

# **East Asian Monetary Future**

## **- Hong Kong Dollarization**

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Tutkimuksen aihe on Itä-Aasian valuuttatalousalueen muodostaminen ja sen mahdolliset rakenteet keskittyen Hong Kongin asemaan, rooliin ja tulevaisuuteen.

Nykyinen valuuttajärjestelmä on osoittanut monia ongelmia, esimerkiksi euro-dollari, sekä jeni-dollari valuuttakurssien heilahtelut ovat aiheuttaneet monia kriisejä ja ovat nousseet taakaksi markkinoille, kehitysmaille ja kansainväliselle kaupalle. Aikaisempien tutkimusten pohjalta olisi hyödyllistä tutkia mahdollisuutta kolmannelle valuuttatalousalueelle, jotta valuuttalauttojen kautta saataisiin suuret heilahtelut poistettua ja tasaisempi talouskehitys.

Aasian nopea talouskasvu, sekä Kiinan asema maailman toiseksi suurimpana taloutena myös väistämättä johtaa taloudellisen ja poliittisen integroitumisen tarpeeseen. Nykyinen yhteistyö ei ole vielä ottanut merkittäviä askelia eteenpäin johtuen poliittisista tekijöistä. Tulevaisuuden kannalta on kuitenkin oleellista tutkia erilaisia mahdollisuuksia kehittää talousyhteistyötä alueella ja empiirinen tutkimus on osoittanut, että Aasian suurimmat ongelmat ovat aiheutuneet valuuttakurssien heilahteluista.

Itä-Aasian korkeat dollarireservit luovat ainutlaatuisen tilanteen verrattuna aikaisempiin valuuttatalousalueen rakentamisiin. Varsinkin Kiinan ja Hong Kongin laajat ulkomaan valuuttareservit korostavat tilannetta. Hong Kongin lopullinen luovuttaminen Kiinalle 2047 tulee vaarantamaan Hong Kongin dollarin aseman ja tutkijat pitävätkin Hong Kongin dollaria poistuvana valuuttana pidemmällä aikavälillä. Dollari valuuttareservit ilman likvidiä vaihtomarkkinaa nostavat esiin kysymyksen vaihtomarkkinan rakentamisesta, joka auttaisi jatkossa valuuttatalousalueen rakentamisessa.

Hong Kongin dollari on sidottu Yhdysvaltain dollariin kiinteällä vaihtosuhteella ja Hong Kongin rahoitusrakenteet -ja instituutiot ovat maailman luokkaa. Hong Kongin dollarisointia tutkittiin Aasian rahoituskriisin aikaan, mutta tilanne ei ollut dollarisoinnille suotuisa. Nykyiset valuuttaheilahtelut, Kiinan korkeat valuuttareservit ja Aasian talouskasvu nostavat esille kysymyksen: Tulisiko Hong Kong dollarisoida osana laajempaa valuuttayhteistyötä ja onko aikaisemmin havaitut esteet dollarisoinnille poistuneet.

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# 1 Introduction

The issue of optimal currency areas has recently become acute in the international monetary system. This is particularly true in Europe, but also in Asia. In Asia, the current monetary system has produced high volatility in exchange rates which causes many problems in financial markets and international trade. The problems are especially severe for less developed countries.

The fast economic development in some Asian countries has urged the need for renovations in monetary co-operation. Earlier studies suggest that a world would need a “third leg” to stabilize the international monetary system. An Asian currency union could serve this objective.

Quite recently, the U.S. dollar reserves in the Eastern Asia have grown rapidly. China has become the largest creditor of the U.S. and Asia's position in global economic and politic forums has strengthened. The main problem is that Asia's interests are not aligned due to a lack of previous economic and politic integration. The fluctuation problems could be solved by an Asian currency union, but Asia should first arrange the pre-requirements of the union. High U.S. dollar reserves in Asia cause problems due to a lack of an exchange market. Especially, China's high rates of foreign reserves would need an exchange platform. The key question is, should Asia launch a dollarized exchange market.

Hong Kong is the most advanced financial center in Asia and has a steady economic and institutional structure. China's take-over of Hong Kong is closing, and the era of the Hong Kong dollar (HKD), already tied to U.S. dollar, is probably ending due to substitution by yuan (RMB). Hong Kong dollarization was considered during the Asian Financial Crisis, but the time was not mature for dollarization. Current exchange fluctuations, China's U.S. dollar reserves, and rapid economic growth in Asia reopens the question about Hong Kong's dollarization as a part of larger currency development process.

The Thesis proceeds as follows. Section 2 discusses the development of monetary system, current exchange fluctuation problems, currency area theories, and pre-conditions for an Asian currency union. Section 3 focuses on concept of dollarization; its benefits,

costs, processes, and empirical evidences. Section 4 is based on Hong Kong dollarization; its processes, position in a potential currency union, and implications for other economies like China, and U.S. Section 5 is conclusion part which answers for the question; is Hong Kong mature for dollarization, and should Hong Kong be dollarized as a part of larger currency development process.

## 2 Monetary Unions

### 2.1 Introduction to the World Monetary Development

*Today there are 185 members of the International Monetary Fund (IMF). It is easy to understand the world with same amount of fluctuating exchange rates would mean chaos. If there are  $N = 200$  countries with separate currencies, there would be  $\frac{1}{2} * N * (N - 1) = 19,900$  exchange rates! This is the ultimate situation, but it give the idea of the possible scenario, and helps to understand the goal of simplicity while arranging fixed exchange rates preventing the jungle of exchange rates. (De Grauwe, 2000.)*

In the beginning years of the 20<sup>th</sup> century, the British Empire was considered the leading economy in the world because of the fast industrialization of Britain. The pound sterling was the leading currency before the First World War, which caused a change in the currency domination after the war. Europe rushed into a gold standard after the war in order to stabilize the high inflation of prices caused by the war. When this switch occurred the U.S. had the world's largest gold reserves, which resultantly secured its position as an economic leader with the U.S. dollar achieving reputation as the global unit of account, even though gold was used as the mean unit of payment settlement. This world-wide rush into using the gold standard created a high demand for gold, thus causing a deflation of prices and depression throughout the entire globe. The UK and U.S abandoned the gold standard, because the cycle of deflation was unsustainable. However, the UK returned to the standard in 1934, when the country again suffered from high inflation. By contrast, the U.S. managed to devalue the dollar and link it to the gold standard using a weak linkage, thereby establishing a leverage of monetary power for the U.S. over the next four decades (Mundell, 2002).

After the entire world switching constantly to and out of the gold standard, the Bretton Wood's system was introduced in 1944 and was the leading system of the whole world until its breakdown in 1971. The anchor of the Bretton Wood's system was the U.S. dollar, which was pegged to gold, and so all other countries fixed their currencies to the U.S. dollar. The reason for this systems breakdown, however, was the increase in consumer

prices, which tripled against the price of gold between 1944 and 1971. The U.S decided to leave the gold standard in 1971 and let the U.S. dollar float, which thus only left other countries with only one solution; to let their currencies float. This float of exchange rates was the start of a phenomenon called monetary nationalism; the creation of independent monetary systems with their own exchange policies. (Mundell, 2002.)

Mundell (2009) says that allowance of floating exchange rates as the worst idea, calling it anarchy in monetary system; there small economies suffer, and large economies might gain, but not necessarily. Under fixed exchange rates, smaller economies might gain, or at least avoid suffering from being fixed with a larger currency based on monetary mass<sup>1</sup>. Mundell mentions that the main trouble for smaller countries is fluctuation, which can be decreased by building exchange rate hedge using a basket of currencies. American monetary power still prevents this choice of building balanced exchange baskets because smaller economies cannot get enough weight in U.S. dollars for their exchange baskets. This trend is due to the monetary nationalism phenomenon which shifted the power and seigniorage benefits to the U.S. government. De Grauwe (2000) called this unshared gain “an exorbitant privilege”. The Federal Reserve System (FRS) enjoyed this enormous privilege and has been using it as a Lender-of-Last-Resort (LOLR), which means that they have been using the U.S. dollar as the last possible choice for small economy bail-outs under economic distress.

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<sup>1</sup> Monetary mass index i.e. the share of the total monetary mass vis-à-vis the amount of the individual currency.

<sup>2</sup> The world financial crisis of 2008 is included due to high appreciation of the U.S. dollar in 2007-08, which indirectly affected the

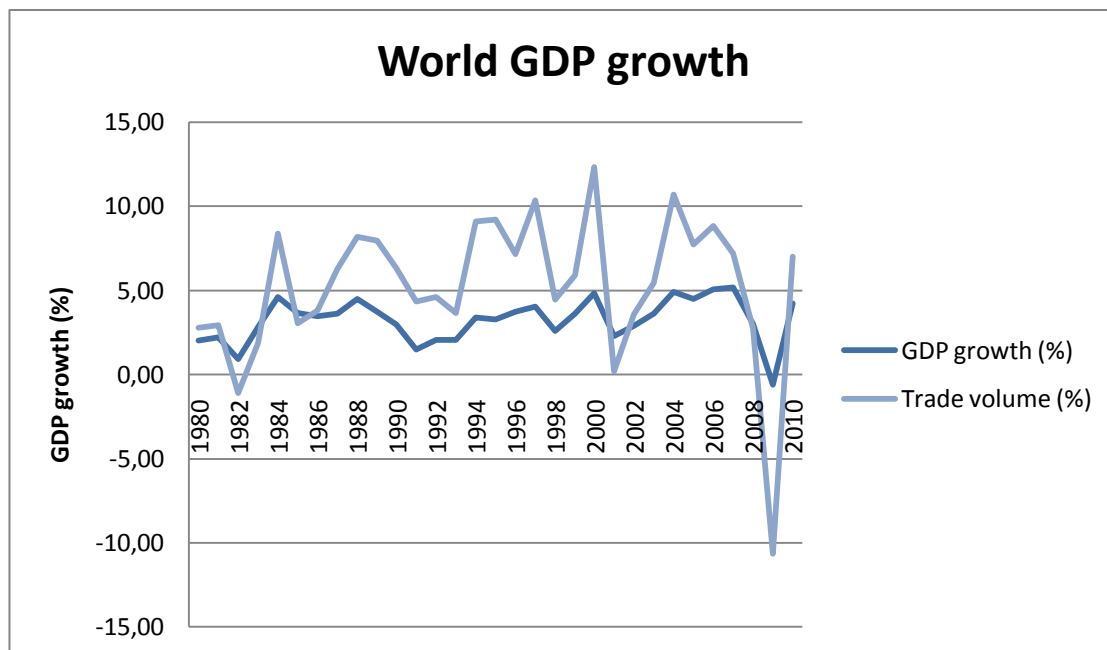


Diagram 1. The world GDP growth (%) and trade volume (%)

Source: IMF world statistics, <http://www.imf.org/external/pubs/ft/weo/2010/01/weodata> (GDP, constant prices)

Recent history has shown that the performance of fluctuating rates has not been as successful as when countries used the Bretton Wood's system. The Bretton Wood's system *post era* has already confronted four crises: the S&L crisis in the early 1980s, the International Debt Crisis of 1982, the Asian financial crisis of 1997-8, and the World Financial Crisis in 2008<sup>2</sup>. These crises can be seen as drops in GDP, and net trade in diagram 1.

Mundell (2009) presented his scenario of a single currency for the whole world and although this idea is far-reaching, and currently unrealistic, he suggested that to achieve this kind of optimum monetary system would require more currency unions – like the EMU. His idea is to establish an Asian currency union, and after this establishment the world would have three large currency areas covering 70% of the world monetary mass with approximately equal weight, and would form good pre-conditions for a single world currency area.

The biggest initiative in recent decades has been the launching of the European Monetary Union (EMU). Europe has an excess of fluctuating exchange rates and suffered from this

<sup>2</sup> The world financial crisis of 2008 is included due to high appreciation of the U.S. dollar in 2007-08, which indirectly affected the bankruptcy of the Lehman Brothers investment bank straight after the U.S. economy was turning into growth in Q2 2008.



exchange rate chaos. Europe also has a need to unite its political and monetary fields due to the re-unification of Germany. After fixing exchange rates and the establishment of the euro as a banking currency in 1999, the euro became the sole currency of the EMU. The euro has become the second most important currency in the world due to monetary mass indexes, and according to the EU's and EMU's expansion process, the euro will vie with the U.S. dollar as an international unit of account and basic means of payment. The euro has become an alternative to the U.S. dollar if it loses its luster or becomes an unstable currency.

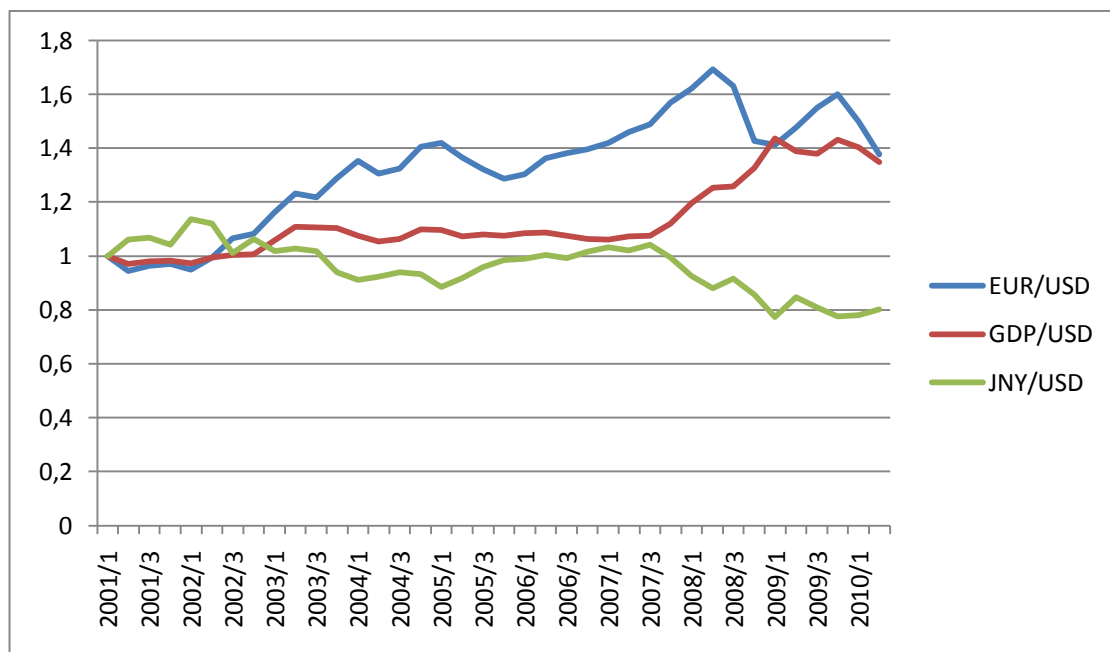


Diagram 2. Exchange rate fluctuation against U.S. dollar from 2001/1 until 2010/2 (Monthly closing rates)

**Source:** The Central bank of Netherlands, Department of Statistics.  
<http://www.statistics.dnb.nl/index.cgi?lang=uk&todo=Koersen> and [www.federalreserve.gov](http://www.federalreserve.gov)

High instability is a real burden for financial markets, international trade, and especially for developing countries. Diagram 2 shows the exchange fluctuations of the yen, dollar, euro, and pound in the *post era* of the euro. The euro-dollar exchange rates have especially been seen as a problem for the whole world in regards to development.

