p. 6.

<sup>110</sup> See Roubini (1998), p. 14.

from domestic or international borrowers<sup>111</sup>. When relying on domestic sources of finance, e.g. loans from commercial banks, governments have to keep their borrowing requirements sufficiently low so as not to crowd out banks' lending to the private sector. Thus, a credible currency board makes governments (supposed they regard the costs of default as prohibitive) face the need to keep public borrowing requirements at or near zero, i.e. it imposes hard budget constraints<sup>112</sup>.

If, as in most countries, fiscal policy is not concentrated upon a single centralized authority, then municipal, state or provincial, and central fiscal authorities have to agree on a common consolidation policy, which risks to be exposed to political dispute. Currency boards therefore might work better in countries where the fisc is centralized, or at least effective co-ordination mechanisms among the different fiscal levels are in place<sup>113</sup>.

Again, modern currency boards sometimes make modest compromises with respect to the budget constraint, and allow a certain proportion of backing assets to be held in government debt denominated in the reserve currency. Although the credibility of the fixed exchange rate depends on the assets used to back it being external, limited and sufficiently small proportions of government debt, denominated in terms of the reserve currency, may stay without harm to the currency board's credibility<sup>114</sup>.

Another problem to solve is how both day-to-day liquidity management and longer-term management of government debt, typically previously done by the monetary authority<sup>115</sup>, should be organized under a currency board. It

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<sup>111</sup> However, a credible currency board is able to compensate for the loss of inflation tax by lower interest rates and reduced debt service costs. See Dornbusch (2001), p. 239.

<sup>112</sup> See Hanke/Schuler (2000), p. 13.

<sup>113</sup> See Eichengreen (2001), p. 272.

<sup>114</sup> See Bennett (1994), p. 198.

<sup>115</sup> Typical central banks hold and manage government deposits and provide overdraft provisions. However, movements in government deposits are associated with reserve changes that compromise the currency board.

seems clear that the purest and most transparent solution is not to allow the currency board to hold government deposits, but to pass government accounts as well as their management to commercial banks. If a currency board chooses to keep government deposits, possibly because the domestic banking sector is not (yet) able to undertake the related tasks, it should do so only under the conditions that government deposits are fully backed by foreign reserve holdings, that there are no overdraft provisions, and that interest is paid only if covered by the currency board's own interest income on reserve assets<sup>116</sup>.

The question of how to handle stocks of outstanding government debt is closely related. The most conform solution for a currency board would be to balance public budgets before its introduction, or to sell government debt to the market and stop buying new debt<sup>117</sup>. Open market operations related to government debt, such as the issuance and marketing of treasury bills, should be passed to the fiscal authorities<sup>118</sup>. It is then their responsibility to balance the maturity structure of government securities, and to keep the securities markets sufficiently liquid, a task that is all the more important when government securities are an important fraction of the banking system.

With exchange rate and monetary policy severely restricted under a currency board, the conduct of fiscal policy is crucial for the success and sustainability of a currency board. Fiscal policy in this context may take over some of the tasks normally ascribed to monetary and/or exchange rate management, as, for instance, the dampening of business cycles (though boosting cycles has to be subject to budgetary limits). During incipient debt

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<sup>116</sup> See Enoch/Gulde (1997), pp. 14-6.

<sup>117</sup> Where the currency board itself is divided into a banking and a currency department, the government debt can also be booked to the banking department in order to let the currency department operate as a pure currency board.

<sup>118</sup> Where organizational problems (e.g. staff qualification) exist, the currency board can also take over these functions passively, i.e. on a strict "fee for service" basis for the government.

crises, fiscal policy can help restore confidence by reducing structural deficits. Fiscal surpluses can reduce the country's dependence on foreign savings and build up its international reserves position<sup>119</sup>.

#### 4.6 Institutional Preconditions

The core of a currency board's credibility, as opposed to the credibility of a purely fixed exchange rate, is the legal and institutional anchoring of the arrangement, meant to erect high obstacles to any change. A maximum degree of credibility is obtained by including the currency board into the country's constitution, or by requiring a parliamentary supermajority to reverse the arrangement. On this basis, a currency board law (sometimes named central bank law) defines the new monetary regime. This law can be very simple and short<sup>120</sup>. It has to define the exchange rate and the reserves, the structure as well as the activities (and their limitation) of the monetary authority. Especially, it has to settle the currency board's relation to the government<sup>121</sup>. Finally, it has to rule that a well-defined set of statistics is to be published regularly, in order to establish a maximum of transparency.

The legal fixing of the exchange rate with the self-commitment of the monetary authority to sell foreign exchange at the defined rate is an important, but not sufficient precondition for the credibility and sustainability of a currency board: laws and even constitutions can always be changed when the political impetus exists. Nevertheless, the design of the legal setting can play an integral role in determining the degree of credibility. Especially, credible rules

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<sup>119</sup> See Balino/Enoch (1997), p. 18.

<sup>120</sup> Hanke and Schuler recommend a very detailed and rigid currency board design and give a corresponding model for a currency board law. See Hanke/Schuler (2000), pp. 58-64 and 73-6.

<sup>121</sup> E.g., to demonstrate the currency board's sterility against government influence, it can be incorporated and required to hold its reserves abroad (e.g. in the reserve country or another "safe haven" country), or be required to include a majority of foreign board members.

defining the behaviour in situations of distress or of adverse external developments can add substantially to the credibility of a currency board<sup>122</sup>.

Despite its simplicity, the setting up and enacting of the legal framework requires time and comprehensive information of the political decision makers, and, to be credible, broad and unequivocal support of a large political majority<sup>123</sup>.

One of the biggest obstacles towards making a currency board credible is doubt about the soundness of the banking system. Therefore, along with the reduction of monetary policy functions of the currency board, especially its lender of last resort function, commercial banks have to be prepared for the new regime in order to make them as sound as possible, and to enable them for interbank markets that now have to function without permanent central bank intervention. As pointed out above, comprehensive prudential regulations as well as banking and stock market supervision, accounting standards, disclosure requirements, bankruptcy laws, and the payments system belong to the most important issues to be revised and strengthened. Where there is no realistic prospect for banks to comply with the new standards, the supervisory authority should be prepared to close them down. Privatising state-owned banks and allowing foreign banks to open branches in the country increases competition and efficiency, and reduces the need for lender of last resort activity, since branches of foreign parents generally will be granted liquidity assistance from abroad<sup>124</sup>.

Further institutional conditions, though not directly related with the establishment of the new monetary constitution, arise from the interdependencies between the monetary and the real sectors of the

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<sup>122</sup> E.g., Hanke and Schuler propose a rule according to which prolonged periods of strong deflation or inflation in the reserve country, both in degree and duration exceeding clearly defined ranges, force the currency board to either revalue or choose a new reserve currency. See Hanke/Schuler (2000), pp. 63-4.

<sup>123</sup> See Enoch/Gulde (1997), pp. 7-9.

<sup>124</sup> See Enoch/Gulde (1997), pp. 12-3.

economy, and typically require broad structural reforms. Most important, with a fixed exchange rate, the adaptation to real shocks has to occur via changes in prices and wages rather than via changes in the exchange rate<sup>125</sup>.