The analysis of yen-dollar ratios has not been any better; dollar-yen ratios were around 230-250 yen in 1985 and fourteen years later in 1999, the yen had appreciated enormously to a ratio of 78 yen to one dollar. The yen crashed to 148 yen per dollar in

June 1998, which was the beginning of the Asian Financial Crisis. The low yen shut down Japanese foreign direct investments (FDIs) to Southeast Asia, which put the whole of Asia into a severe recession. At the same time, the U.S. dollar was appreciated *pari passu* against Southeast Asian currencies, which opened an entrance for currency speculators. Many countries were looking for a safe haven by fixing their currencies to the U.S. dollar. (Heping & Wiemer, 2004.)

History shows that the biggest exchange rate problem in Asia has been the dollar-yen exchange ratios. Under the Bretton Wood's system there were not any fluctuation problems in a dollar-yen rates. It seems that it would be beneficial for all of Asia if dollar-yen rates would be fixed again as capital movements can cause problems when uncertainty increases. The Asian region's economic markets have been growing tremendously in recent decades and capital movements have increased. Since capital movements are rising, the exchange rate stability will be more important. (Bayomi & Eichengreen & Mauro, 2000.)

Mundell (2009) believes that there are no bad capital movements, only bad monetary and exchange rate systems. For example, one cannot see bad capital movements between New York and California, because exchange rates are locked. Also, before the euro, there was the possibility to form hedge funds with European currencies. After the launching of single currency, bad capital movements vanished. In order to effectively stop the occurrence of money transferring problems and currency crises, would require the creation of a single currency; more specifically a single world currency. This would require that all currencies be fixed together and would require many gradual changes to be introduced, starting with building currency areas that are beneficial to economies.

Establishing an Asian currency area would be a major step towards creating a world currency. However, building a hegemonic and successful currency union requires the parallel vision of the political future. Power relationships inside Asia have been changing in recent decades as China has increased its role in world political arenas. Japan still plays a major role in the region, but China is challenging Japan's position as the politic and economic leader in the region. The currency area, regarding both China and Japan, is a political challenge due to history, mainly the Sino-Japanese war. Mundell (2009) reminds

us that an Asian currency area with China alone would have a dominant policy center in China, and an Asian currency area with Japan alone would have a dominant policy center in Japan. Basically, a currency union could be possible without one of the following, China or Japan, but this cannot be seen as an optimum situation because the absence of China or Japan would tremendously decrease the benefits gained from a joint monetary mass and would create speculator risk.

The political background of Asia makes building a single currency, like the euro, impossible at this point, but researchers (Mundell & Eichengreen) see a currency union as a plausible solution for Eastern Asia. Instability in the whole region can be seen as an obstacle of building an Asian currency union because there are separatist movements in the Philippines and Indonesia, North Korea is isolated, Cambodia suffers from civil war, and the Asian financial crisis still affects the lives of many in Southeast Asia. All of Asia would need political integration before a common currency could be introduced.

The history of monetary unions has shown that the best performing new currencies are built on existing currencies. Building a new currency over existing one helps to ensure confidence. For example, the euro was built over the DM (Deutsche Mark), and the U.S. dollar was built over the Spanish dollar. The history of successful unified currencies provides guidance for the creation of an Asian currency that it should take the path of building on an existing anchor currency or choosing a basket of currencies. (Eichengreen, 1999.)

In theory, Asian countries could make a basket of their currencies and designate it as the unit of account and a reference point to measure an Asian currency. Europe followed this strategy, but three observations suggest that the EMU is not a good model for East Asia to follow. Firstly, it would have been easier for the EMU to choose an external currency anchor. In the 1960s, when the idea of a single European currency was introduced for the first time, it would have been a possible solution to take the U.S. dollar as the anchor for the EMU. The two World Wars were the main obstacle of taking the U.S. dollar as an anchor; especially Germany's relationship to the U.S. government during these times. After the Second World War, most European currencies were fixed to the dollar, which made the pre-conditions suitable for adopting the dollar, but the EMU chose an indirect route through fluctuating exchange rates. This alternative route gave Europe time to

enhance political integration between European countries before launching the euro. (Mundell, 2009.)

The second reason why Asia should not follow Europe's path is that the EMU had been much easier to build if an internal currency would have been selected instead of a brand new one. Allowing European currencies to float and separate from the U.S. dollar in August 1971, it would have been easier to choose the strongest currency to become the anchor currency for the whole of Europe. The DM was the strongest currency that time, but the World Wars were the main obstacle for this solution, especially considering that the UK and France would not have approved this idea. It would have been possible to take the pound sterling as the anchor of Europe, but just before the breakdown of the Bretton Wood's system, the DM became the strongest currency in Europe. (Eichengreen, 1999.)

The Asian need for a currency union is more economic than Europe's needs had been before the EMU; Europe needed something to fix the political bonds that were torn during the World Wars. According to Eichengreen (1991), Europe was not suitable for a currency union following Mundell's OCA theory. Given the diverse European institutional legislations, business cycles, legal systems, and language barriers, it is easy to agree with Eichengreen's comments. Eichengreen also compared North America's and Europe's suitability to be an optimum currency area, and concluded that North America is more suitable to be a currency area in terms of OCA criteria than Europe.

Just as Europe needed political integration during the 1990s, East Asia is currently facing this same need, mostly because of the Sino-Japanese war which had similar features to the World Wars in Europe. Likewise, the Asian Financial Crisis has increased the need for co-operation in the region. Eichengreen (1999) writes that politics is the biggest motive for forming currency unions. He has researched Eastern Asia's optimality for forming a currency union resulting that the region is optimal for a currency union. He says that price and wage flexibility was greater in East Asia in 1999 than at the beginning of the 1990s in Europe, mainly because of the lack of organized labor unions and the unequal distribution of wealth. Political integration within Asia has been taking small gradual steps as ASEAN<sup>3</sup>

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<sup>3</sup> The Association of Southeast Asian Nations commonly abbreviated ASEAN is a geo-political and economic organization of 10 countries located in Southeast Asia.

has been enlarged by involving South Korea, China, and Japan to ASEAN+3, whose largest reform has been approving currency swaps through the Chiang Mai Initiative<sup>4</sup>.

The era before the EMU was a time of fluctuating currencies in Europe. By contrast, China, Hong Kong, Brunei and Macau all have fixed exchange rates. China and Hong Kong are fixed to the dollar (Hong Kong via a currency board system), Brunei is in a currency union with Singapore, and Macau peso is fixed to the Hong Kong dollar. The lack of fixed exchange rates in Asia is a new phenomenon because during the Asian Financial Crisis, most of the region's currencies were fixed to the U.S. dollar. The change from fluctuation to a fixed form were made fast to help the economy during the crisis. According to this previous rapid change, we can assume that it would be possible to fix rate fast if needed. The monetary fixing process in Asia is faster than in Europe because decision making is more centralized.

There are many monetary and political similarities in the pre-conditions for currency unions between Eastern Asia and Europe which implies that Eastern Asia could build its own currency area. The main problem of establishing a currency union in Asia is achieving political hegemony which is a key success factor when building joint ventures.

## **2.2 Exchange Rates and Optimal Currency Area Theory**

Exchange rates are important, because they enable us to translate different countries prices into comparable terms and are determined by a process similar to that used to determinate asset prices.

There are two ways to quote exchange rates; either direct or indirect. In a direct quotation, the price of a foreign currency is given in terms of the domestic currency. In indirect quotation, the price of the domestic currency is presented in terms of a foreign currency. Exchange rates can be affected by appreciation or depreciation; appreciation makes local goods more expensive for foreigners and foreign goods cheaper for domestic residents and *vice versa* in the case of depreciation.

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<sup>4</sup> The Chiang Mai Initiative (CMI) is a multilateral currency swap arrangement among the ten members of ASEAN, China (incl. Hong Kong), Japan and South Korea. It consists foreign exchange reserves pool worth US\$120 billion and was launched on 24 March 2010.

Exchange rates are determined in foreign exchange markets whose major participants are commercial banks, international corporations, non-bank financial institutions, and central banks. New participant groups, new technologies, and new trading systems have caused a huge increase in foreign exchange. The increasing role of overseas investments in the growing globalized world makes exchange rates a major part of corporate strategies and investors seek investment opportunities at home and around the world. (Catterall & Aldcroft, 2004.)

Mundell (2009) believes that a more important factor than an exchange rates itself is the pool of exchange rates it belongs. An exchange rate can be fixed or fluctuating; if it is fixed, it is pegged to another currency with a solid exchange rate. This type of fixing builds a currency float between these two currencies; if these currencies were not in a joined float, they would be separate fluctuating currencies.

The benefits of such currency floats arise when economies face uncertainty and the increasing risk of high fluctuation and large floats are steadier in overcoming economical disturbances. Economies which are very open are more disposed for absorbing shocks and joining a float increases their monetary power when the monetary mass of a joined float increases. The benefits of a monetary union are widespread and Mundell (1961) made the base work for the theory which can be used to evaluate optimal currency areas. He writes,

*An optimum currency area (OCA) is an economic unit composed of regions affected symmetrically by disturbances and between which labor and other factors of production flow freely. It is patently obvious that periodic balance-of-payments crises will remain an integral feature of the international economic system as long as fixed exchange rates and rigid wages and price levels prevent the terms of trade from fulfilling a natural role in the adjustment process. (Mundell, 1961.)*

The Optimum Currency Area (OCA) theory is based on the idea of fixing exchange rates inside suitable currency areas. Transferring monetary policy power to a joint float would create benefits, such as decreasing external shocks, increasing monetary mass, avoiding speculators penetration of national currency, and providing more monetary power compared to other regions rather than based, on a national currency basis alone. Although the original OCA theory suggests that an OCA is not worldwide, but the existence of more than one currency area implies variable exchange rates. (Mundell, 1961.)

Mundell (1961) argues in same article that the world could be optimum currency area under some assumptions. He gives a good example by using the gold standard; if there were not national currencies, but a region with one money measure, e.g. gold, and then there would be only one central bank. Following this idea of a gold standard and one central bank, the value of gold would be equal in different regions and there would not be bad exchange rates, neither mismatching nor bad monetary policies. This example is extreme, but may suggest a re-thinking of why the Bretton Wood's system was launched.

Nevertheless, Mundell's (1961) idea of gold as a measure of account seems ideological and extreme. A world with one common changeable good and mean of payments would require a lot of legal structures and some kinds of safeguards from speculators.

The main assumption in Mundell's OCA - theory is the Ricardian factor mobility, which means free labor and capital movements. This assumption is quite hard to achieve in the real world, which is full of trade barriers. Barriers do not only cause exchange rates to be problematic, but also the greater number of currencies in the world increases transaction costs. However, Ruffin (2002) was more concerned with the costs of valuation and money-changing, than stabilization and trade policies. He reminds us that a large amount of the currencies decreases the convenience of using currency as a medium of exchange.

According to Ruffin (2002) and the Ricardian assumptions, the optimal amount of currency areas would be one - the whole world. However, there are still two more factors which affect the number of optimal currency areas. Firstly, the sizes of foreign exchange and monetary mass should be high enough to prevent the penetration of speculators. The second factor is the willingness of people to accept fluctuation in real income through adjustments in money wage or price level. These problematic factors appear to increase when the number of currency areas increase. Mundell (1961) outlined the base rule for selecting an optimal participant for a currency union; currency unions should be launched in areas, where Ricardian factors are valid and keep national currency regions under immobility. In practice, people are usually unwilling to accept the adjustment through real income and the prevention of speculators entering the market has been empirically impossible.

McKinnon (2000) explains that the optimum currency area is a single currency area in, which monetary-fiscal policy and flexible external exchange rates can provide the best resolution to the following objectives; the maintenance of full employment, the maintenance of balanced international payments, and the maintenance of stable internal average price levels.

Using fixed exchange rates inside a currency area leads to increased factor mobility and when salaries approach each other, assumptions are made regarding free trading and mobility inside currency area. McKinnon (2001) says Mundell's idea of basing the optimal currency area model on a basis of mobility movements should be considered as *ex post*. He suggests that it is not wise to sort currencies in a basket on an industrial or geographical basis; the difference should be made by different measurements excluding the internal structure of items exported and imported.

Mundell (1961) and Kenen (1969) use a model of two countries, two regions, and two industries to show that factor mobility would lead to an optimal currency area situation, if the labor force would be homogenous. Under this assumption, there would not be differences between industries because workers from different areas could move to different countries. Following this model's idea in the "real world" of currency areas would work only if a region is small, the structure of industries are similar, the labor force is homogenous, and adjustments are allowed. Kenen (1969) points out that in multi-product countries, the re-action to external shocks is much stronger than in single-product countries and that is why leveraged industrial countries are better off fixing exchange rates. Kenen (1969) mentions that both external and domestic demand has to be stable in exchange rate fixing. In East Asia external and domestic demand is rather stable, except domestic demand in China.

De Grauwe (2007) calls the original model of symmetric shocks as ECB theory under the assumption that when integration in a monetary union increases, the symmetry increases. This should be a logical assumption, but a few top researchers in the world disagreed with this assumption. According to Krugman (De Grauwe, 2007), integration into monetary union would lead to the asymmetry. This disagreement is quite remarkable because the



ECB has based its guidance for development of the EMU to this “integration leads for symmetry” idea, yet there is still no consensus around this topic.

## **2.3 Benefits of Forming a Monetary Union**

*“A currency is like language” (Barro, 2001).*

In the above quote, Barro (2001) means that people can gain from using the same language over borders, like currency. He also mentions three factors that suggest the need for forming currency unions; the increased number of independent countries, globalization and the decreased role of independent monetary policies. Calvo and Reinhart’s (2002) research on developing economies capital markets concluded that in developing countries, exchange rates are more volatile than in developed countries. Specifically, exchange rates are more volatile for smaller economies and this is why small economies prefer fixed exchange rates, e.g. Hong Kong. Calvo and Reinhart (2002) used the term “fear to float” in these developing countries because the volatility can cause huge social problems and unrest. Breur (1994) believes that floating exchange rates are no longer found as shock absorbers; instead, they are the source of a shock.

There are also indirect benefits that some researchers found larger than direct benefits, for example, trade between countries might expand inside a currency union. Frankel & Rose (2002) and Glick & Rose (2002) researched the expansion of trade in a currency union and suggest that trade does expand, which can be taken as axiomatic that trade through currency unions enhances wealth.

Finding the exact quantities for costs and benefits in a currency union is an impossible task because of the causality and scale of the effects. Madhur (2004) listed the qualitative benefits that a currency union creates; greater flexibility in wages and prices, greater mobility of factors, more symmetric shocks, and an increase of trade in union.