Sustainability of a currency board therefore requires deregulated goods and labour markets that are flexible enough to absorb the effects of, say, an outflow of reserves that causes the money stock to decrease, interest rates to rise, and output and employment to shrink, through price and wage decreases, in order to re-establish internal and external balance<sup>126</sup>.

Besides a broad deregulation of prices and wages, trade liberalization is necessary to strengthen market forces and optimise factor allocation. Since state-owned enterprises can no longer rely on the soft budget constraints they previously enjoyed, their privatisation not only brings about their market-oriented realignment, but also contributes to restore government budgets<sup>127</sup>. The promotion of capital and know-how imports is a prerequisite for the development of key industries in developing or transforming economies.

Generally, the rigid external anchor imposed by a currency board necessitates a streamlining of the real sector towards an internationally competitive and export-oriented economy, hence an economic alignment that requires a broad social consensus<sup>128</sup>.

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<sup>125</sup> See e.g. Broda (2001), p. 377, who examines the empirical evidence for the potential of the exchange rate regime to buffer real shocks.

<sup>126</sup> See Gulde/Kähkönen/Keller (2000), pp. 5-6.

<sup>127</sup> See Hanke/Schuler (2000), p. 13.

<sup>128</sup> See Fuhrmann/Richert (1995), pp. 1038-9.

## 5 Strengths and Weaknesses of a Currency Board

### 5.1 Strengths of a Currency Board

#### 5.1.1 Simplicity and Transparency

One major advantage over a central bank is a currency board's simplicity and transparency. As the currency board's conduct is reduced by a simple rule to quasi-mechanical behaviour, its function and motivation are easy to understand even for the broad public. Given an adequate information policy, its behaviour is completely verifiable and predictable. The straightness of the arrangement is directly tangible for the whole population, especially when the reserve currency already is in broad use as a parallel currency before the currency board's introduction, since foreign exchange transactions are simplified and freed from restrictions that typically prevailed before. In addition, the currency board's simplicity is underlined by the reduced need for staff and bookkeeping within the currency board.

Even where a currency board deviates from an orthodox design, and engages in certain regulatory, open market, or lender of last resort activities (as described above), its operations are clearly defined and limited in scope, thus easy to monitor<sup>129</sup>. This eliminates uncertainty and creates a calculable monetary framework for economic activity.

#### 5.1.2 Credibility

A currency board's main objective is the installation of credible disinflation policies. The credibility of stabilization policies decides over their success and sustainability.

With inflation being to a great part the result of economic agents' inflation expectations, typically shaped by past experiences of lax fiscal policy, accommodative monetary policy, and failed stabilization attempts, the

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<sup>129</sup> See Balino/Enoch (1997), p. 6.

adoption of a currency board, by almost instantaneously eliminating the scope for inflationary policies, can quickly restore policy credibility and provide clear signals for the revision of expectations. The main determinant of this kind of credibility is the severe self-restriction of the government and the preparedness to surrender flexibility for the sake of credibility<sup>130</sup>.

For countries lacking a well-established track record of price stability, less strict ways towards building up credibility, e.g. through the self-commitment of an autonomous central bank, are very time-consuming and often doomed to fall victim to speculative attacks<sup>131</sup>.

### 5.1.3 Currency Stability

Short to official dollarization, a currency board establishes the closest link of the domestic currency to an external anchor. It introduces a high degree of substitutability between anchor and domestic currency, or, put differently, it imports the reserve currency's stability.

The convergence of domestic towards reserve country inflation rates is the result of the built-in automatic monetary adjustment mechanism of a currency board: a higher price level in the currency board country leads to a balance of payments deficit, reserve outflows and a shrinking monetary base, which causes a rise in interest rates that exerts a correcting deflationary pressure, which again improves the balance of payments<sup>132</sup>. Inflation differentials between anchor and domestic currency widely disappear, or, where they persist to limited degrees, reflect real rather than purely monetary developments (e.g. higher growth rates in the currency board than in the reserve currency country).

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<sup>130</sup> See Eichengreen (1996), p. 239.

<sup>131</sup> The experience of the Mexican peso crisis in 1995 is an example how coherent policy measures, though initially able to produce good results, were not enough to constitute a lasting credible monetary policy reputation. See Humpage/Owen (1995), p. 2.

<sup>132</sup> This is the famous price-specie-flow-mechanism first described by David Hume.

In the same way, nominal wage growth approaches the respective wage growth rates in the reserve country, plus an allowance for productivity gains. Real wages in a currency board country therefore can increase quickly when productivity increases<sup>133</sup>.

#### 5.1.4 Interest Rate Convergence

Along with currency stabilization, one of the main benefits of a currency board is that it promotes the convergence of domestic interest rates to reserve currency levels<sup>134</sup>. This is, like the convergence of inflation rates, a direct consequence of the automatic monetary adjustment mechanism, according to which a supposed flight into the reserve currency will cause the domestic monetary base to shrink and domestic interest rates to rise until a level is reached where holding local currency becomes again attractive. Remaining risk premia demanded for holding domestic currency reflect the state of confidence in the stability of the domestic currency's purchasing power. They are supposed to decrease with successful stabilization<sup>135</sup>.

Risk premia are composed of country and currency risk. Currency risk can be described as the probability of exchange rate realignment. It can be measured as the differential between interest rates granted in the currency board country for domestic as opposed to reserve currency deposits. Country risk, in contrast, reflects the political, legal, and/or economic risks prevailing in a country. It can be assessed comparing the interest rates of reserve currency deposits (or, as well, reserve currency money market rates) in the currency board country with those in the reserve country<sup>136</sup>. Currency and country risk cannot be completely separated: the higher the currency risk (i.e. the risk that the exchange rate is changed), the higher the perceived country risk, as economic and political conditions of the currency board country would be

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<sup>133</sup> See Hanke/Schuler (2000), p. 38.

<sup>134</sup> See Dornbusch (2001), p. 240.

<sup>135</sup> See Fuhrmann (1999), p. 92.

<sup>136</sup> See Balino/Enoch (1997), pp. 32-4.

severely affected by a change in the exchange rate. Similarly, a higher country risk (e.g. because of rising banking sector problems, or following external shocks) will immediately spill over to a higher currency risk by adding pressure to the currency. Therefore, for instance, as long as there is an institutional possibility that the currency board could be changed, or that banks may get illiquid (both of which cannot be completely excluded), a certain risk premium will always remain, even if a currency board is doing well<sup>137</sup>.

Bank rates, particularly long-term lending rates, in the currency board country often remain significantly above respective rates in the reserve currency country. This is to be explained mainly with higher domestic credit risk, different lending policies, lacks in transparency, and possibly unsound banks. Over time however, in the course of stabilization and institutional reforms, risk premia should decline substantially.

Besides the beneficiary effects of lower interest rates on domestic investment and public households, interest rates converging to international levels due to reduced exchange rate uncertainty and the perception of orderly monetary conditions help promote international trade and access to international capital markets, and so facilitate international integration that is a prerequisite for a currency board country's growth.

Compared to conventional fixed pegs, these benefits seem to be clearer, because the adoption of a currency board implies that the government is generally more adept to strengthen policies overall, which results not only in lower interest rates demanded by investors but also in smaller interest rate changes (and concomitant costs for the economy) necessary to adjust to changes in monetary conditions<sup>138</sup>

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<sup>137</sup> See Bennett (1994), p. 206.

<sup>138</sup> See Balino/Enoch (1997), p. 9.

### 5.1.5 Financial Intermediation

The credibility of a currency board is supposed to strengthen the financial sector and stimulate financial intermediation and remonetization of the economy, measurable in increasing ratios of broad money to GDP, growth rates of credit to the private sector, and ratios of deposits to broad money.

This is the mainly result of three effects, the first resulting from the abstinence of the monetary authority to provide a financial safety net and from the concomitant reduction of moral hazard for banks that cannot any longer rely on being bailed out by the authorities via devaluation of the domestic currency. This works to induce them to more responsible risk taking in liquidity, currency, and maturity terms. The absence of a central liquidity provider also stimulates and intensifies interbank lending<sup>139</sup>.

Second, a credible currency board leads to a lengthening of agents' horizons<sup>140</sup>, and hence to a return of domestic and international long-term lending to domestic banks and firms, which previously had been discouraged by the prevailing currency risk. Financial and real sectors get more liquid, and currency risks resulting from domestic currency assets and foreign currency liabilities in banks' and firms' balances are covered by the exchange rate commitment. Similarly, maturity mismatches arising from long-term investments that under the previous conditions of distrust and exchange rate uncertainty had to be forcibly financed by short-term loans, are reduced when currency risk is eliminated<sup>141</sup>.

Finally, ameliorating economic and financial conditions work to attract international banks to open up business in the currency board country, leading to enhanced competition, a more efficient financial sector and real credit growth. In short, a currency board, by eliminating exchange rate

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<sup>139</sup> See the respective comments in the section "Constitutional Elements". The question of whether a strong financial sector is an effect or a precondition of a credible currency board will be addressed below.

<sup>140</sup> See Dornbusch (2001), p. 240.

<sup>141</sup> See Eichengreen (2001), p. 269-71.

uncertainty, is expected to encourage the development of a sophisticated financial sector that serves the needs of a growing and diversifying local economy striving to intensify its integration into the world economy.

## 5.2 Weaknesses of a Currency Board

Not surprisingly, the weaknesses of a currency board are the flip side of its strengths. Most notably, the fixed parity can become an obstacle to adequately respond to large exchange rate misalignments. Similarly, the rigid backing rule makes the financial system vulnerable in case of crises. Operational simplicity in central banking rules out important and otherwise possibly beneficent central bank functions. Finally, by preventing the government from lending from the currency board, an immediate fiscal consolidation is required that may be difficult to realize.

### 5.2.1 Nominal Exchange Rate Rigidity and Exchange Rate Misalignments

One of the biggest threats arising for the sustainability of a currency board is the danger of a growing misalignment of the real exchange rate<sup>142</sup>. A post stabilization boom, as often experienced after successful stabilization, may lead to a positive growth rate differential between currency board and reserve currency country. As a consequence, price levels in the currency board country, although approaching reserve country levels, often remain well above reserve (or trading partner) country levels due to higher demand for goods and services, which leads to decreasing competitiveness<sup>143</sup>. Other factors contributing to inflation differentials over the reserve country level can be increased productivity due to the opening up of the economy<sup>144</sup>, or high capital

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<sup>142</sup> See Roubini (1998), p. 5-8.

<sup>143</sup> Especially prices of nontraded goods, being in inelastic supply, often rise faster than in the reserve currency country.

<sup>144</sup> This is true for the so-called productivity bias that results from differential productivity growth within an open economy. With fixed nominal exchange rates, realized productivity gains in the tradable sector result in wage increases, which are transmitted to the nontradable sector. If productivity growth in the nontradable sector is less, this leads to

inflows due to the newly perceived macroeconomic stability of the country. Also, an initial undervaluation of the exchange rate, while partly chosen to provide room for inflation inertia, may by itself contribute to initial inflation<sup>145</sup>. An appreciation of the real exchange rate (defined as the quotient of nominal exchange rate and price level) is the result.

While exchange rate misalignments are a problem for most exchange rate based stabilization programmes, they are a more serious concern for currency boards as the option of adjustment of the nominal exchange rate, i.e. devaluation, is barred. The correction of a misalignment therefore has to occur via the adjustment process over the balance of payments: a deterioration of the balance of payments (in the current and/or the capital account), a shrinking monetary base, and price and wage deflation<sup>146</sup>. Where prices and wages are sticky, the adjustment effectuates prolonged periods of tight liquidity and high unemployment, which again can challenge the sustainability of the currency board.

Nominal exchange rate rigidity also makes a currency board country more vulnerable to external shocks or to an instable reserve currency. E.g., with incongruent business cycles prevailing in the two countries, changes in monetary conditions in the reserve currency country may lead to situations where interest rates of the reserve currency country are too high or too low for the current economic situation in the currency board country. The currency board then, in effect, has procyclical effects: imported interest rates that are too low for a booming currency board country can aggravate already prevailing inflationary pressures, too high interest rates intensify a monetary and real contraction<sup>147</sup>. When the value of the reserve currency changes in

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increasing prices for nontradables and to inflation, which, if productivity growth in the reserve country is less, exceeds inflation in the reserve country. See Hanke/Schuler (2000), pp. 38-9.

<sup>145</sup> See Williamson (1995), p. 22.

<sup>146</sup> See Enoch/Gulde (1998), p. 2.

<sup>147</sup> See Williamson (1995), pp. 24-5.

relation to the currencies of other trading partners, similar costs are incurred: a weakening reserve currency then results in a depreciation of the currency board currency vis-à-vis its other trading partners and hence in an inflationary bias, and vice versa in the case of an appreciation of the reserve currency. As pointed out above, the design of a currency board, and especially the choice of the anchor currency, decide to a great extent over the exposedness to external shocks.

### **5.2.2 Financial Fragility in the Absence of a Lender of Last Resort**

Compared to conventional fixed exchange rates, the financial system has the overall preconditions to be less fragile under a currency board: sufficient foreign reserves have to be maintained to ensure convertibility, and bank runs motivated by expectations of exchange rate realignments are discouraged. Although this reduces the probability of bank runs, their occurrence is still possible. If one occurs, a currency board is more vulnerable than a system with central banking, since it is largely deprived of instruments to deal with crises (namely of lender of last resort functions)<sup>148</sup>. Comparatively small disruptions in the financial sector can spread fast and even lead to a national financial panic when the knowledge about the absence of any lender of last resort assistance accelerates bank runs<sup>149</sup>.

A currency board grants full convertibility for notes and coins, but not for deposits. Therefore, although banks may keep sufficient reserves to meet “normal” conversion demands, a bank run, (i.e. a sudden increase in the currency-deposit ratio of the public) may make them unable to honour requests for deposit withdrawals. Selling liquid domestic assets may help single banks, but do nothing to solve systemic crises, as it leaves the overall reserves base unchanged. While increasing interest rates offer a short-term

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<sup>148</sup> See Roubini (1998), p. 2-3.

<sup>149</sup> See Zarazaga (1995b), pp. 17-8.

solution, over time they damage confidence in the sustainability of the currency board<sup>150</sup>.

Improperly managed public debt is another source of instability. If large proportions of public debt are outstanding in the short term, this may lead to speculative attacks exposing the government to a debt crisis even if the levels of public indebtedness are sustainable. In turn, when government securities form an important part of banks' liquidity, such a debt crisis may also trigger a banking crisis.