Tower and Willet (1976) expressed the idea that currency areas would decrease the amount of information costs, encourage an increase in imports and exports, and decrease

transaction costs, uncertainty, search costs, and calculation costs. Mundell (1961) expressed a belief that currency conversion increases the cost in case of flexible exchange rates and under fixed exchange rates; companies would not need to spend so much time on exchange rate supervision. Under a common currency, countries do not need much foreign reserves for speculative threats and banks do not need much “bumper” money in their reserves for intra-trade system. Currency unions decrease the transaction costs and save time from having to count in different currencies. Interestingly, history shows that small countries, which cannot do much with their monetary policies, are usually more interested in joining monetary unions.

After joining a currency area, countries cannot use their own currency as an exchange tool, like it may have been used before as a method of fixing economical situations in shock. Currency unions can effectively act under symmetric shocks by making decisions that will symmetrically affect the whole currency union area, e.g. a widespread shock affects all the member countries and the monetary union can make adjustments to help the whole region. The main potential problem for a currency union is asymmetric shocks, e.g. a supply shock that happens in country A will change the demand from country A to B, then the shock is asymmetric and monetary union cannot straight adjust its monetary policy, which would help the country B without making country A worse-off. (Mundell, 1961). Independent countries have used devaluation or valuation as a weapon in these kinds of supply and demand shocks, but under a currency union without independent monetary policy, this is not possible. In practice, if a joining country will fulfill requirements like the EMU has, and will maintain them during their time in the union, it would not need an exchange tool, and thus makes the loss irrelevant.

Another problem presented by Tower and Willet (1970 and 1976) and also by Corden (1972) demonstrates the loss of monetary policy independence which can be seen in stable short-term Phillips-curve trade off model; it shows that a country cannot select its own mix of desired inflation and unemployment, or at least not even try to select its own, once involved in a currency union. The Mundell-Fleming model<sup>5</sup> suggests that under fixed exchange rates and perfect capital mobility, the changes of stance in monetary policy in one region are offset by capital flows in another region, bringing the monetary base to its

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<sup>5</sup> The Mundell-Fleming model is an economic model first set forth by Robert Mundell and Marcus Fleming. The model is an extension of the IS-LM model. Whereas the traditional IS-LM Model deals with economy under autarky (or a closed economy), the Mundell-Fleming model tries to describe an open economy.

initial position. Nakagawa (2004) expressed that the benefits of an East Asian currency union would be widespread; exchange risks inside East Asia would be eliminated, financial market development would be spurred on, and the onus for maintaining exchange rate stability would be shared between the joined countries.

## 2.4 An Asian Currency Union

For Eastern Asia to launch its own currency union certain pre-conditions must happen; the first being consensus of joint operation between East Asian nations, e.g. equivalent to the EU's Treaty of Rome<sup>6</sup> by establishing public opinion to unify an East Asian community. Secondly change in improvements for commencing work in earnest, i.e. the consensus of inflation goals, coordination of macroeconomic policies and institutional changes to unify business cycles, the establishment of economic soundness, and the forming of a common market area.

Nakagawa (2004) states that there are challenges for forming a political consensus; war history recognizing, religious challenges between Muslim<sup>7</sup> and non-Muslim countries to adopt similar types of institutional structure, including political systems which are originally based on socialism, dictatorship, democracy, and security guarantees which are based strongly on bilateral exchanges with the U.S. government, i.e. Taiwan independence question.

The more there is mobility of production within a region, the more likely the region is *ceteris paribus*, to be an OCA. Gandolfo (1987) and Salvatore (1993) defined basic assumptions for countries to start monetary integration; first, countries should have the same inflation rates following Flemings (1971) theory that if interest rates are close to each other among countries, current account transactions would be in equilibrium and keep inflation steady. Secondly, the degree of mobility stated by Mundell (1961), "Countries between high degrees of factor mobility are viewed as better candidates for monetary integration, because factor mobility provides a substitute for exchange rate flexibility in

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<sup>6</sup> Treaty of Rome was contract establishing the European Economic Community (the EEC Treaty). This treaty was renamed Treaty establishing the European Community (the EC Treaty).

<sup>7</sup> Muslim countries in Asia are the world's biggest Muslim countries include Indonesia, Malaysia, Brunei and East Timor. Many Asian countries have relatively big Muslim groups, especially in North-West China, Singapore and Southern Thailand.

promoting external adjustment". Thirdly, McKinnon (1963) states, "Open economies tend to prefer fixed exchange-rate arrangements since exchange-rate changes in such economies are not likely to be accompanied with significant effects on real competitiveness" should proposed that small countries are usually much more into international trade, thus, more inclined to join in a currency area. Mundell (1961) and McKinnon (1963) mention two countries that have symmetrical reactions from the external shocks and are probably integrating more effectively and gaining more.

Kenen (1969) mentioned that commodity diversification is an important factor in shocks; the more diversified a country is, the more insulation the country has against a variety of shocks. Shocks have a great affect in fluctuating exchange rates and putting pressure on exchange rates. Friedman (1953) and Kawai (1987) researched price and wage flexibility as an assumption for a currency union; if prices and wages are flexible, the adjustment process is easier when joining a currency union. In particular, inflation is more stable compared when there is a situation with sticky prices and wages. Mundell (1961) points out that the production structure of an economy is a remarkable factor of how good a skilled economy can adapt to shocks. Countries in a currency union that have similar production structures are more likely to adapt better to a currency union. Kenen (1969) reminds us that pre-requirement for a currency union is usually some form of political union, which secures parallel political acceptance for similar monetary reforms.

Mintz (1979) suggest that the political goals of members inside a union are the most important factors when joining a union. Cohen (1993) agrees with Mintz with his study of six different currency unions, where he found that the biggest incentive for forming currency unions was political integration. According to OCA literature, the key cost for nations to form a currency union is the loss of national autonomous monetary policy. The loss of national autonomy is based on the variation between countries before launching into the currency area; any gain must compensate for the loss of ability to use national monetary policy. (Barro, 2001.)

Kenen (1969) suggests that well-diversified and small national economies are the best ones to join currency unions, but also that a pre-requirement is having sophisticated internal policies. Well-diversified economies are still vulnerable for external monetary shocks caused by change in money wages relative to the import prices. Kenen (1969)

advises developing countries to keep their fluctuating exchange rates until their industries are leveraged. Krugman (1991) proposes that countries that are joining a currency union have to be ready to abandon their own currencies, which might cause a national rejection of such a move. Countries under fixed exchange rates in currency unions are unable to answer to external shocks, nor counter-cyclical or exchange rate policy.

The new theory of OCA tries to evaluate optimum areas by characterizing optimal factors. Padoa & Schioppa (1988) tried to categorize these characteristics from monetary side; their idea was to divide countries by the degree of integration to the four classes. The first class is exchange rate unions, where rates are fixed between countries. The second is a pseudo exchange rate union (Corden, 1972) which contains fixed interest rates, free capital movements, and some integration of monetary policies without formality. The third class is monetary integration, which includes irrevocably exchange rates, monetary policy integration to some extent, and the absence of fluctuating exchange rates. The fourth class is monetary unification in which there is monetary integration plus a single currency with common central bank.

During the last few decades, the amount of independent countries worldwide has increased, especially with the collapse of the Soviet Union, which has increased the number of independent countries in Eastern Europe. There were only 76 currencies in the world before the Second World War and now there are over 200 currencies, including 185 members of IMF. Globalization makes trade between countries larger and increases the supervision of exchange rates. The reasons for the increased importance of supervision are; increased trading, overseas investments, strategic weapons, amount of currencies, and capital movements. (Barro, 2001.)

Barro (2001) believes that the underestimation of Asian countries would be mistake and that Asian countries have made large economical changes in a short time, e.g., changing financial structures and legislations. It is plausible that the region can arrange pre-conditions faster than other regions due to the lack of democracy and de-centralized policy making. These fast changes were made during the Asian financial crisis when most of the countries fixed their currencies to the U.S. dollar. After the crisis exchange rates in Asia have focused on two main things, firstly of which was to reduce fluctuating risk; free floating exchange rates would help diminish incentives for borrowing foreign currency. The

second focus was developing monetary systems and unions to eliminate currency mismatches. (Bord, 2009.)

According to Eichengreen (1999), Eastern Asia is already an OCA, but he agrees with Madhur (2004) that the political situation prevents the launching currency union. He suggests that countries could start to prepare the necessary pre-arrangements. The European model showed that maturity is not the obstacle for arranging pre-conditions and optimality a currency union can become *ex post*. Mundell (2009) agrees that the political situation needs more time and effort from all counterparts and he sees East Asia be able to form a currency union before 2015. However, he sees that a single currency is not plausible in this point. Madhur (2004) suggest that the benefits of forming the ASEAN currency union would also exceed the costs, but recent political unstableness in Thailand, the Philippines, and Indonesia have showed that the stabilization of the region is a prior task before joint operation of monetary policies can be achieved. Among Japan, China, Taiwan, Hong Kong, Macau, and South Korea, policy power has been changed peacefully over the last decades and there has been a lack of hostile takeovers changing the power, which Mundell (2009) had said is one of the pre-requirements for forming common monetary policies.

Mandhur (2004) mentions the following four constraints for OCA theory; diversity in the level of economic development across countries, weakness of financial sectors, inadequacy of region-level resource pooling mechanisms and the lack of political pre-conditions for monetary co-operations. Between Eastern Asian countries, economical divergence in wages is not high. The European union economical divergence was higher before the EMU compared to current situation in East, which follows Eichengreen's (1991 & 1999) results of the OCA suitability for Asia and Europe.

Mandhur (2004) mentions an interesting perspective in discussing a currency union in Eastern Asia. Intra-regional differences in China are huge, especially in output and price levels, yet still there is one common currency. China is also restricting labor movement inside the country which means China lacks the pre-requirements of OCA in this area. Eichengreen (1991) states that obtaining evidence of interregional mobility is not credible anywhere. The OECD (1986) made research of comparable labor mobility between European countries and in the U.S. and results showed that the labor mobility in the U.S

was two to three times as high as between European countries. A special feature for East Asian labor movements is the lack of reliable data, especially since; interregional labor movements inside China are not credible. The population accounting system in China is still based on door-to-door accounting and reliability can be questionable.

Eichengreen (1991) states that the reason for larger interregional labor movements inside the U.S. might be caused by border controls and changes in fluctuating exchange rates. Inside the U.S., the cultural barrier for moving around the country is smaller than inside Europe, because of the history, language etc. Eastern Asia has a lot of immigration, cultural similarity, and languages with near roots. One factor that might overestimate the mobility factor in Eastern Asia is high capital mobility inside ethnic groups, like among overseas Chinese (Table 6.). The movements in these ethnic groups might overestimate the amount of overseas transaction, which may show that the transactions are widespread culturally while only among specified groups. The concept of family and family ties are more widespread in Asia than in Europe and trade usually occurs inside this accepted group, which might negate the estimates of transactions. Eichengreen (1991) points out that, if mobility is higher, the adaptation to shocks is faster, and that is why Eastern Asia could be more effective to adapting to shocks than Europe was before Euro era.

Mundell (2009) states that the main reason why the Euro area was built was political necessity. The area was not mature enough for it, but the need exceeded the barriers. Mandhur (2004) concludes that even if Eastern Asia is fulfilling the criteria requirements for OCA, it still needs to prove the institutional structures for building a currency union. Mauro (2000) still believes that Eastern Asia has a ready model to follow from the two decades from the EU, which could be followed so that they can “leapfrog” the similar challenges that the EMU confronted. Therefore, Eastern Asia has a model, not only theory.

According to Eichengreen (1999) East Asia is an OCA, but the question of an anchor currency is still under debate. Mundell (2001) lists the requirements for an anchor currency as; fixing has to be a “hard fix” that adjustment is allowed to preserve equilibrium in the balance of payments, keeping the chosen exchange rate fixed, correct choice of exchange rate at the time of stabilization, strong and united leadership, endorsement of the policy by the other members of the currency area, and fiscal solvency by keeping the debt levels in control to prevent currency crisis.

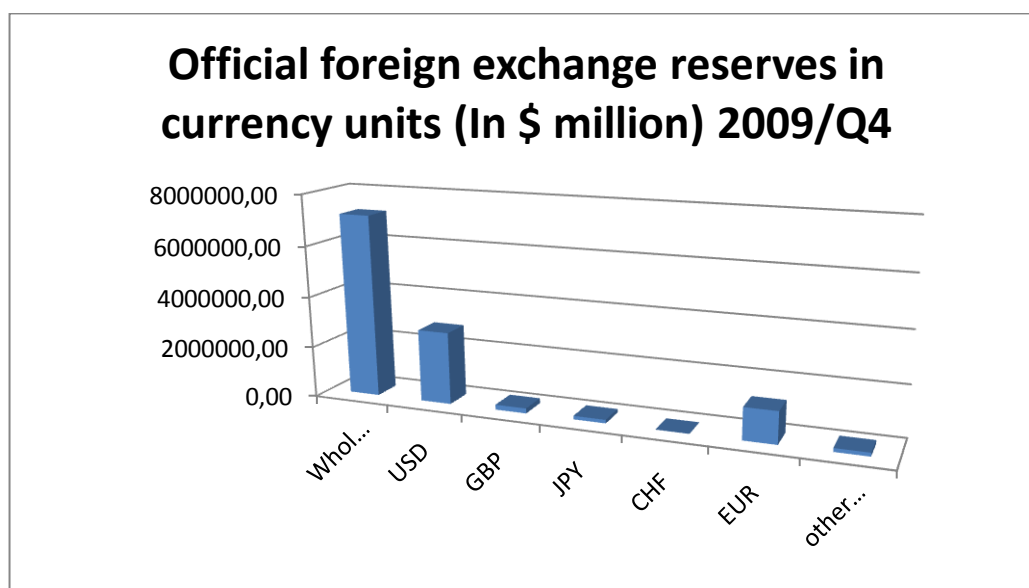


Diagram 3. Official foreign currency exchange reserves in currency units (COFER) – allocated

Source: IMF Statistic Department COFER database and *International Financial Statistics*

Diagram 3 shows the foreign exchange reserves in currency units and implies that the U.S. dollar is the most trustful reserve currency. The reserve currency statuses are divided by major currencies and the weight of other currencies as reserve currencies are not high. The yuan (RMB) has been growing to be the most important currency for the whole Asia, but in this moment it is not possible for the yuan to be an anchor, because the yuan is an inconvertible currency<sup>8</sup>. According to Eichengreen (1999), the yen was one of the best choices for the anchor because Japan's economy was in balance and its position as the third biggest reserve currency. Currently, Japan's economy is not stable for the yen being an anchor. Japan is running an account deficit with high external debt (Table 1.). Japan's banking system is in trouble as, monetary and fiscal policy has been problematic for decades. Recent research from Japan has shown that its creditor role has changed to being debtor, which decreases the yen's suitability of being an anchor for an East Asian currency area. The euro cannot be an anchor in practice, because it does not enjoy enough high reserve currency status in the Asian region.

<sup>8</sup> Convertible currency means that the currency can be used as international bank transfer without limitation. China's yuan has been unconvertible with limitations.