As becomes evident, in the absence of a lender of last resort, a currency board's fragility in case of financial crises increases with high capital mobility, a weak (or weakly supervised) banking sector, a dominance of local banks without access to foreign funds, and weaknesses in the structure of public debt.

### **5.2.3 Loss of Other Central Bank Functions**

Besides being restricted in its function to deal with financial crises, a pure currency board also refrains from other central bank functions, such as day-to-day monetary management and the settlement of payments.

A currency board is designed to leave liquidity adjustment to capital flows and interest rate arbitrage within the financial sector. However, unless financial markets are highly developed, market imperfections, transaction costs, and credit risk account for high volatility and intermediation spreads, which penalize capital flows and hamper arbitrage. Consequently, though capital account transactions may be fully liberalized and interest rates may generally follow international movements, capital flows may be unable to fully arbitrage interest rates with sufficient speed. Ensuing short-term liquidity mismatches then negatively affect financial and exchange markets, subject the economy to unnecessary fluctuations, and possibly undermine the

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<sup>150</sup> Empirically, persisting and high interest rate differentials to reserve currency levels, especially for long-term deposits and loans, generally reflect prevailing expectations of banking crises or a collapse of the currency board. See Balino/Enoch (1997), p. 15.

currency board's credibility. This is why most modern currency boards do engage in day-to-day monetary operations to smooth out adjustment to short-term liquidity imbalances.

Similarly, under a pure currency board, clearing and settlement services are provided by the private sector. Then, settlement failures are possible, especially when the currency board provides no lender of last resort assistance. Again, deviating from the orthodox design and allowing banks to settle in the books of the currency board reduces this risk<sup>151</sup>.

#### **5.2.4 Constraints on Fiscal Policy**

Currency boards promote, but cannot guarantee fiscal discipline<sup>152</sup>. With central bank financing precluded, fiscal deficits can still be (typically to a much larger part than before) financed via debt issue on domestic and international capital markets, or through payment arrears. While all fixed exchange rate arrangements require sound public finances, a currency board is especially vulnerable in the case of fiscal indiscipline<sup>153</sup>.

Under a currency board, substantial fiscal deficits, if financed by foreign capital, exert an inflationary pressure on the economy, as the inflow of reserves increases the monetary base. Even if financed domestically, by crowding out private financing needs and driving them towards international markets, fiscal deficits have an inflationary impact and lead to an appreciation of the real exchange rate. They can thus compromise the currency board's sustainability, and even lead to its abandonment in case of a debt crisis. As a currency board does not engage in accommodating treasury bill markets, short-term fluctuations in treasury cash flows may occur and create additional stress for public finances<sup>154</sup>.

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<sup>151</sup> See Balino/Enoch (1997), p. 17.

<sup>152</sup> See Roubini (1998), p. 15.

<sup>153</sup> See Williamson (1995), p. 16.

<sup>154</sup> See Balino/Enoch (1997), p. 18.

In the worst case, where governments cease to accept their financial subordination to the monetary regime, there is a possibility that they might “raid” the currency board in one form or another, e.g. by demonetising the currency board currency and issuing an own parallel currency. Therefore, although a currency board is able to reinforce an existing political commitment to fiscal discipline, it is jeopardized when such commitment is fading<sup>155</sup>.

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<sup>155</sup> See Williamson (1995), pp. 28-9.

## 6 Considerations for Adopting a Currency Board

### 6.1 When is a Currency Board an Appropriate Choice?

As Fuhrmann (1999) notes, there is no theory that would predict under which circumstances and preconditions the introduction of a currency board is an optimal strategy<sup>156</sup>. In this context, most economists refer to a number of criteria that stem from the theory of optimal currency areas, supplemented by some arguments that take account of the special application of a currency board as a stabilization vehicle.

(1) Only small and open economies benefit from an external nominal anchor. For an open economy (i.e. one with a high proportion of imports and exports to GDP), exchange rate uncertainty induces greater costs than for a closed economy, and fixing the exchange rate will to a greater extent imply a fixing of the price level. Since small economies tend to be more open, both criteria are intertwined<sup>157</sup>. Therefore, the argument holds, for small economies with the typical low degree of diversification, the best strategy is to choose fixed exchange rates in order to adapt to international price structures and maximise the advantages that arise from the international division of labour<sup>158</sup>. Consequently, the argument holds, only small economies should adopt a currency board. (2) When shocks tend to hit the pegging and the pegged-to country symmetrically, the real costs caused by the adjustment process with fixed exchange rates are minimised for the pegging country, whereas a higher probability for asymmetrical shocks would rather be an argument for flexible

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<sup>156</sup> See Fuhrmann (1999), p. 86.

<sup>157</sup> Note that the criterion of country size is to be understood in economic, not geographical terms. E.g., Hong Kong, though geographically tiny, has to be regarded as a large “country” whereas Argentina, though geographically big, is a comparatively small economy in terms of GDP.

<sup>158</sup> See Fuhrmann/Richert (1995), p. 1036.

exchange rates<sup>159</sup>. (3) High factor, especially labour, mobility between pegging and pegged-to country is desirable for a country with fixed exchange rates as it facilitates the adjustment process and contributes to price level equilibration<sup>160</sup>. (4) If there are aspirations of a country to integrate into a common trade area (or to prepare to join a currency area), a currency board with its highly credible fixed exchange rate may ease such integration more than strategies with central banks and simply pegged exchange rates. (5) Lacking central banking experience of a country delivers a further argument for a currency board because of its simplicity of operation as well as the high degree of credibility of its strictly rule-bound activities. (6) Finally, for a country with a record of credibility-lacking monetary policy, of high and persistent inflation, of currency crises, and of high risk premiums required by international investors, a currency board with its high credibility and almost instant anti-inflationary impetus can provide an effective cure<sup>161</sup>.

An additional criterion in this context may be the existence of a “natural” anchor currency, i.e. of a major reserve currency that fulfils the requirements of a suitable anchor<sup>162</sup>. At the margin, the lack of such a natural candidate to peg to may provide the decisive argument against a currency board<sup>163</sup>.

The consideration of the suitability of a currency board for a country extends to an evaluation of the expected advantages and disadvantages of a currency board for the specific case. Some shortcomings in the starting position of a currency board country can certainly be addressed by precautionary measures, e.g. by allowing for a limited lender of last resort

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<sup>159</sup> An additional consideration in this context refers to the assumption that a currency board (or a common currency) increases economic integration between the countries and so works to synchronize shocks and cycles, thereby increasing its advantageousness. See Alesina/Barro (2001), p. 383.

<sup>160</sup> See Williamson (1995), p. 23.

<sup>161</sup> See Balino/Enoch (1997), p. 6.

<sup>162</sup> See the above discussion about the choice of anchor currency.

<sup>163</sup> See Williamson (1995), p. 24.

capacity, or by promoting the entrance of foreign banks into the financial sector in order to partly compensate for a still weak banking sector. Other risks are potentially harder to address such as the dangers related with substantial and lasting real appreciation that may translate into long-term risks difficult to assess in terms of growth, income, and employment.

Therefore, even if a country clearly appeared to be a candidate for a currency board, it should have become clear that adopting one would be far from automatically providing stability. The advantages of a currency board materialize only when supported by the described sustainable structural and macroeconomic, especially fiscal policies. Indeed, adversaries of the currency board idea argue that stability can be achieved by the very disciplined policies without the need to establish a currency board in most countries, given a sufficient time horizon<sup>164</sup>.