A basket currency could be one possibility, but a basket would be inconvenient to use. The fluctuation between currencies would cause a decreased use of a basket as a medium of exchange. A basket with a high weight of yuan has been introduced, but this kind of solution cannot be executed before the yuan is fully convertible. Also, the idea of using the SDR as currency in a basket has been introduced, but this would need some modifications of SDR from the IMF's side. Respectively, previous possibilities for a common currency have realistic obstacles to become an anchor currency for an East Asian currency area. Nevertheless, one solution is left: the U.S. dollar as the anchor. The U.S. dollar would have benefits if used as an anchor, because of high dollarization, a high rate of dollar peg, and a high rate as reserve currency in the region.

The chances for an East Asian currency are almost the same choices in which Hong Kong has for its future. Hong Kong could choose the path of dollarization through the U.S. dollar, yuan, or yen. Political circumstances are the biggest hurdle for choosing the yen, because of the Sino-Japanese war, which leaves us with two candidates – the yuan and the U.S. dollar. For Hong Kong, which is an extremely open economy, the choice of using the basket would be the optimum choice, but in reality, it is neither a long-term choice nor a possible solution to have a hedge currency against the fluctuating rates. The yuan's inconvertibility leaves one choice, the U.S. dollar.

# 3 Dollarization

## 3.1 The Concept of Dollarization

*Dollarization occurs when the inhabitants of a country use foreign currency in parallel to or instead of the domestic currency. (Mack, 1999).*

Unofficial dollarization occurs when people are holding foreign assets even though the foreign asset is not legal tender. The term "unofficial dollarization" covers both cases where holding foreign assets is legal or illegal. In some countries, it is legal to hold foreign assets in some form, such as dollar accounts in a domestic bank, but illegal to hold other kinds of foreign assets, such as accounts abroad, unless special permission has been granted by central banks. Unofficial dollarization can be in the following forms; in foreign bonds, non-monetary assets, and foreign currency deposits on abroad, foreign currency deposits in domestic systems, or in foreign bank notes.

Unofficial dollarization can be called asset substitution, when people are holding foreign bonds and deposits abroad as store of value. The goal of this arrangement is to protect wealth, preventing the depreciation of holding domestic currency. In the second level of unofficial dollarization people hold large amounts of foreign currency deposits in a domestic banking system. This arrangement is generally called "currency substitution". In currency substitution wages, taxes and everyday expenses are commonly paid using domestic currency, but more expensive items are paid using foreign currency, e.g., houses and cars. In the final level of unofficial dollarization people think in terms of foreign currency and prices in domestic currency become they are indexed to an exchange rate (Mack, 1999.)

The total level of the unofficial dollarization is hard to estimate, because there are no exact figures how liquid currencies are in circulation. Central banks do not reveal the exact amounts of issued currencies. Counting together foreign currency reserves in domestic currencies gives some estimations of unofficial dollarization, but not all the money is inside domestic banking systems. Large amount of U.S. dollars are used in illegal activities and are not deposited to banking systems. (Mack, 1999.). The Free Gold Money Report (2010) estimated that the amount in circulation was \$860 billion in the beginning of 2010.

One type of dollarization is semi-official dollarization and more than a dozen countries have a system that can be called semi-official dollarization or bi-monetary system. In these countries foreign currency is a legal tender and may even dominate bank deposits, but the domestic currency has a major role on taxes, wages, etc. and these countries usually retain their own central bank and monetary policies. There are only two officially semi-dollarized countries in Asia; Cambodia and the Lao People's Democratic Republic (Laos). The U.S. dollar is a commonly accepted payment currency besides riel (KHR) in Cambodia and kip (LAK) in Laos. Vietnam and Mongolia are unofficially dollarized countries without legal status by using the dollar as a secondary currency, but U.S. dollars are commonly accepted as a method of payment. (Mack, 1999.)

Official dollarization is called "the second solution" after pegging domestic currencies to the U.S. dollar using a 1:1 ratio. Official dollarization also occurs when a country uses only the dollar as the country's official currency. This is a common case in most Latin American countries and around the former Soviet Union area (Meyer, 2000.). Asia has one full-dollarized country, Brunei, which uses the Singaporean dollar (SGD) as a secondary currency besides the Brunei dollar (BND). South and Central America have more cases of full dollarization; two official ones approved by the FED and one executed dollarization without approval, when Ecuador launched its full dollarization without permission from the U.S. government. Two other fully dollarized countries are El Salvador and Panama.

The U.S. dollar has been the most widely used currency in substituting domestic currencies besides the pound and euro (Table 3.). U.S. dollar domination has been significant in dollarization processes, but the euro has been challenging dollarization by its own "eurozation".

### 3.1.2 The Benefits of Dollarization

*Benefits from the official dollarization: convergence of domestic inflation towards world inflation, elimination of currency risk, which reduces domestic interest rates, better environment for investment as a result of stable inflation and lower interest rates and absence of the so-called “original sin” which help to reduce the country risk as currency mismatches in the country’s balance sheet disappear. (Jacome & Lönnberg, 2010)*

Meyer (2000) has gathered the pros and cons of dollarization and states that the benefits from dollarization are elimination of devaluation risk and ensuring low inflation. Dollarization would stabilize the volatility of exchange rate changes and the elimination of high inflation cycles would help to develop the long-term domestic capital markets. The low transaction costs would help international trade increase by eliminating currency mismatches and helping domestic companies get into global markets. Nevertheless, the main factor is that it significantly spurs international trade. Gross (2006) mentioned that in Hanke’s (1994) research of 32 countries from 1950 until 1993, which shows that the GDP growth has been faster, inflation and volatility has been lower in dollarized countries compared to *ex post* levels.

Fischer (2006) disagrees that dollarization would be a self-fulfilling prophecy of success in the future and would lead to better macroeconomics. He agrees that in previous cases full dollarization has led to better economic performance, but disagrees that full dollarization is a current trend. He claims that, “trend is going to de-dollarization like in Israel, Poland, Mexico and Egypt”. He mentions also that in Latin America de-dollarization is a current phenomenon which should be impossible, because dollarization was seen as impossible to reverse.

Arellona and Heathcote (2007) compared borrowing in dollarized countries; El Salvador and Ecuador were compared to Mexico, which still stays unofficially dollarized regardless the high dollarization rates. They found that borrowing became easier after El Salvador was dollarized and the lack of a highly developed financial system decreased the market integration. They suggest that in the case of dollarization, the most interesting thing is the possibility to prevent or to re-act shocks with possibility to borrow using lower interest rates. Supporting this assumption they found that in countries where the revenue of the

government is counter-cyclical, it will gain the most from relinquishing control of monetary policy.

One feature of improvements by dollarization is that arbitrage removes from trade; arbitrage is a system of taking advantage of price differentials between two or more markets. Under dollarization, trade does not need unnecessary agents, which leads to resource unchaining and more effective use. The empirical case of El Salvador proves that after dollarization, actual growth has exceeded estimated growth and the main reason for this has been vanishing arbitrage. (Moreno-Villalaz, 1998.)

Bergsten (1999) introduced integration with the U.S. as an additional criterion for dollarization. The closer business cycles are with U.S. business cycles, the more a country will benefit from dollarization. Nicolo & Honohan & Ize (2003) disagreed with previous stated benefits by mentioning that dollarization has only one effect; it offers an inflationary hedge for depositors.

Financial integration plus official dollarization using a leading international currency makes a country open to a larger pool of available funds. Consequently, the location of loans does not need to be closely linked to the location of deposits, e.g., the main U.S. banks do not require more deposit holdings to open account in Panama compared opening in the U.S. All of these factors make countries more attractive for investment inflows.

### **3.1.3 The Cost of Dollarization**

*Basic divide for cost of dollarization is: loss of seigniorage, limited or no ability to provide lender-of-last-resort (LOLR) assistance to banks in trouble, lack of exchange rate to be used as a shock absorber and inability to reduce the value of financial commitments denominated in domestic currency via large exchange rate depreciation or through fueling inflation. (Jacome & Lönnberg, 2010.)*

Dollarization costs are a country's inability to adjust exchanges rates, the losses of seigniorage and sovereignty. The loss of seigniorage, i.e. for money printing, is smaller if a

country already is highly dollarized. Losing this ability is called a “second loss” in seigniorage, while the loss of monetary policy is the first one. Losing the ability to print money affects also inflation within the tax system, which can be used to help an economy in trouble in cost by others. The loss of using the inflation tax is offset by the benefit; the risk to fall into endless fluctuating inflations. When a country leaves the domestic currency and goes through dollarization, it hands monetary power to the FED. Losing money supply power to the U.S. Federal Reserve System (FRS) is also a cost, but, basically, money distribution between the U.S and outlying areas, e.g. Panama and Hong Kong, is based on market forces.

Replacing domestic currency with the U.S. dollars is a huge single cost, but one solution would be a step-by-step transformation through a dual currency system, which was used with euro. The Economist (2002) estimated that transforming to the euro system costs 1% of countries GDP because of renewing contracts, etc. (Schuler, 1998.)

Meyer (2000) also mentions that dollarization might cause a risk if global banks will acquire local ones when local banks incomes decrease because of dollar-denominated assets sales. The risk of global acquisition is smaller if the internationalization level of local banks is higher. Schuler (1998) reminds us that small countries do not need as large adjustment processes as larger countries and if the banking sector is internalized, only the structure of financial institutions changes.

Latin and Central American cases have showed that in dollarization, only the notes have been changed because it is an easier solution and gives some national identity when coins are still in the old national currency, e.g. Panama’s balboa still has a secondary role in coinages, which gives some identity for residents of Panama. Replacing domestic coins with dollar coins is found to be too expensive to execute because the returning rate of coins is low and this problem is easy to solve by fixing the dollar/balboa exchange rate to be 1:1. This arrangement makes balboa coins equal to dollar coins and they are not needed to be draw from circulation they are marginally a small part of the whole monetary system. (Mack, 1999.) According to Schuler (1998) previously dollarized countries have not felt a loss of sovereignty after dollarization, but Mundell (2002) mentions that political resistance is always involved with the process of dollarization.

Schuler (1998) mentions that the dollarization process has usually occurred under economical crisis, mainly under high inflations and historical examination shows that crisis's have been the cause for dollarization, e.g. Ecuador failed with Brady bonds, Zimbabwe, and El Salvador had hyperinflation. Krugman (1999) agrees that dollarization is an effective move against hyperinflation, but he sees dollarization as sometimes unnecessary. He based his assumption to preferences that it is more desirable to have steady unemployment, interest rates, and fluctuation rather than losing seigniorage and sovereignty. In summation, there are two losses which are not offset instantly by benefits; the losses of seigniorage and sovereignty.

#### **3.1.4 General Currency Board**

*Currency board is a monetary authority that issues notes and coins convertible to a foreign currency or good with fixed value and based on demand. (Schuler, 1998).*

The differences between a currency board system and full dollarization are not extensive. Under a currency board system, the government does not have the capability to use active monetary policies. A currency board is usually the first step to full dollarization, which relieves transformation to the dollar system gaining enough foreign net reserves and makes the adaptation process smoother. A currency board is not always the straight path to the dollarization, Eichengreen (1999) has mentioned that de-dollarization has been a rising trend around the world.

A currency board is a monetary authority that issues notes and coins convertible to a foreign currency with fixed value and based on demand. In the 1950's, 50 countries and territories had currency boards and historical inspection has shown that countries or economies using currency board systems have good macroeconomic performance and enjoy economical stability (Schuler, 1992). Schuler states that currency boards do not have any implementation to monetary policies. The main characteristics of currency boards are convertibility at a fixed rate by backing assets with monetary base. Adapting to a currency board system requires sacrifices in the form of abandonment of the option as lender-of-last-resort. Reserves are needed in backing new issues and a fraction of reserves has to be extremely liquid in form to avoid conversion claims, thus keeping trust

for the system. With low trade barriers, local tradable prices should be equal to world prices and interest rates should follow approximately the same rates as in the rest of the world.

The other important difference between full dollarization and a currency board, according to the Hong Kong Monetary Author (HKMA), is that a currency board system has a full reserve backing requirement of a monetary base, and an explicit commitment of the currency board or monetary authority to convert domestic currency into a reserve currency at fixed exchange rates. The backing rule prevents the central bank from creating unpacked monetary liabilities by maintaining this kind of monetary discipline. Noting a tendency of monetary policy to be destabilizing rather than stabilizing, Mankiw (2010) wondered if countries would actually be better off by surrendering their monetary control. (McHale, 2010.)

Argentina's currency board was launched in 1991 and their growth rates were highly volatile and the system was under serious attack during the so called Tequila Crisis<sup>9</sup> in 1995. After the Tequila crisis the Asian financial crisis had an effect on Argentina's economy. During the Asian financial crisis, Brazil devalued its currency and caused more problems for its biggest trading partner, Argentina. The devaluation pulled Argentina to severe recession in 1999, which lasted over two years. According to Zarazaga (1995), currency boards did not protect Argentina from the speculative attacks to their currency. Devaluation was avoided, but there were huge losses in sectors of the economy. Argentina's case showed the fragility of currency board systems, although, some currency boards, e.g. Hong Kong's currency board arrangement with the U.S. dollar since 1983, have been successful. (Burdekin, 2010.)

Ecuador chose to rush to a solution and avoid crisis by executing dollarization without approval of the U.S. government in 2001. After dollarization, Ecuador had a steady inflation and somewhat stable macroeconomics. The most followed case regarding dollarization has been Panama, which was dollarized in 1904. Since 1971, when the

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<sup>9</sup> The Mexican peso crisis occurred in 1994, which became an effective crisis with the sudden devaluation of the Mexican peso in December. The impact of the Mexican economic crisis reverberated around Latin and Central America and was labeled the Tequila Crisis.



Bretton Wood's system broke down, only Panama amongst the pool of less developed countries, has kept its inflation at an all the time low below 20% without even having exchange controls; the inflation has been under U.S. levels, which can be said to be an extraordinary situation. Along with Puerto Rico, Panama is a unique Latin American country where private lenders offered 30 years mortgages at fixed interest rates. Official dollarization has been a success in these countries where there is the same kind of relationship in economies between New York, Puerto Rico, and Panama (Schuler, 1999). Berg and Borgestein (2000) believe that there are some problems with saying dollarization can be solution to economies like Hong Kong as there are lack of many experiences to compare with; only Panama has the same kind of size and structure as Hong Kong. Unfortunately, Panama's model is out-dated regarding Hong Kong dollarization.

The empirical cases above have shown that dollarization is virtually irreversible and that the risk for default does not disappear, e.g. Minnesota has grading AAA and the New York has A. Still, the role of Panama has been encouraging, and in Costa Rica, the president of the Central Bank has expressed his interest for official dollarization and intends to follow Panama's experience. Also Ministry of Finance in Guatemala has expressed its interest for dollarization as well. (Fernandez, 1999.)

### **3.2 The Process of Dollarization**

*In the dollarization process the most crucial part is credibility (Mundell, 2009).*

Mack (1999) researched the dollarization process step-by-step and points out the following timetable for the dollarization process. Firstly, date of execution of conversion rate when the new currency has officially become the legal tender. Secondly, date when the central bank will stop conducting open market operations. Thirdly, the date when the central bank will start to replace the domestic currency with a new currency. Fourthly, Period of time when both currencies are circulated, including the date for notes and coins to be phased out from circulation. Finally, date when financial system balance sheets will be converted into "the new currency" and new accounting rules for the corporate sector will enter into effect.