However, and this is an argument that even currency board opponents concede, a currency board can deliver stability quickly, and in this respect is superior to a central bank that has to build up its own credibility over long periods. Put differently, for transformation economies without any track record of credibility, and for confidence-lacking high-inflation economies, a currency board's present value is higher than a central bank's, with a central bank solution facing higher "sunk costs" and barriers to entry than a currency board<sup>165</sup>. All the more for a hyperinflation country that is already looking back on several failed stabilization attempts (such as Argentina was in the late 1980s): here the complete erosion of credibility can arguably provide an all or nothing situation where the adoption of a currency board seems to be the only chance to break the ever-accelerating cycle of inflation and depreciation<sup>166</sup>.

In such a case, with the ills to cure so large, the potential remedy may justify very high costs even if the country is not in every respect an optimal

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<sup>164</sup> See e.g. Roubini (1998), p. 16.

<sup>165</sup> See Fuhrmann/Richert (1995), p. 1038.

<sup>166</sup> See e.g. Williamson (1995) p. 34, or Zarazaga (1995b), p. 22.

candidate for a currency board. The challenge for such a country then will be to reap the currency board's short-term benefits without putting at risk the country's long-term position by not taking account of the currency board's potential dangers. Explicitly trying to re-direct trade flows in order to improve the anchor's long-term suitability, or else planning a timely exit after successful stabilization may belong to some possible alternatives to counteract these risks.

## 6.2 Implementation of a Currency Board

Although it is undisputable that the success of a currency board depends on strong supporting policies, the extent to which they are taken to be indispensable at the time of a currency board's introduction is subject to discussion. The statement that strong macroeconomic policies, a strong banking system, and flexible labour and goods markets are prerequisites for a sustainable currency board is in this form unquestionable. On the other hand, it is just these qualities a country aspires to obtain via the adoption of a currency board. There is some general evidence that a hard peg by itself is able to boost financial sector, fiscal and labour market reform<sup>167</sup>. Therefore, earmarking these reforms as being indispensable preconditions to be fulfilled by a country that is only beginning to solve its severe problems of transformation or hyperinflation seems at least problematic.

A certain qualification can be made according to the notion that among the prerequisites for a sustainable currency board, some are clearly indispensable for the start, whereas others that primarily aim at protection against potential shocks can be left for implementation (or improvement) when the currency board is already in place. The first, indispensable, category doubtlessly comprises a sufficient level of reserves to grant the conversion commitment, a sound fiscal policy stance, and a satisfactorily robust banking system. In

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<sup>167</sup> Eichengreen addresses this issue for the regime of official dollarization. He finds that the case for dollarization accelerating financial market and fiscal reform is strong, whereas its effect on labour market reform remains ambiguous. See Eichengreen (2001).

contrast, efforts such as installing an efficient banking supervision or making labour laws more flexible can (but should rapidly) be made after the installation of the currency board<sup>168</sup>.

Clearly, the risk is that with the experience of a possible initial stabilization boom following the currency board's introduction, politically queasy reforms such as revising labour laws may be postponed or pushed through half-heartedly. Neglecting these reforms can contribute to substantial exchange rate misalignments and to high real costs including rising unemployment, which again can put the currency board under social and political pressure. The necessary political and social consensus for these reforms is easiest to obtain at the start of the currency board, when the pains of the previous regime are still felt and the preparedness to agree on hurting measures is biggest. This at least should provide the decisive argument for carrying out all, and especially the politically tricky, reforms as quickly as possible.

This leads us to the consideration of two principal alternatives for the implementation of a currency board. The first is to introduce the new monetary regime in a kind of shock therapy, with the "shock" most eminently manifested in a sudden fixing of the exchange rate without a previous period of floating against the reserve currency. As pointed about above, the main problem is to find evidence for the "appropriate" exchange rate in terms of market conformity. The exchange rate therefore can only reflect an estimate that, if far from the imminent market rate, may not be accepted by the markets and induce potentially harmful capital movements. If the introduction of a currency board goes in parallel with a currency reform, the exchange rate of the new currency board currency in relation to the old currency has to be set simultaneously, which implies similar problems<sup>169</sup>.

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<sup>168</sup> See Balino/Enoch (1997), pp. 18-9.

<sup>169</sup> An overvaluation of the old currency in relation to the new one can create a monetary surplus that may challenge reserves and negatively influence distribution. A strategy of parallel currencies, with old and new currency floating against each other over a limited period, can moderate distribution conflicts. See Fuhrmann/Richert (1995), p. 1036.

The alternative to a shock therapy is a gradualist approach, which implies the announcement to introduce the currency board at a later date while allowing the currency to float freely against the reserve currency during the interim period. The advantage of this approach is that markets are expected to deliver an unequivocal notion of the appropriate exchange rate. For high inflation economies with a record of failed stabilization policies, however, the problem will be to furnish the announcement with a maximum degree of credibility, in order not to evoke expectations of just another policy announcement that later will be abused for surprise inflation by the government (the time inconsistency problem). An announcement lacking credibility (because not immediately translated into visible action) would doom the preparation of the currency board's introduction and lead to capital flight and continuing devaluation of the domestic currency<sup>170</sup>.

Further limitations to the gradualist approach arise from the problems of timing and sequencing of different reform elements. For instance, with the usually high proportion of administered prices in both transformation and high inflation economies, the revelation of the "appropriate" exchange rate is limited to the extent that sovereign price fixing is not eliminated prior to the floating period. Price structures then are not yet adapted to the new regime, and the market equilibrium exchange rate does not equal the level that also would incorporate system conformity. Similar issues apply for fiscal reforms that require higher taxes and hence lead to a higher price level. Both price liberalisation and fiscal consolidation should ideally be in place before the floating period in order to reap its advantages in terms of an appropriate exchange rate<sup>171</sup>. Both however require credibility, which may be challenged for a gradualist approach in high-inflation countries.

Therefore, gradualist approaches may be a more viable choice for transformation than for high inflation economies. As already pointed out, the

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<sup>170</sup> See Fuhrmann/Richert (1995), p. 1039.

<sup>171</sup> See Fuhrmann (1999), p. 89.

central advantage of a currency board is to be seen in its immediate effectiveness, an advantage that for high inflation countries may only be realizable by opting for some sort of shock therapy<sup>172</sup>.

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<sup>172</sup> See Fuhrmann (1999), p. 94.

## **7 Duration and Termination of a Currency Board**

Colonial currency boards functioned adequately over long periods. However, in terms of motivation, environment, and functioning conditions, they are not fully comparable to present-day currency boards. The long-term character of currency boards that survived from colonial times generally is not doubted even today. Currency boards introduced during the last two decades of the 20<sup>th</sup> century offer a mixed picture. Hong Kong's currency board is generally viewed as a permanent, i.e. long-term, arrangement, as probably was also Argentina's, whereas Estonia and Lithuania seem to provide examples of currency boards implicitly designed to govern a limited period of transition, in order to prepare their economies for an eventual membership in the European Monetary Union.

This section tries to qualify under which conditions a currency board can be viewed as a transitional or a permanent arrangement, and addresses the related question of when and how to exit from a currency board.