Mack (1999) mentions that previous cases of dollarization occurred because of high inflation. Tsang (1998) reiterates that the problem executing dollarization during crisis is; the announcement of abolishing a domestic currency would cause the unofficial exchange rate of domestic currency to plunge, and sharp rise of the interest rate. Tsang (1998) says that a country will be hurt more in the long run if it makes a currency substitution during a crisis. Mundell (2009) states that dollarization should not be used in a time of financial crisis, but only in cases of restraining hyperinflation. Bergsten (1991) says the best solution for hyperinflation is a strong anchor currency, e.g. the U.S. dollar for Latin American countries and for Zimbabwe. Arellano and Heathcote (2007) mention that, when Ecuador was in the middle of a severe economic crisis caused by its banking system in 2000, the U.S. dollar was the best anchor. The governments of developing countries are not so successful at controlling inflation because governments try to increase short-term growth at the expense of long-term stability.

Arellano and Heathcote (2007) write "If dollarization is permanent, it eliminates the possibility of currency crises." Mendoza (2000) argues that eliminating distortion uncertainty over the duration of stabilization policies can deliver substantial welfare gains, but not full elimination of the default risk. Calvo (2000) mentions that dollarization also solves the "fear of floating" problem, which arises when international liabilities are denominated in dollars and currency devaluations therefore precipitate debt crises.

Steil (2006) says nations can impose large costs on citizens while trying to keep their national currencies by devaluation, which leads to citizens losing their savings and rapid or consistent inflation cycles. Steil (2006) also reminds that the current monetary system is based on 200 currencies in faith of investors. He sees the system as inefficient and dangerous. He suggests that many currencies of emerging economies could be swapped away and replaced by stronger and more stable currencies that could be used more widely e.g. dollar, euro or yen. In case of the fixed exchange rates countries cannot act as LOLR, which would be counted as loss of power in dollarization if a country would have fluctuating exchange rates. The lack of a LOLR function prevents crony capitalism and promotes a healthier banking system. Basically, this prevents too-big-to-fail problems. Acosta (2001) examined the political side of dollarization and believed Ecuador and El Salvador had a strong common need to replace old economic policies, which speeded the

change of currency systems, e.g. Neo-liberalism<sup>10</sup>. In Ecuador and El Salvador, the institutionalization of socio-economic changes was introduced following painful domestic conflict. Gross (2006) proposes that if dollarization is based also on the abandon of old ideologies, de-dollarization can be a political problem. He suggests that long-term thinking is needed when making decisions of dollarization.

### 3.3 The Post Era of Dollarization

*Each country with a flexible exchange rate is an interest rate island, with separate inflation rates and separate interest rates. (Mundell, 2009).*

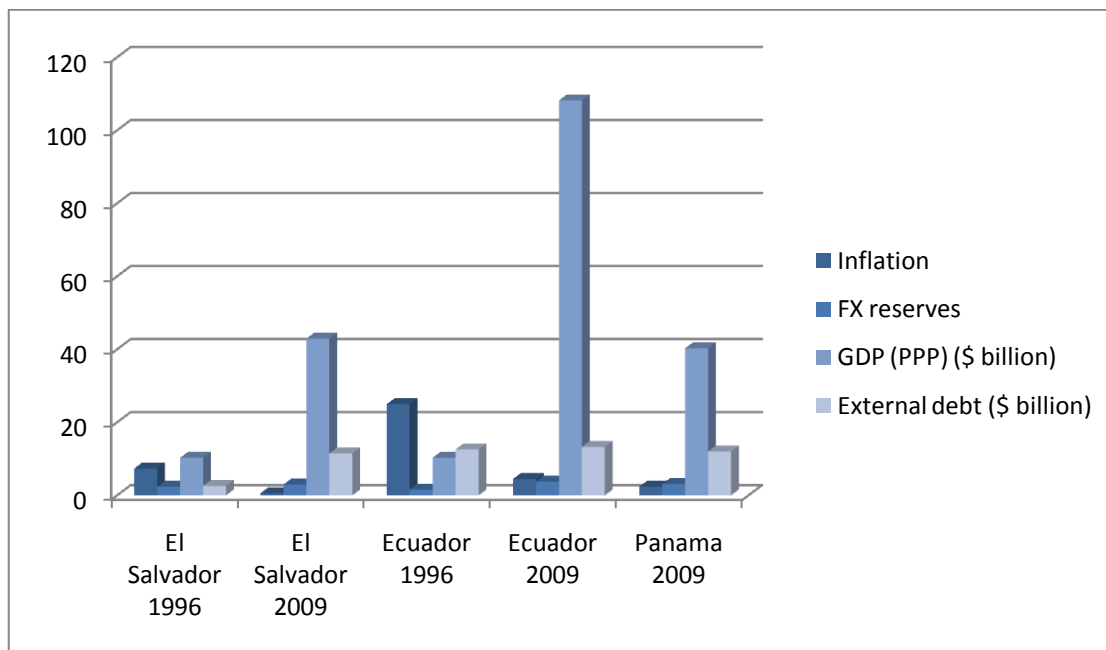


Diagram 4. The *post era* development of dollarized economies in Central America

Sources: The CIA World Factbook 1996 & 2010, and Economy Watch, <http://www.economywatch.com/>

After dollarization, interest rates in countries should be equal to U.S. levels. Diagram 4 shows that the *post era* of dollarization has been inflationary steadier in dollarized countries. In environments of macroeconomic stability, the less disruptive method of converting domestic currency interest rates to dollar-denominated interest rates is to

<sup>10</sup> Neoliberalism is a market driven approach to economic and social policy based on neoclassical theories of economics that maximize the role of the private business sector in determining the political and economic priorities of the state.

maintain the original terms and conditions of the contract, and apply them using conversion rates. Interest rates will be lower because dollarization will eliminate the devaluation risk arising from the fear that the central bank is not strongly committed to maintaining the current exchange rate. Devaluation risk accounts for 1 to 4 percentage points of interest, depending on the period of the loan. The longer the period is the higher the devaluation risk and *vice versa*.

After the re-arrangement of all contracts, assets and liabilities are valued at the conversion rate. However, converted dollar interest rates will probably still reflect previous expected devaluation and country risk premiums. Even though the premiums are not large, the post time of the dollarization converted interest rate will result in higher rates compared to those agreed to in contract during the post-dollarized period. This problem can be solved with voluntary re-negotiations at an interim period. El Salvador circumvented problems by announcing a three months re-negotiation period after the law of dollarization was approved. The re-negotiations were made and prevented discounted interest rates from appearing. (Mack, 1999.)

Discounted interest rates mostly appear in times of high inflation when dollarization causes problems in discount contracts. If there would be this kind of dollarization based problems legislative council needs to take a role in contract settlement. Gruben (2003) disagrees use of government interventions claiming that contracts should always incorporate time-inconsistency contingencies, e.g. option clause of dollarization. More specifically, governments are not well informed to interfere by changing the parameters of pre-dollarization contracts and interference would create *ex post* moral hazard to market discipline. Gruben agrees that converting domestic currency interest rates into the dollar under hyperinflation, or especially under high inflation, is a demanding assignment and requires a very thorough research of potential effects.

In case of an appearing crisis, dollarization will help a country to keep short-term rates steady through overnight borrowing from U.S. markets, or for a week or month of loan periods. Schuler (1998) explains that the Asian financial crisis only had a little effect for short-term loan rates in Panama because Panama had the possibility to use U.S. overnight loans, which made short-term interest rates as steady as in the U.S.

Altig & Nosal (2002) researched reactions for dollarization and they divided issuing countries reactions to three different models; passive, active resistance, and active encouraging strategies. The U.S. government conducted a passive role for dollarization. In the passive model, a country neither encourages dollarization using subsidies nor discourages using threats. If the issuing country would be encouraging, the typical arrangement would be one of sharing the seigniorage benefits. The U.S. has never shared this privilege. Political and economical barriers are also obstacles for sharing this privilege and in the open world active resistance is hard to execute. The issuing country should have to have a tool to make the threat credible without harming itself and it is not obvious that this kind of solutions exists. The only way in which it has been executed in recent history has been the ECBs threat to countries that have been thinking about eurozation. The ECB has announced that for eurozation countries, future applications to the EMU would be more difficult if eurozation occurs without their acceptance.

Altig & Nosal (2002) mention that U.S. business cycles can be counted as quite independent and their example is that U.S. domestic policy has been under influence of crisis, but without major problems, e.g. collapse of the Thai baht, followed by the Asian financial crisis, and the collapse of the Russian ruble. Their conclusion was that the marginal cost of dollarization driven integration of domestic and foreign markets is easy to overstate because markets are already highly integrated. Their idea is that the benefits from dollarization by issuing and adapting to other countries are aligned, but dollarization does not pose a threat for the U.S. economy.

# 4 Hong Kong Dollarization

## 4.1 Hong Kong's Position in an Asian Currency Union

The idea of implementing dollarization to Hong Kong was first introduced to the HKMA by John Greenwood in 1988. Economic growth was just turning to its bloom in Hong Kong and the working currency board system was launched in 1983. This time period, however, was not suitable for dollarization to be launched. The second time dollarization was in public discussion was during the Asian financial crisis, but dollarization during a crisis is always a risk so Hong Kong decided not to go with this suggestion. Currently, public discussion of the dollarization is rising. The situation is once again unique, because the HKD has risen to be a highly traded currency and Hong Kong has acquired huge foreign exchange reserves. The HKD is the 9<sup>th</sup> most traded currency in the world, mostly because inconvertible to the RMB, which leads the HKD being a transfer currency between mainland. The U.S. congress (2000) counts Hong Kong as an unofficial dollarized other currency.

Mundell (2009) says that timing is very important in the dollarization process and it should not be executed during a crisis. This was one of the original reasons why the idea of dollarization in Hong Kong was dumped during the Asian Financial Crisis. The current situation in Hong Kong would benefit from changes in monetary structure, because Hong Kong has high foreign exchange reserves, steady interest rates and macroeconomic balance.

Mundell (2009) has introduced two scenarios of the world monetary system; the first one is called the APEC solution, where the whole of Asia would be fixed to the U.S. dollar, and the second scenario was an individual currency union for the Asian region. Under the APEC solution (Diagram 5), Hong Kong's position as the only dollarized economy would be beneficial, as it would dominate the exchange platform as a financial hub. If Hong Kong would go to an Asian currency union through the APEC solution it would have to pay one-time costs twice when going to dollarization and reverse the dollarization by de-dollarization. The gains from dollarization are highly correlated with the time in which Hong

Kong would stay under the APEC solution, before joining to the Asian currency union. The time under the APEC scenario is crucial factor.

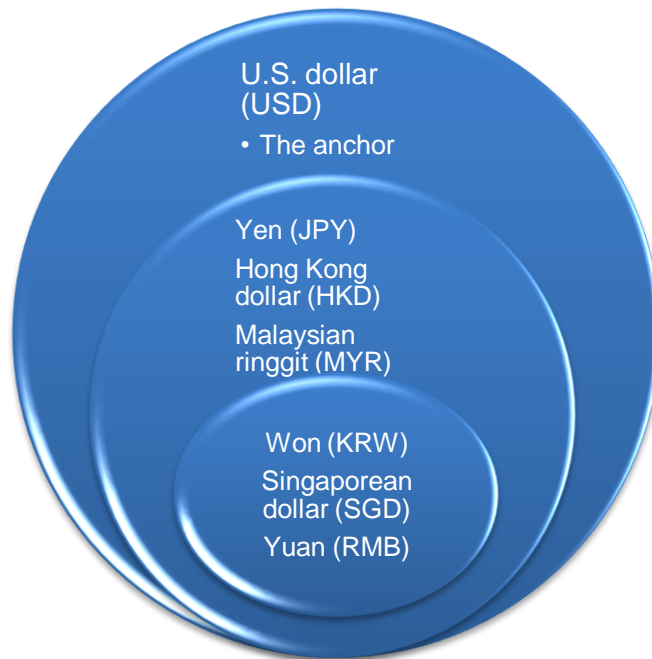


Diagram 5. APEC solution (Mundell, 2009)

Mundell (2009) said Hong Kong's dollarization would be the first step to form the EACA (Diagram 6), disregarding which countries are included. He also suggested that Malaysia and Singapore could be included to the currency area and he points out that Hong Kong has a remarkable role if an Asian currency area is built in the near future. Hong Kong's position as SAR, having large net foreign reserves and having second biggest foreign exchange after Tokyo, makes the role of Hong Kong very important for a future currency union.

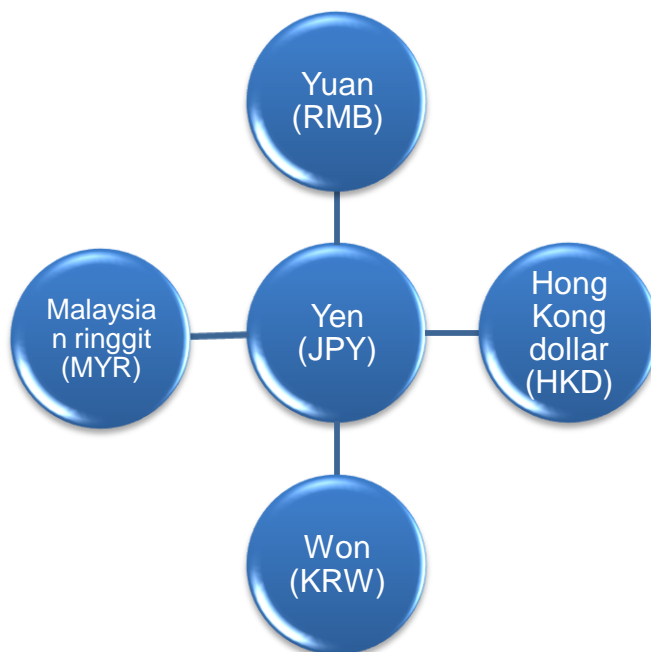


Diagram 6. EACA solution (Mundell, 2009)

Achieving a consensus for establishing a currency union is a vast process that will require a lot of discussion. Relationships between Japan, South Korea and China have been warming and possible increases of co-operation have been on the table. While political relationships are warming and the idea of a currency union has been discussed openly with the governments, it would be an optimum time for the dollarization of Hong Kong. The process requires time and Hong Kong's macroeconomic situation is stable, unlike its situation during the Asian Financial Crisis.

The overall development of Asian monetary integration can be described as more defensive than offensive in the sense of resource pooling. The only major monetary joint ventures have been; the Asian Monetary Fund and Chiang Mai Initiative<sup>11</sup>. Both were financed by ASEAN+3 countries and a major part of finance came after the Asian financial crisis, when the ASEAN+3 decided to prepare for future challenges. In the end, after the crisis there has been little urgency for monetary unification. Recent problems, e.g. euro crisis in Greece and strengthening dollar, have shown an increasing urgency for such. Japan, China, South Korea, and small tiger economies are closing toward each other in

<sup>11</sup> The Chiang Mai Initiative (CMI) is a multilateral currency swap arrangement among the ten members of the Association of Southeast Asian Nations (ASEAN), the China (including Hong Kong), Japan, and South Korea. It draws from a foreign exchange reserves pool worth \$120 billion and was launched on 24 March 2010.



terms of wealth and income. Asian regions are increasing in power and world economy forums put pressures on them integrate economically. According the City of London Global Financial Center Index (2010), seven of the Asia Pacific's financial centers are among of the top 15 in the world. Also, the current RMB appreciation indicates RMB will become more flexible in the future. RMB convertibility will cause more cash inflows to China and Eastern Asia, and it will cope with the same pressures that it did just before the Asian Financial Crisis. The crisis is still in close memory and should make countries think about preparation for a potential future crisis.