### **7.1 Currency Board: Permanent or Transitional Arrangement?**

Currency boards can be viewed and implemented as permanent arrangements when a currency board allows realizing trade and other benefits for a country that belongs to a common currency area. Likewise, when a country experiences a lasting phase of high inflation and real appreciation of its currency, and/or is systematically exposed to speculative attacks, a currency board can, and should, be designed and presented as a long-term arrangement.

In contrast, a currency board can be perceived as a transitional arrangement when a country experiences a transformation process from one economic regime to another, e.g. from socialist to market economy. Similarly, when a country faces a political regime change intending to stop deficiencies such as hyperinflation, money press funding of fiscal deficits, political

promiscuity<sup>173</sup>, or when a country faces other major institutional changes (e.g. the installation of a newly independent monetary authority that is still lacking a record of credibility), a currency board can be taken as an interim arrangement. In such cases, a currency board is expected to promote credibility and stability until a switch to a different exchange rate regime or monetary regime becomes feasible<sup>174</sup>.

Depending on the initial motivation for the installation of a currency board, therefore, the decision for and timing of an exit has to be chosen according to different criteria. If the currency board was introduced primarily as a transitional arrangement intended to give time and stability during the building-up of institutional conditions for a functioning central bank, or for the joining of a monetary union, then the degree to which those functions are brought into effect decides about the timing of an exit. The abandonment of the currency board then is a desired development.

Currency boards introduced to gain monetary credibility are different from the above insofar as the time for an exit is determined by the degree of credibility assumed to prevail after the termination of the currency board. Strong policies over a prolonged period of time are required to build up credibility. This implies also to endure exchange rate misalignments, which in itself carries substantial risk for the sustainability of a currency board. Especially in cases where a currency is overvalued, the currency board is prone to speculative attacks as well as to internal political pressures, which, if turning extreme, can not only make the currency board appear unsustainable, but also makes it difficult to choose the best time for an eventually unavoidable exit. The optimal exit point then would have to be gauged according to the achieved building-up of credibility over time on the one hand, and to internal and external pressures on the other hand, and would have to be viewed as an optimisation and the result of a trade-off.

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<sup>173</sup> See Williamson (1995), p. 34.

<sup>174</sup> See Balino/Enoch (1997), p. 24.

## 7.2 Exit Options

Typically, in the initial phase after the successful installation of a currency board, the public usually perceives that it would be irrational for the authorities to abandon the arrangement early. Over time, however, the weaknesses owed to the inflexibility of the arrangement become more visible and hurting, possibly evoking doubts about the sustainability of the currency board<sup>175</sup>.

If at the same time the justification of the currency board as a vehicle to promote credibility is losing weight because confidence in the government has grown and institutional conditions have improved, this may deliver an argument for a gradual relaxation of the rules (“growing-out of the currency board”) and an eventual exit from the currency board<sup>176</sup>. This would then be viewed as the natural and desired development of a transitional process during which credibility is built-up, institutions are installed, and financial markets are developed. If in addition external conditions are favourable, a country is able to abandon the currency board out of a position of strength, i.e. to realize a so-called soft exit<sup>177</sup>.

If, in contrast, the weaknesses of the currency board are felt, while the currency board’s expected achievements do not materialise, possibly because

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<sup>175</sup> As Zarazaga points out, maybe the biggest risk to a currency board’s sustainability can be circumscribed by the time inconsistency problem, inherent in all kinds of policy rules. Since currency boards, especially in the long run, are almost certainly subject to pressure some time (be it caused by external shocks or by internal developments, such as price and wage deflation, or rising unemployment), it becomes at some point attractive for policymakers to abandon the chosen policy rule, arguing that the present situation is different from the original and therefore justifies a deviation. The perceived time inconsistency of monetary policy rules, here of the currency board rule, reduces credibility and hence the effectiveness of the very policy rule. See Zarazaga (1995b).

<sup>176</sup> See Williamson (1995), p. 35.

<sup>177</sup> A textbook example for a gradual exit is Ireland, which in the 60s and 70s gradually relaxed the currency board rules that since 1927 had tied the Irish pound to the pound sterling. Another example for an exit out of a position of strength, though not gradual, is given by Singapore and Malaysia in 1973. See Balino/Enoch (1997), pp. 26-7.

institutional, structural, and fiscal reforms have been delayed or ineffective, and confidence in the government is declining, the risk that the currency board eventually has to be abandoned under stress is substantial. Unfavourable external developments, such as an appreciating reserve currency or a sharp decline in capital inflows, may add to the stress and force the country to opt for a hard exit<sup>178</sup>.

The theoretical exit options from the fixed exchange rate comprise its replacement by a different (depreciated or appreciated) fixed exchange rate, by a fixed exchange rate pegged to a different anchor, or by a floating exchange rate. While the move to a float inevitably comprises a complete exit from the currency board and a change to some form of central banking, changes resulting in a modified fixed exchange rate regime can be compatible both with the introduction of a central banking system or with a continuation of the currency board under a modified rule (also treated as “exit” for this purpose).

As will be argued, any possible termination or modification of a currency board should be based on rules defined *ex ante*, i.e. on escape clauses built-in at the time of its implementation. Along this rather normative statement, the problems and functioning conditions of each available exit option shall be briefly addressed.

### **7.2.1 Built-in Escape Clauses**

Considering possible exits from a currency board, the only means to avoid the perception of a breach of policy commitment seems to be the provision of *ex ante* built-in escape clauses. Although the discussion of rules versus discretion in monetary policy seems to reveal that contingent rules (i.e. rules with some flexibility) are superior to non-contingent rules<sup>179</sup>, this cannot

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<sup>178</sup> All of Argentina’s three currency boards (1902-14, 1927-29, 1991-2002) had to be given up under stress, with external shocks triggering the exits of 1914 and 1929. See Balino/Enoch (1997), p. 26.

<sup>179</sup> See Zarazaga (1995b), p. 20.

unconditionally apply to currency boards since their essence is that they fully rely on rules to build up credibility (instead of on a reputation of credible behaviour)<sup>180</sup>.

Escape clauses that offer room for genuine discretion of the currency board (i.e. that leave possible actions or possible escape cases vaguely or not defined) are doubtlessly harmful to its credibility and introduce the stability risks associated with simple fixed exchange rates<sup>181</sup>. Such escape clauses can at best be envisaged for very extreme (and clearly discernible) situations such as national emergency.

Escape clauses, however, that clearly pre-define actions and the constellations under which they are allowed, are different from the above, in that they do not open discretionary leeway. Whether even such well-defined built-in escape clauses undermine a currency board's credibility from the beginning, or, on the contrary, entail an increase in credibility in reducing uncertainty about a currency board's behaviour remains disputed.

The main argument against such escape clauses relates to the criteria that trigger pre-defined actions (e.g. inflation or exchange rate limits exceeded by the reserve currency). Such trigger points, when approached, bear the potential to cause capital flows that render the escape case more probable than would otherwise be the case<sup>182</sup>. Thus, opponents of escape clauses

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<sup>180</sup> The case of the gold standard might illustrate this. Although the gold standard appears to have been a non-contingent rule, in reality it had implicit escape clauses: the temporary suspensions of convertibility of the pound Sterling into gold during wars and financial crises can be viewed as applications of an inherent escape clause. However, the use of such discretionary leeway did no harm to the Bank of England as it could rely on a high reputation. See Zarazaga (1995a), p. 3.