Mundell (2009) said that the dollarization of Hong Kong would be the best solution to keep the SAR status. There have been different ideas of using some other anchor besides the U.S. dollar because the U.S. dollar has been declining and the U.S government has been unable to prevent growth of its massive budget deficit. The U.S. dollar has been the best performing currency in the world and enjoys strong credibility among currencies. Dollarization would be a problem for Hong Kong if the U.S. dollar would become a volatile and unstable currency, but, nevertheless, the volatility risk occurs in present time through Hong Kong's net foreign reserves (Table 1.). Previous objection to dollarization in the 1990s was that Hong Kong did not have enough net foreign reserves or denominated assets in the form of U.S. dollars. According to HKMA (2010), the reserves are not the problem because Hong Kong had growing trend of net foreign reserves over the last decade. Xu (2000) disagreed previously that it does not matter if the reserves are not exceeding the 10 percent rule, but Hong Kong's reserves exceeds the 10 percent rule easily, which, can be seen in Diagram 7. Moreno-Villalaz (1998) noticed that after dollarization the need for foreign reserves would decrease because the thrust for the dollar is in more solid base than the thrust for other currencies.

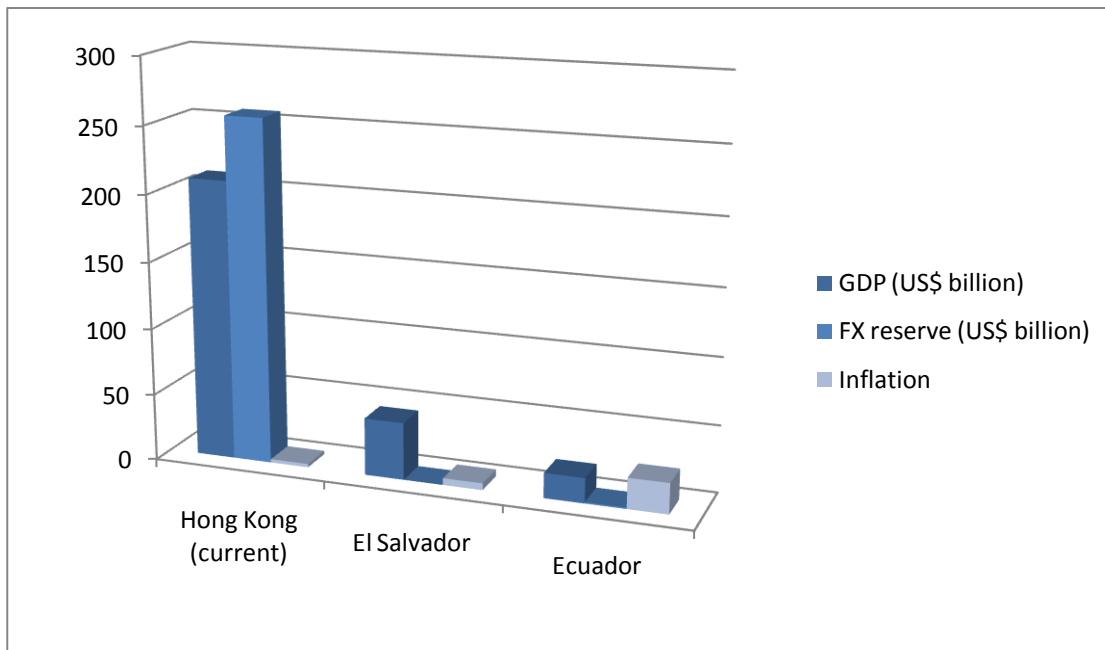


Diagram 7. Foreign exchange reserves in time of dollarization

Source: Table 5.

Mundell (2009) suggests that Hong Kong should be dollarized because the HKD is not a currency of the future. After dollarization Hong Kong, would have a world-class currency, and the interest rates should be equal with New York's interest rates. China would benefit by having a platform for worldwide financial markets and through the Hong Kong exchange market, it could help the RMB to be more convertible. At the current moment, pressures for RMB convertibility are widespread and the whole world is focusing on the movements of peg between RMB-USD. Dollarization of Hong Kong would be beneficial for the other Asian countries with high unofficial dollarization rates, e.g. Cambodia has 95% of the currency in the U.S. dollars. Later, this dollar-based currency area in Asia could be a platform for building an independent Asian currency. For Hong Kong, the need for dollarization is totally different than for South or Central American countries. Hong Kong economy is in balance but has not been the case for the latest dollarization discussions. Instead of fixing the macroeconomic the main target for Hong Kong's is to secure its position after Chinese final takeover and to secure its autonomy position to some extent.

If Hong Kong and China would combine their currencies, the benefits would be diminishing transaction costs and the risk of exchange rate variations. Combining the HKD and yuan

would diminish these kinds of rapid exchange rushes, but the biggest problem of replacement is inconvertible yuan. Barandiaran and Tsang (1997) mention that the HKD and the yuan are convertible to some extent in southern parts of China. Mundell (2002) does not find the yuan as perfect substitute for HKD, which he sees is the main obstacle for integration of these currencies presently and possibly in the close future. Tsang (2001) presents a new idea of creating a currency basket with a 50-50 ratio of euro and dollar to substitute the HKD. In the short-term, the idea would be plausible, but as Tsang was researching possibilities for uniting the HKD and yuan, he found that the future changes from this basket situation would not be as smooth as the current situation.

Mundell (2009) sees that fluctuating currency rates are not a solution for Hong Kong, because Hong Kong is very special region. It is extremely open and would adopt the entire possible crisis in it. Mundell reminds us that the fluctuation problems before launching the currency board system in 1983 were because fluctuating exchange rates were absorbing shocks. Tsang disagreed with Mundell, mentioning that the 1983 was an extraordinary situation when the handover was first introduced and an uncertain situation caused the fluctuations. Under a fixed exchange rate system Hong Kong is still very volatile for external shocks.

There are many examples of dollarization, e.g. the U.S congress (2000) listed the following independent countries that use or were using dollar as their official currency; East Timor, Ecuador, El Salvador, Marshall Islands, Micronesia, Palau, and Panama. Also, there are some other regions which are under U.S. or other economies but are use the dollar as an official currency.

Barandiaran and Tsang (1997) mention two different aspects which are remarkable when combining two neighbor currencies. First is the degree of market integration between two economies and the transaction demand for the currencies. Second, if there is close integration between currencies, the reputation of currencies is important factor. Stability of currency value and convertibility into other foreign currencies are crucial. Mundell (2009) states that the size of the country becomes a crucial factor in the process of transforming the currency board to full dollarization. For example, Argentina faced huge problems in credibility when turning to full dollarization.

The reason why Hong Kong has not yet gone through dollarization is mainly because the Hong Kong currency board is an orthodox. Having an orthodox currency board means that the whole monetary system is based on following a strategy of keeping a fixed exchange rate. For another point of view, it is easy to change the whole system, but small changes are relatively hard to execute. Schuler (1998) was encouraging HKMA to abandon the orthodox system and transform to dollarization. He sees the orthodox system as an effective system, but RMB devaluation would increase speculation against the HKD and compromise the currency board system. China announced that it will abandon the fully fixed exchange rate on 19<sup>th</sup> of June 2010, and will let RMB fluctuate under supervision, like it did until 2005. This process will put pressure on the HKD which has been suspected of being undervalued according to the Economist's famous Big Mac index (2010).

#### **4.2 The Hong Kong Currency Board System**

Hong Kong started to operate under a currency board from 1935 until 1972, which was linked to sterling. Between 1972 and 1974, the HKD was set at a fixed rate to the U.S. dollar. From 1974, the HKD fluctuated freely against the U.S. dollar until 1983, when Hong Kong went to the currency board system using the U.S. dollar peg. (Schuler, 1998.)

In September of 1982, while Hong Kong was under a free-floating system, officials began to plan for the region's future after its return for the mainland. As a result, confidence in the HKD and economy began to diminish. The value of the HKD dropped by 50% as the property market went downwards. The proposal for going back to the currency board system came from John Greenwood, who was in current Hong Kong's business economist. His suggestion was to achieve anti-inflationary policy and promote currency stability, which would be needed to help Hong Kong increase property markets. (Schuler, 1998.)

While Hong Kong has successfully used currency boards, in the past, it has also suffered from high volatility, especially during the Asian Financial Crisis. In 1998, the GDP fell tremendously in the Asian region, strongly affecting the Hong Kong economy even though,

Hong Kong had an effective currency board system (Berg & Borensztein, 2000). The Asian crisis showed that even the currency board cannot protect a fixed exchange rate from speculators or outside monetary shocks. For instance, in the context of the Hong Kong currency board, Lo (2005) reports that in response to the U.S. contraction monetary shock, domestic output falls dramatically.

Ito & Kruger (2001) count three major phases for the Hong Kong currency board; the time of rule-bound regime, discretion regime, and de-emphasis of discretion and return to a rule-based regime with a confidence booster. The difference between rule and discretion is that the first one entails commitments about future policy, thus predictability of policy measures. Ito & Kruger (2001) show in that time period that the credibility of the currency board varied significantly. Later research, however, shows that the credibility recovered after the 2005 reforms, when the exchange rate gap was restricted to 1000 pips<sup>12</sup>.

Hong Kong's currency board is not completely orthodox and Hong Kong currency board has long roots from 1983 when it was launched. Nowadays, the currency board is based more on tradition than written law. The U.S. dollar has been the external anchor currency for the HKD. The system does not have any specific reserve requirements or maintenance requirements of any specific components (Schuler, 1998). Hong Kong's currency board is a prime example of the method called a hard peg. The U.S. dollar was an obvious choice, because of the trade volume between the U.S. and Hong Kong. The HKMA (2009) announced that the total assets of the exchange fund amounted to HK\$2,151.7 billion on the last day of the year. The currency board account shows that the monetary base at the end of the year 2009 was HK\$1,010.7 billion and the system had backing assets worth of HK\$1,081.1 billion.

A currency board is a prospect for stable exchange rates like the traditional peg, which is believed to increase investment and trade. Hong Kong's currency board has survived many booms and busts, the most notable of which was a speculative attack during the Asian financial crisis of 1997-98. The HKMA sold large amounts of U.S. dollars to defend the peg in October 1998 and after the crisis, the reform for the board was introduced, using a weak-side convertible undertaking (CU) system. This was an asymmetric weak-

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<sup>12</sup> Pip is the smallest counted marginal of exchange rate.

side commitment, which means that HKMA was ready to sell U.S. dollars at 7,80 without being obliged to purchase them at a pre-announced rate.

In autumn 2003, the HKD appreciated to 7,7 against the USD. The reason was suspicion of investors that HKMA might start a regime to pull the currency board system down and end the era of a fixed exchange rate. The limits were changed after a heavy discussion in 2005, because the HKD was under speculative attacks during the Asian financial crisis. The exchange rate fluctuated between 7,8 and 7,7 and the end result was that HKD was appreciated and the HKMA thought to end the appreciation and adjust boundaries. The HKMA introduced a symmetric target zone with a band of 7,75 to 7,85 on a width of 1000 pips. According to the Big Mac index in the Economist (2009), it was suggested that the HKD is 52% undervalued. This might suggest that current stability may be coincidental and caused by the current undervaluation of the HKD. When there is recoil the exchange rates may test the credibility of new boundaries.

After the 2005 regime, two potential risks have emerged. The first risk is the uncertainty if HKMA will honor the peg, or if it reacted for appreciations with this fast solution. HKMA has publicly announced that they will continue using the current currency board system. Ferro (2001) sees it worth mentioning that southern parts of China have been closely integrated with Hong Kong so it makes eventually sense to replace the U.S. dollar peg with the RMB peg. Keeping in mind that the HKD is the most important close currency, it makes it technically possible to peg the HKD to RMB anytime. An expected rise in the value of RMB makes no-sense to peg the HKD to RMB. According to HKMA, during the Asian Financial Crisis the best solution was to fix the exchange rates rather than let them float. The HKD is the only freely convertible currency in the region that withstood the pressures caused by the Asian financial crisis. Some arguments have been publicly expressed that the HKMA solution might have not been the best one, the linked exchange rates contributed to the low growth of Hong Kong and in some portals. HKMA disagrees that it is the fault of linked exchange rates. However, the small economy can be more vulnerable under non-independent monetary policy in the short run. HKMA researched the linkage of interbank interest rates in Hong Kong and in U.S. counterparts and under the linkage exchange rate system they follow each other closely. The Hong Kong dollar and U.S dollar mainly reflects the premium which depends on investor demands.

Argentina's case reminds us that the currency board cannot last forever and so it must be remembered that Hong Kong's currency board has not been under any real test after the Asian Financial Crisis and its reforms.

### 4.3 The Schuler's Process

Jacome & Lönnberg (2010) mention one important factor in dollarization - political support. Political support is one of the most crucial deals if there is a lack of confidence in the economy, especially in times of crisis. Countries should carefully weigh the costs and benefits of adopting a foreign currency being legal tender. Once the decision of dollarization is adopted officially, enacting a clear legal framework is critical, which ideally should be endorsed by society at large. While large groups in the country may be unwilling to abandon the national currency, i.e. often because of national pride, such endorsement is easier to garner if the country is going through a period of very high inflation.

Ecuador and Zimbabwe are cases in which inflation was discouraged by using the domestic currency as a store of value and, hence, their economies were already *de facto* highly dollarized. Dollarization requires legislation for a new monetary arrangement. New laws should be approved by parliament, or other highest powers, and should administer central bank law, other relative legislation, and sometimes even the constitution. There are needs for changing institutional structures and obligations when turning to a new currency. The first important step is to find and publish reliable proof that dollarization is crucial, as dollarization cannot happen without the silent approval of society. (Mack, 1999.)

Mack (1999) mentions that there are three important things to make the change transparent; firstly, select the rate of conversion to re-denominate in dollars existing domestic currency prices, assets, liabilities, contracts, and financial transactions. Secondly, define a transitory period in which the prices of goods and services are in both currencies, and thirdly select a date when local currency will be stopping serving as mean of transaction. Some economists think that overnight dollarization is possible for small economies, but Tsang (1998) disagrees; his opinion is that overnight dollarization is not

possible because of the legal framework and that there has to be a dual currency system before full dollarization.