<sup>181</sup> See Fuhrmann (1999), p. 103.

<sup>182</sup> Consider, for instance, an escape clause that allows the currency board to devalue as soon as the reserve currency exceeds a pre-defined appreciation threshold against another major currency. Any appreciation bringing the reserve currency near the trigger point would render the escape case more likely, which from a certain point would lead

argue, the mere existence of (even well-defined) escape clauses can by itself trigger speculative capital flows and lead to a termination of the currency board, which possibly might have survived without escape clause<sup>183</sup>.

Advocates of escape clauses retort that it is uncertainty that feeds speculation. If uncertainty is removed in the sense that the behaviour of the currency board is rule-bound not only within but also beyond pre-defined ranges (e.g. of reserve currency appreciation/depreciation or inflation/deflation), there is no room left for speculation. The development of the reserve currency is the only thing that remains uncertain, and speculative capital flows remain limited, as they do not attack the currency board's commitment<sup>184</sup>. Apart from that, the effect of speculative capital flows on the development of the reserve currency (usually a major international reserve currency) will be small at best, so that self-fulfilling prophecies are unlikely to arise from any escape clause included in the currency board law of a usually small economy.

Therefore, in order not to put achieved credibility at risk when the currency board faces extreme situations, and with a view to the credibility of potential future monetary regimes, it is certainly better to stick to well-defined rules, known in advance to the public, to govern an exit from the existing currency board rule, than to behave in improvised ways<sup>185</sup>.

### 7.2.2 Depreciation

For a currency under pressure through inflation and real appreciation with no alleviation to be expected in the medium term, an early exit from the

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speculators to sell currency board currency and buy reserve currency, thereby increasing the likelihood of the escape case.

<sup>183</sup> See Balino/Enoch (1997), p. 28.

<sup>184</sup> See Hanke/Schuler (2000), p. 64.

<sup>185</sup> During the 1995 tequila crisis and thereafter, the different performance of Mexico (that returned to discretion) and Argentina (that stuck to the currency board law and confined crisis management to the pre-defined options) can be viewed as offering a backing for this finding. See Zarazaga (1995b), pp. 20-22.

currency board may limit the degree of overvaluation and of the connected real losses. However, an exit followed by substantial depreciation is certain to undermine the credibility of policymakers unless it can be clearly justified by major external shocks.

The main problem with depreciation is that, if anticipated or even announced, it induces capital flight, as the public tries to convert domestic assets into reserve currency and to transfer them abroad. The resulting domestic interest rate increases can cause banks to break down, and the perceived risk can by itself cause bank runs and exacerbate the situation.

Alleviating, if politically questionable, measures can consist in temporarily suspending convertibility of deposits, or in a forced conversion of all deposits into the reserve currency at the pre-depreciation exchange rate. These measures however are likely to further damage policymakers' credibility.

A pre-announced downward crawling peg may provide a possible solution. It may limit the credibility loss caused by breaking the exchange rate rule, although it does not provide an insurance against losing control of the situation in terms of a devaluation-inflation-spiral<sup>186</sup>.

### **7.2.3 Appreciation**

An exit followed by a substantial appreciation does not carry penalties similar to those of an exit followed by depreciation. The change of law carries no adverse effects, as the central objective of the law, the maintenance of the currency's value, is not violated. The legal hurdles imposed by the currency board are meant to prevent surprise devaluations, and as such can be overcome without damage in the case of appreciation.

A soft exit with the goal of appreciation of the domestic currency will probably become public well before the respective legal change. This will attract capital inflows, which potentially can undermine the appreciation strategy, as foreign reserves may cease to provide full backing of the expanded monetary base at the intended new exchange rate. In any event, an

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<sup>186</sup> See Balino/Enoch (1997), pp. 26-7.

appreciation increases the value of the currency board's liabilities in relation to its assets, which causes losses for the currency board.

Again, a controlled and gradual upward crawl of the currency can be introduced to mitigate these problems by gradually allowing domestic interest rates to decrease and to keep capital inflows at bay<sup>187</sup>.

#### **7.2.4 Switch to a Floating Exchange Rate**

The switch to a floating exchange rate regime is most appropriate when the domestic currency is undervalued, especially where the pressure to appreciate is not too large. The switch to a float can be taken in steps, so as to allow initially the exchange rate to float within a band that can be widened gradually or be defined as a crawling band.

In cases of strong depreciation pressure, however, the switch to a float is unequally more dangerous, as it bears the risk of loss of the nominal anchor and of accelerating devaluation and inflation.

#### **7.2.5 Switch in the Peg**

Another exit option consists in the change of the anchor currency. In changing to a reserve currency that is expected to depreciate vis-à-vis the main trading partners' currencies, a currency board can realize (provided these expectations materialize) a desired real effective depreciation of its currency (and vice versa for the case of a desired real effective appreciation)<sup>188</sup>. Destabilizing capital flows can largely be prevented when the switch occurs at the relevant market cross exchange rates at the time of its implementation. However, the structure of domestic interest rates will change with the new anchor currency, which is likely to bear some real costs, and

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<sup>187</sup> See Balino/Enoch (1997), p. 25.

<sup>188</sup> See the proposal of a dual currency board, described in the next section, where peg switches are intended ex ante to occur automatically as soon as a cross exchange rate defined by the currency board is reached. The pre-determination of peg switches makes them seem like a special kind of built-in escape clause, under avoidance of possibly destabilizing effects.

possibly have an adverse impact on capital flows. These costs have to be weighed against the expected future benefits in terms of avoided distortions in the real exchange rate. The reliance on mere expectations of nominal exchange rate movements, however, makes this strategy a risky one.

## 8 Dual Currency Boards: An Extended Proposal for Currency Stability

One interesting extension to the currency board idea deserves special attention: the proposal for so-called dual currency boards, brought forward by S.E. Oppers<sup>189</sup>. It shall be briefly sketched here in order to show how some of the drawbacks of the currency board idea can – so far only in theory – be avoided.

The idea is derived from the ancient experience with the gold and silver-based bimetallic monetary system, which dominated monetary constitutions from the Renaissance until the 19<sup>th</sup> century (when it was replaced by the gold standard). Under bimetallism, gold and silver competed for dominance with the effect that, according to Gresham's Law, "bad money" drove out the "good money", and so prevailed as the circulating medium. While the system of competing specie was sometimes condemned as fundamentally unstable, the quality of the system to bring about quick and automatic changes in the peg constitutes the main advantage for the dual currency board.

The idea underlying the dual currency board idea is to extend the promise of convertibility to a second reserve currency, with the convertibility guarantee always subject to the availability of the respective currency in the reserves of the currency board. If one of the reserve currencies is not available, convertibility of the domestic currency in the other reserve currency is guaranteed. A shortage of the currency board of one of the reserve currencies is not to be seen as weakening the currency board's credibility, but on the contrary reflects the stabilizing mechanism of the dual currency board as will be described with the following example.

Assume a country's currency is convertible by law into either one dollar or one euro. The rates of 1 unit of domestic currency per 1 dollar or 1 euro are the official "currency board rates". Total reserves can consist of one or both of

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<sup>189</sup> See Oppers (2000).

the reserve currencies and always provide full coverage for domestic notes in circulation, valued at the currency board rates. At all times, conversion into one of the reserve currencies is guaranteed at the currency board rates. The currency board's activities include nothing that exceeds "orthodox" currency board activities: it only buys and sells both reserve currencies at the defined currency board rates upon demand and thus behaves completely passive. This frame yields an interesting mechanism, which Oppers illustrates with the help of the empirical development of the dollar and euro exchange rates during 1999 and 2000.