Mundell (2009) mentions three reasons why dollarization is easy to execute in Hong Kong; Hong Kong has a large currency exchange, the HKD is already fixed to the dollar, and Hong Kong does not have an independent monetary policy. The HKD being already fixed to the dollar is a very important aspect because usually, the process of choosing right conversion rate is a problem in currency unions and so this would not be problem. The HKD is fixed to the USD at a rate 7.8 to 1. If the Hong Kong would be dollarized, then 7.8 HKD would be replaced with 1 New Hong Kong dollar (NHKD), which would be equal to the U.S. dollar with rate 1:1. In the cases of other countries, fixing the exchange rate is a problem because setting conversion rates too high would cause inflation and *vice versa*.

Mundell (2009) mentions that Hong Kong's atmosphere for dollarization is favorable because local residents are already leaning toward western values more than in other regions in Asia. The process of dollarization is easier where the culture and the norms of the western hemisphere is appreciated (Gross, 1998) and Hong Kong has inherited such western ways from its time a British colony, which it was from 1841 until 1997. Hong Kong and Singapore can be considered as the most westernized regions in Asia. These Asian countries have conquered the top two rankings of the Heritage foundation and Wall Street Journal's research "The economic freedom". Hong Kong has been number one every time in this research. (Heritage, 2009.)

Schuler (1998) writes that the legal framework for dollarization of Hong Kong is easy to execute, because neither statute law nor Basic Law commits Hong Kong as a part of any particular monetary system. Hong Kong will vote for changing the Basic Law in 2018, which might change this situation though. Currently, the power to make changes belongs to the Hong Kong government and it can abandon the currency board system straight away by administrative a decision without approval of the Legislative Council <sup>13</sup> or public debate. Some objectors have said that the law does not allow the dual system to be used, but Xu (2000) disagrees, because the Basic Law does not stipulate the Hong Kong dollar

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<sup>13</sup> The Legislative Council of Hong Kong (LegCo) is comprised of 60 members, with 30 elected directly by geographical constituencies and 30 elected by functional constituencies. Apart from its law-making function, the Legislative Council debates issues of public interest, examines and approves budgets, receives and debates the Chief Executive's policy addresses, and endorses the appointment and removal of the judges of the Court of Final Appeal and the Chief Judge of the High Court



being the only legal tender. Schuler (1998) points out that the U.S. dollar has been the best performing currency in the world, excluding some occasional problems.

The dollarization process by Schuler (1998) for Hong Kong would be as follows: determining the liabilities of HKMA that should be dollarized and setting them aside; introduction of a new currency unit which will be a 1:1 value to U.S. dollar, and a 1:7.8 to the old Hong Kong dollar; making the U.S. dollar legal tender; announcing that all the Hong Kong dollar assets, liabilities, wages etc. are now same under U.S. dollar at the rate 7,8 to the U.S. dollar; allowing transition time for changing Hong Kong dollars to the new currency, immediately change Hong Kong dollar assets at the HKMA with U.S. dollar assets; retire Hong Kong dollar notes from circulation, and reorganize HKMA if necessary.

Mack (1999) mentions that the most important operational issue is to define the conversion rate. In the case of Hong Kong, this is not the problem because the HKD is fixed to the U.S. dollar, unless RMB appreciation occurs and develops pressures for the HKD to be under reassessment. Another critical part of the process according to Mack (1999) is the backing of rule question, especially in times of a transition period to assure the viability of the new monetary regime. The minimum backing should be coins and bank notes of local currency, but for large-scale processes in an international hub to succeed, backing should be based on money plus interest-bearing securities issued by the central bank. Failing in backing rule would undermine the credibility and, eventually, the sustainability of the new monetary system. Usually, if there has been an excess of international reserves after applying the appropriate backing rule, a productive use of this surplus could be used to create an emergency liquidity facility, which could be used beyond the transition period to cope with episodes of financial distress in absence of LOLR facilities. Transition to the new currency has been quite easy to execute concerning notes because those are easy pull from circulation, but coins are harder to remove from circulation. Hong Kong should go with the Panama model and only change the notes, which is a relatively easier model to execute by keeping the coins with a 1:1 ratio.

In the dollarization process handing over monetary power is a key point and, for Hong Kong it would mean losing power over the FED. After handover there are two possibilities for re-arranging the monetary system; keeping the central bank with no commercial bank responsibilities or abandoning the whole central bank system. Panama went through the

abandonment strategy, but Ecuador and El Salvador have preserved a central bank without commercial activities. (Mack, 1999.)

Hong Kong could go without a central bank because the currency board system has been its equivalent for a central bank and the demand for an individual “regional” central bank was not necessary after the handover. On the process side, to ensure the viability of the new monetary regime and enhance the transition credibility, it is desirable to change the central bank’s balance sheet presentation. With a new balance sheet, market operators should be able to monitor the availability of international reserves to back the domestic currency in circulation. In Hong Kong, dollarization would be done in a stable macroeconomic condition so that there would not be a need to change the parameters of contracts maturing after dollarization enters into effect (Mack, 1999). The only reason why Hong Kong would need a central bank is the possibility, or need, from China to increase the convertibility of RMB in tight supervision.

Bank notes in Hong Kong are issued by note-issuing banks (NIB). Banks submit U.S. dollars to the HKMA for the account of exchange fund in return for certificates of indebtedness; this operation is required by law because HKD bank notes are fully backed by U.S. dollar held by the exchange fund. In cases of issuing notes through HKMA, the agent bank is responsible to ensure that notes are settled against the U.S. dollar stock.

Loss of seigniorage for HKMA is profit, which HKMA would receive by issuing the Hong Kong monetary base. Gaining seigniorage is one benefit for the U.S., if Hong Kong would be dollarized. Also, the U.S. could see this as an opportunity to increase circulation of the U.S. dollars in Asia, because unofficial dollarization rates are high, yet there are no officially dollarized areas. The possibility to have a dollarized economy in Hong Kong as an exchange place between the U.S. and the Asia would benefit all participants. In the end, the loss of seigniorage is a relatively small fraction of the GDP and Hong Kong already lost its power over monetary policies when they pegged the HKD to the U.S. dollar.

Kang (2005) estimated that seigniorage worth \$682 million annually in Cambodia. He mentions that international research shows that the annual lost of seigniorage is 2% of GDP. Using 2% to estimate Hong Kong seigniorage shows that seigniorage would be

approximately \$6 billion (Table 1.). HKMA's Report on Financial Market Review (1998) estimated that the seigniorage in Hong Kong would be only 0,6 percent of GDP which would be \$1,81 billion. These differences may be because of Cambodia's high level of unrecorded dollars, integration levels with the U.S, unofficial money printing, and differences in economic structure. Kang mentioned Cambodia is far less integrated with the U.S. economy than Hong Kong or Latin American countries. In Bloomberg (2010) estimations, the size of annual injection for keeping the currency peg to the dollar in Hong Kong has been \$25.8 billion in recent years, which is a high cost keeping the current system. This cost could be reduced if dollarization is executed. Altig & Nosal (2002) mention that if all South American countries, including Mexico, would dollarize, the annual seigniorage revenue would be 0,2 to 0,8 percent of U.S. GDP. Nevertheless, Hong Kong is a small special administrative region (SAR) and the HKD is already fixed to the U.S. dollar. The size of losses in seigniorage and sovereignty are comparatively small compared to the annual injection spend to keep the currency peg.

#### 4.4 Special Challenges

*Hong Kong is not a normal economy. In nautical terms, Hong Kong is like [what] the Straits of Gibraltar are to the Mediterranean. We are a narrow bottleneck for massive flows of import and export finances in and out of the [People's Republic of China.]” (Webb, 1998)*

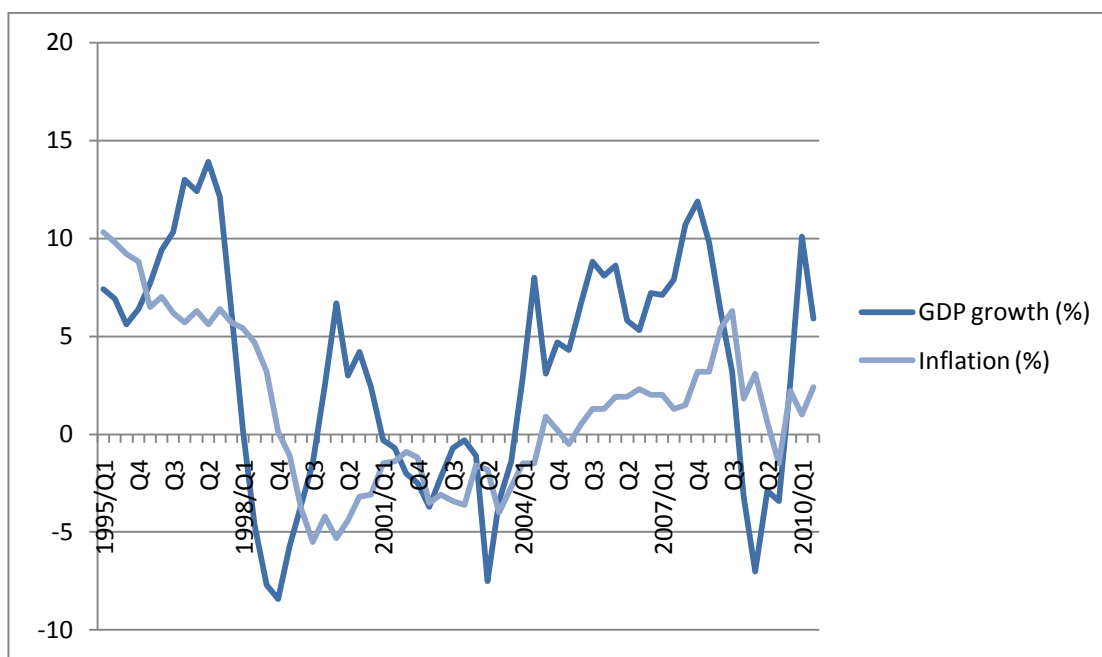


Diagram 8. Hong Kong GDP growth (year-to-year) and inflation (composite year-to-year)

Source: Hong Kong Census and Statistic Department, <http://www.info.gov.hk/hkma/eng/statistics/>

Hong Kong's growth has been volatile due to its openness and diagram 8 shows how the crisis affected Hong Kong's GDP growth, e.g. the Asian Financial Crisis in 1998 and the World Financial Crisis of 2008. Unfortunately, Hong Kong absorbs all possible crises, but dollarization would help to achieve economical balance.

Hong Kong's government has actually thought about the risks of dollarization in its Report on Financial Market Review (1998). It listed four critical difficulties in the dollarization of Hong Kong; the first of which is the transitional issue, which contains problems caused by existing HKD-denominated contracts under *force majeure* and the possibility of shifting USD-denominated assets out of Hong Kong that could lead to a serious leakage of local liquidity. The second loss is the loss of seigniorage. The third is an operational issue such as lack of liquidity provision in Hong Kong while the U.S. market closing is caused by the

time difference between markets. The fourth one is the implication of “one country, two currencies”. For an international finance hub like Hong Kong, the first and the third problem are the greatest concerns. There are three different solutions to overcome these problems according Tsang (1998); overnight legislation, transitional period, or apparel dollarization. During the Asian Financial Crisis overnight legislations, and transitional periods were not possible, but today those can be circumvented.

Rogers (2009) sees the dollarization unnecessary with U.S. dollars and instead suggests the HKD should be replaced using RMB. Rogers estimates that RMB can challenge the U.S. dollar in 15 years as the world reserve currency. Hong Kong has a huge currency neighbor which should be preferred over unfamiliar ones, e.g. the U.S. dollar. The main problem with RMB is still inconvertibility. Rogers mentions that “yuanization” should be executed straight after RMB becomes convertible.

The most notable step for yuan convertibility has been launching yuan bond market in Hong Kong 2004, which is the first place outside the mainland to have banks providing yuan deposits, exchange and remittance. A further breakthrough was the issuance of the first yuan bonds by the China Development Bank<sup>14</sup> in July 2007. The progress letting the bond market develop implies that the yuan’s role will increase in the future; the steady inflation over the transfer time makes it easier for the yuan to become exchangeable. The inconvertibility of yuan is also a cost for China, which had to make currency-swap agreements with its most important trading partners to mitigate exchange rate risks arising from trade settlements in dollars. The People’s Bank of China has signed agreements worth of 650 billion RMB currency-swaps with Hong Kong, South Korea, Indonesia, Malaysia, Belarus and Argentina in 2008. According to development strategies published by the CSRC<sup>15</sup> in 2008, it takes roughly a decade for China to undergo the change to maturity stage and build up well-developed capital markets for the end of 2020. At the present moment, China is missing the first feature of well-developed capital markets full and free convertibility of the yuan.

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<sup>14</sup> The China Development Bank (CDB) is a financial institution in the China under the direct jurisdiction of the State Council. It is the only bank in China whose governor is a full minister. It runs big public projects like the Three Gorges dam, airport, and railway projects.

<sup>15</sup> The China Securities Regulatory Commission (CSRC) is an institution of the State Council of the China, with ministry-level rank. It is the main securities regulator of the China.

The evolution of the international role of the yuan will depend on the pace of liberalization and from restrictions on currency convertibility, which is likely to be governed by the authorities' consideration of the associated benefits and costs. Chinn and Frankel (2005) developed a list of international functions of an international currency. According to them, an international currency has to be capable of playing roles as store of value, medium of exchange and unit of account, for both residents and non-residents. More specifically, it can be used for private purposes, such as, currency substitution, trade, financial transaction invoicing and denomination. It can also be used for public purposes as official reserves, vehicle currency for foreign exchange intervention and anchor currency for pegging.

Internationalization of the yuan refers to increasing the extent of its use in China's cross-border transactions and in overseas transactions in general and increasing the volume of RMB-denominated assets held by non-residents. More specifically, it refers to expanding role of the yuan in the international monetary system and increasing the weight of the RMB in current account transactions, capital account transactions, and foreign reserve holdings. According to estimations, the Chinese hold over \$1.7 trillion in U.S. dollar assets out of \$2.6 trillion worth of foreign assets (Table 1.). Skeptics believe that the yuan is a long way from having international "safe haven" status as it is not even close to being convertible. For China, the greatest advantage in yuan internationalization would be reduced a foreign exchange risk for Chinese enterprises. On the other hand, one major drawback of yuan internationalization would be China's increased susceptibility to the inflows and outflows of international hot money. Furthermore, when the yuan gains wide acceptance as an international currency, China will enjoy the additional benefit of seigniorage, e.g. the difference between the face value of a currency and the cost of producing it.

Former Chief executive of HKMA Yam (2010) mentioned now the monetary system is not very stable and the position of the two most important currencies is still held by the euro and the U.S. dollar. The problems in the monetary system have caused a need for third leg currency. He sees that this "third leg" has to be a large economy and he sees that only suitable candidate would be China, but the currency could be an Asian monetary unit, or some combination of the two. He places only one requirement besides a relatively large size of population in that, the economy must enjoy macroeconomic stability.

Yuan appreciation will suggest that China will make the currency more flexible for the future, which will have straight affects to the HKD. The pressures of adjusting the peg will rise in HKMA because of Hong Kong's position as a financial and exporting hub of China. The Hong Kong exchange rate is fixed, which makes the adjustment process easier. The only difference will be that wages and prices will be quoted in U.S. dollars, instead of the equivalent amount of old Hong Kong dollars. The benefits and costs of Hong Kong dollarization are widespread and far-reaching.