In January 1999, the market exchange rate of the euro was \$1,17. With the defined currency board rates of 1 euro = 1 dollar = 1 unit of domestic currency, the euro is undervalued in the domestic monetary system, which is why the currency board cannot hold or retain any euros: they would quickly be acquired by arbitrageurs at the currency board rate and profitably sold at the market rate. The reserves of the currency board therefore solely consist of dollars, therefore making the convertibility guarantee operational only with respect to the dollar. The domestic currency is effectively pegged to the dollar.

The dollar's appreciation during 1999 stays without effect as long as the dollar-euro parity is not reached. However, when the market exchange rate of 1 euro declines to below 1 dollar (as happened at the beginning of 2000), it gets profitable for arbitrageurs to buy dollars from the currency board, sell them in the exchange market at the market rate against euros and sell those euros to the currency board against domestic currency, so realizing a riskless profit. As long as arbitrage processes are taking place, the deviation of the market exchange rate from parity will remain small as the currency board continues selling dollars. During this process, the mechanism enhances exchange rate stability in the region of the defined parity.

When dollar reserves are sold, however, and the reserves of the currency board solely consist of euros, the change of anchor currency has taken place and the domestic currency is effectively pegged to the euro. It is important to stress that this switch in the peg is purely the effect of the dual convertibility

guarantee and of rationally acting currency traders. It happens completely automatically and without intervention of any authority. Also, the currency board does not incur any loss as a result of the switch, since its reserves are always valued in domestic currency at the currency board rates. It can be argued that the currency board forgoes capital gains by leaving arbitrage opportunities to private traders, but there is no reason why the currency board should not realize those gains itself as soon as the respective cross exchange rate is crossed.

The beneficent effect of this switch is that the domestic currency is always pegged to the relatively more depreciated currency – in the same way as Gresham’s law predicts that “cheap” reserves drive out “expensive” reserves. The crucial relation is that between the market exchange rate and the currency board rate of dollars per euro. This relation decides over which of the reserve currencies is the “relatively more depreciated” one and therefore over the effective peg.

This mechanism invalidates one of the main arguments against currency boards. The much feared real overvaluation of the domestic currency as a result of an appreciating reserve currency, with its detrimental effects on the real economy, is avoided by making sure that the domestic currency is always pegged to the relatively more depreciated of two reserve currencies<sup>190</sup>. With respect to the criteria for the choice of reserve currency, this advantage of the dual currency board over the traditional form becomes prominent: under today’s ever more diversified trade patterns, the choice of more than one reserve currency can mirror existing trade patterns to a higher degree. If, as in the above example, foreign trade of the currency board country is split approximately evenly between the euro area and the United States, the

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<sup>190</sup> As Oppers notes, the idea can theoretically also be extended to three or more reserve currencies, as well as to a basket of reserve currencies. While in this way existing trade patterns could be reflected even better and the real exchange rate could be kept more stable, the lack of transparency and rising transaction costs (as well as more likely reweightings over time) render such options less desirable.

choice of the euro and the dollar as reserve currencies provides a better insurance against imported appreciation and loss of international competitiveness than would be the case with a single reserve currency.

Possible concerns about inflationary impacts of always pegging to the relatively more depreciated currency can be largely neglected, as long as the choice of reserve currencies has been made out of a set of stable currencies. It has to be borne in mind that the description of a currency as the “relatively more depreciated” one does not mean that it is constantly depreciating. On the contrary, if the cross rate implicit in the peg is near the point where it reflects something like long-term purchasing power parity, and if both reserve countries follow similar anti-inflationary policies, the reserve currency cross rate will oscillate around the currency board cross rate, and the opposite effects tend to cancel out over time<sup>191</sup>.

The effects of a dual currency board on interest rates are governed by the fact that a switch of peg also effectuates a switch of interest rate connectivity. As Oppers shows, the relatively more depreciated (hence the reserve) currency will always have a higher interest rate than the relatively less depreciated currency. This is the result of the implicit structure of the convertibility guarantee (which, in fact, incorporates “call options” for the reserve currency<sup>192</sup>). Nevertheless, a dual currency board country’s interest rates need not be higher than they would be under a “simple” currency board regime, as the risk premium on the domestic currency should be lower under a dual currency board, reflecting the relatively lower risk of real overvaluation and ensuing credibility loss.

As becomes clear, the choice of the currency board cross rate is central because it decides over the probable timing and frequency of peg switches. It should optimally be set at an “equilibrium” rate, at which neither of the reserve

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<sup>191</sup> Oppers has substantiated this assumption with empirical evidence for a hypothetical dual currency board with the dollar and the euro as reserve currencies in the period from 1979 to 2000. See pp. 8 and 20.

<sup>192</sup> See Oppers (2000), p. 9.

currencies is significantly over- or undervalued vis-à-vis the other and – implicitly – vis-à-vis the domestic currency. Additional considerations could lead to the decision to define the currency board rate at a level at which the domestic currency would probably be pegged most of the time to one of the two reserve currencies. In this way, a switch in peg could still avoid the worst degrees of overvaluation, while apart from that the domestic economy could stay with the (preferred) peg throughout acceptable movements in valuation<sup>193</sup>. Equally, the currency board rates could be realigned at any time, e.g. by adapting one of the conversion rates to long-term real exchange rate developments, in order to correct relations which have initially been set at unfavourable levels.

As mentioned above, ongoing arbitrage processes during the switch in peg enhance exchange rate stability in the region of the currency board cross rate<sup>194</sup>. While the global exchange rate stabilizing influence of one single dual currency board should not be overestimated, the possibility of various countries establishing dual currency boards reveals further potentials: in pooling their reserves, co-ordinated dual currency boards (setting currency board rates at identical or slightly different implicit cross rates) could contribute significantly to global currency stability<sup>195</sup>.

In sum, the dual currency board idea provides an interesting and convincing way to avoid one of the most important weaknesses of an orthodox currency board. Significant and lasting real overvaluation of the

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<sup>193</sup> Such a strategy could be envisaged for “dollarized” countries, i.e. where the economy is already significantly penetrated by one of the reserve currencies. See Oppers (2000), pp. 9-10.

<sup>194</sup> This is brought about not only by the arbitrage processes themselves (a directly stabilising effect) but also by the anticipation of rational investors who expect them when the market cross rate approaches the currency board rate, and behave accordingly (indirect effect). See Oppers (2000), pp. 10-1.

<sup>195</sup> Again, there is an encouraging historical parallel with bimetallism. See Oppers (2000), p. 12.

domestic currency and the connected economic costs can be largely prevented through a simple and transparent extension of the currency board rule – the addition of an alternative reserve currency. In addition to the beneficent effects on the local economy, obtained by completely market-conform and non-interventionist mechanisms, a dual currency board exerts a stabilizing effect on exchange rates, which even could be maximised when several countries adopted and co-ordinated the system. Against the argument that the system could be considered more complicated and hence less credible than a traditional currency board stands the historical experience with bimetallism which shows that its functioning can be well understood by the public and provide stability over long periods.

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