The internationalization of the yuan, it would increase the importance of surveillance and risk management between East Asian currencies. Nakawaga (2004) mentions that the system for this kind of risk management is immature in East Asia. According to Nakawaga (2004) the market for direct exchange does not exist while the dollar dominates in terms of business deal transactions. Business transactions are done also, in a lesser extent, using Australian dollars, yen, and pounds. The dollar has a role as intermediary currency. The absence of Asian internal exchange rates over transactions, and because of a lack of exchange market, creates risk when the region's financial atmosphere is greatly dependent on U.S. government actions. The annual revenue from Hong Kong dollarization would be far less and the big question of China's future strategies might make decision makers in the U.S. indifferent. Although, Eastern Asia area is already unofficially dollarized, it is quite sure that the U.S. government would not change their strategy, at least in case of sharing seigniorage benefits.

Nakawaga (2004) suggests that the internatilization of RMB would be a great opportunity for Asia because the change could help the Asian economies to release themselves from domination by the U.S. dollar in the region. Yuanization could be seen as a problem for Hong Kong because the counterfeiting of yuan notes is a widespread problem. The new counterfeiting law has been effective due to heavy penalties, but is still a problem that not disappeared. Nanto (2009) mentioned that a potential problem with U.S. dollar counterfeiting will probably increase in the future because U.S. government has estimated that the North Korea has counterfeited approximately \$15 to \$25 million per year, which has spilled over the borders to neighboring countries. For instance, if Hong Kong would be dollarized, the counterfeiting of U.S. dollars would be some kind of problem in initial stages before counterfeiting detector machines would be widely implemented.

Arellano & Heathcore (2007) compared that the dollarization process and the post development of El Salvador and Ecuador. They found that dollarization post era has been better in El Salvador than in Ecuador. Bergsten (1999) mentions that, "Those which are very small and very dependent on the world economy, like Hong Kong, and hence would simply be buffeted too sharply by constant exchange-rate fluctuations". Gross (2006) says,

*But economists say that smaller countries can encourage investment by lashing their monetary fortunes to larger regional powers. In Latin America, companies that need to make long-term investments are forced to borrow in dollars while they operate in local currencies, leaving them exposed to the currency risk. Now that El Salvador has adopted the dollar, companies there can borrow or engage in hedging transactions in dollars with relative ease.*

Gross (2006) reiterates still that dollarization is not a self-fulfilling prophecy; it does not end the risk of default. Panama has been using the dollar since 1904 and can be described as a model of dollarization, but still the country has had occasional problems. Bergsten (2006) showed in Panama case the dollarization does not end the risk of default with dollar-denominated debt. Nevertheless, Panama has been exceptionally successful with its dollarization. Bergsten mentioned that Roubini (2006) sees dollarization useless if the country can keep inflation down. In the end, he sees that the soundness of the policies matters; if the policies are the right ones and inflation is low, there is no need for dollarization.

Gross (2006) reminds us that the post era of dollarization has not convinced El Salvador's neighbor countries to change their monetary systems. Models of Cuba, Liberia and Russia have shown that de-dollarization is not an easy task, mostly because high levels of unrecorded dollarization. Inflation converged and remained close to the world inflation in dollarized countries, e.g. in Ecuador, where inflation had reached 100% year-on-year in 2000 just before dollarization (Jacome & Lönnberg, 2010). These cases are not so comparable with Hong Kong because the incentives for dollarization are diverse. Mundell (2001) mentions that if the world currency would be dollar, the main problem would be inflation, e.g. if the U.S would grow faster than other regions, its real exchange rate would have to come appreciated and *vice versa*. This mechanism called inflation tax would cause the same effect that U.S caused in the 1970s, intentionally or inadvertently to other economies. This is main criteria, why the world is not ready for a universal currency and why transforming to single world currency needs many steps.



The market time difference occurs when markets are in different time zones, and the exchange markets close at different times. Hong Kong's time zone is GMT+8 and New York GMT-5. The difference causes some difficulties for dollarization of Hong Kong and HKMA mentioned it as one of the biggest problems in dollarization research (Schuler, 1998).

When Hong Kong becomes dollarized there would be only a two hour time gap, when the both exchange markets would be simultaneously open. If Hong Kong goes through dollarization, the Hong Kong interest rates may remain a little bit more volatile than when they are in the U.S. because the most active time of day for bank-to-bank lending in the Hong Kong market occurs during the last active hours of the U.S. market. The main problem shows, when the markets are closed. Then the overnight lending would be a problem, when the other market would be open, and they would have additional information at the same time, when second market is closed. The system would need further development to be able to prevent penetration of market speculators, and using the dollar as the intermediary currency in exchange rates, creates risk for an East Asian currency mechanism. One part of the risk is the settlement risks due to the time differences between markets, since this type of transaction depends on transactions conducted in markets outside the region. (Nakagawa, 2004)

Like a currency board system, a dollarized system lacks a central bank as a LOLR. The Hong Kong currency board has diminished this feature and still Hong Kong has the strongest banking system in East Asia.

The dollarization process would change the banking structure, when three NIBs would lose their deals being the only ones to issue notes in HKDs. According to Bergsten (2006) increases new entries to banking sector, this leads to tightened competition. Nevertheless, foreign bank law in Hong Kong restricts from opening more than one retail office and one back office. Foreign banks should be able to compete with similar rules with local banks and be able to buy ownership from local banks until dollarization is 100%. This kind of arrangement would cause free trade system in banking system and would cause improvement pressures for local banks.

Schuler (1998) disagrees with the idea of dominating foreign banks because in a free trade banking system, the banks would not have power to dictate customers. It would lead for better and more effective banking services. Schuler (1998) suggests that a banking system should contain an option clause, e.g. setting penalties for customers who would try to withdraw deposits for a specified period for an exchange for paying depositors a penalty rate of interest during the period. This would give banks time to bolster their reserves if a credit crunch made it prohibitively expensive. None of the dollarized countries has an option clause, but some centralized banking systems an option clause arrangement.

From the experience of Panama, Moreno-Villalaz (1998) suggests that when combined with an internationalized banking system, dollarization requires lower foreign reserves than other monetary systems, because it is joining the U.S. dollar pool that enjoys economy-of-scale. Under uncertain conditions banks, have a need to increase their foreign currency reserves to defend themselves from shocks. Uncertainty always pulls more supervision away from available resources. Certainty is more predictable, which leads to decreased spending for supervision. After dollarization, banks can decrease foreign exchange reserves, and free their resources for other tasks from the supervision of exchange rates. Hong Kong banks posses' large amounts of the U.S. dollar deposits and the dollarization would erase the distinction between local-currency and U.S. dollar deposit making the system more transparent and easier for supervision. The absence of exchange risk also gives banks chance to borrow for the short-term with international level of cost. Moreno & Villalaz (1998) estimate that if Panama would have a currency board, it would require net foreign reserves of about 10% of GDP instead of 7% under a full-dollarized system, and, would thus free resources.

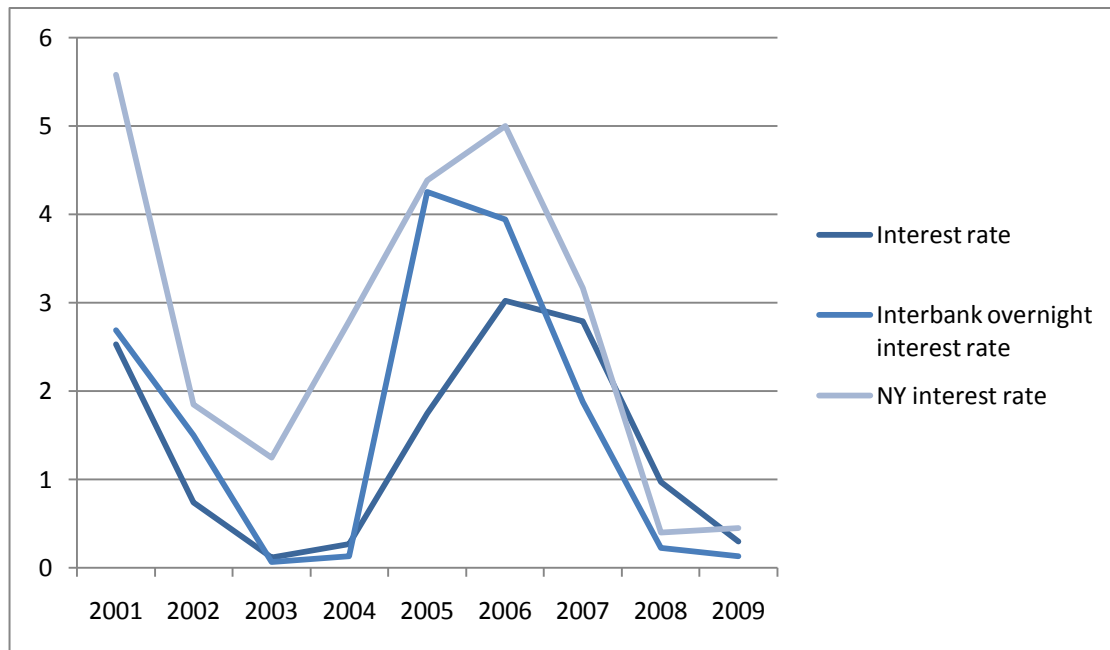


Diagram 9. Hong Kong interest rates (12 months in \$HK)

**Source:** Hong Kong Census and Statistic Department, <http://www.censtatd.gov.hk/> and U.S. Treasury's interest rate statistic, <http://www.ustreas.gov/>

Hong Kong's interest rates have been relatively low for the last decade and dollarization should stabilize the interest rates for the same levels as in New York. In Hong Kong's case this would mean interest rates increase, e.g. diagram 9. The market would probably re-act before replacing the HKD and the interest rates would be stabilized to U.S. levels before the U.S. dollar would be a legal tender. Rising interest rates could cause negative inflation rate problem for Hong Kong, because Hong Kong has low inflation rates.

## 5 Conclusion

*The US dollar has been considered among the best-performing currencies in the world for more than 200 years, despite occasional periods of trouble. (Kurt Schuler, 1998)*

China has entered to the league of superpowers being the second biggest economy in the world. Asia posses the biggest foreign exchange reserve in the world, especially, China and Hong Kong. Eastern Asia is already suitable for forming currency union regarding OCA criteria. Only political issues; Sino-Japanese war, Taiwan question, and Korean peninsula, are obstacles for forming monetary joint operations at this point. Currently, the Asian biggest countries have gathered together to talk about these issues which are threat for steady economic growth in Asia, unfortunately, without consensus.

According to Mundell (2009) there are two possible scenarios for an Asian currency union; APEC, and EACA. In both, Hong Kong has a major role being the only U.S. dollar exchange platform in Asia. The most suitable solution would be forming the EACA which could be later enlarged. According to Mundell (2009) EACA solution would have three major currency areas with 70% monetary mass equally divided which is enough to stabilize the fluctuation problems. The single currency for the EACA is not plausible according to Eichengreen (1999) because of previously mentioned political issues.

Yam (2010) has emphasized the need for a “third leg” for currency system. The anchor analysis showed that the only way to build a currency area in the near future is taking U.S. dollar as an anchor. It is easy to agree with Schuler (1998) that the success of the U.S. dollar has been significant. Yuanization is not plausible before the yuan becomes convertible although some researchers (Rogers, 1999) say that yuanization should be done immediately without convertibility but they stand alone with their arguments. Japan’s current problems with their macroeconomics prevents yen’s role as an anchor. The only rational choice would be U.S. dollar. During the Asian Financial Crisis majority of the Asian currencies were pegged to the U.S. dollar implying that the new peg would not be so dramatic change.

Hong Kong economy has been pragmatic during the last decade, and uncertainty of the future increases which has an effect on FDI inflows. China has not announced any actual plan for Hong Kong development. Nevertheless, China announced to increase the convertibility of the yuan which will cause pressures for undervalued HKD. China possesses the largest U.S. dollar reserves besides being the biggest creditor of U.S; if Hong Kong would be dollarized, it would be easier to increase the convertibility of yuan. There has been a debate about Shanghai's position in the future financial arrangements but still Chinese companies are using Hong Kong to finance their overseas deals, and Chinese companies' initial public offerings are executed by Hong Kong Stock Exchange (HKSE). It can be assumed that China will need Hong Kong's services increasingly in the future when it enhances the yuan convertibility. The yuan convertibility is the main issue in the dollarization. Hong Kong dollars' future is under pressures because in the long-term RMB would probably replace the HKDs even though China has announced its plan to keep the HKD as an official currency of Hong Kong. The best solution for Hong Kong to ensure its future independence, and increase financial role would be a full dollarization.

Researchers (Schuler & Tsang) have been estimating that in the short-run Hong Kong would not benefit from the full dollarization but the position as the only full dollarized economy in Eastern Asia gives value in the future. The sacrifices what Hong Kong faces would be a loss in seigniorage, sovereignty, and one-time costs but Hong Kong would probably lose these during the Chinese final takeover. The necessity of decision making would have to be done in the short-time but with the long-term plan.

Hong Kong dollarization would be an end solution for Hong Kong because de-dollarization has been seen as a harder process than the actual dollarization (Fischer, 2006). According to Mundell (2009) Hong Kong dollarization would be most beneficial under APEC solution because it could be a gateway solution for further monetary developments like EACA. If Hong Kong dollarizes it has a remarkable role, but the largest benefit would be under APEC solution. The only problem would arise when Eastern Asia would go for a single currency, and Hong Kong would be dollarized. It would have to carry the costs of de-dollarization. Hong Kong benefits are based on a time how long they can be under APEC solution before Eastern Asia launches its own currency. The gain from dollarization has to offset the costs of dollarization, and de-dollarization. The third solution could be to stay

dollarized, nevertheless, what Eastern Asia does. This solution could be better for Hong Kong than de-dollarization.

There are still some questions to be solved before Hong Kong dollarization would be plausible; the yuan convertibility, two dollarized exchange markets issue, legislation to prevent entrance of speculators, and political disagreements and reactions. Besides these issues, Hong Kong dollarization would have significant benefits in the long-term, not for Hong Kong itself but for China, U.S., for whole world. The previous problems for dollarization found during the Asian Financial Crisis are vanished so re-opening the case would be plausible solution. Current situation has opened new problems but minor ones compared to those during the Asian Financial Crisis. Now would be an excellent time for HKMA to execute thorough research of Hong Kong dollarization before 2018 Basic Law voting in which dollarization could be accepted, and included to the law.

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<sup>16</sup> Reference class A includes books and well-know articles. Reference class B includes rest of the references, which might not enjoy academically high recognition, but which are crucial for the research.

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# APPENDIX

**Table 1.** East Asian economies and currencies

Country	GDP (billions)	GDP per capita PPP	GDP growth (real)	Currency	Fixed	Anchor	Fixing rate	Exchange rate (to USD)	Reserve of FX (billions)	External Debt (billions)
China	8789	6600	8.7%	CNY	Yes	USD	6.78021	6.78021	2422	347.1
South Korea	1356	28	0.2%	WRP	No			1223.17	270	333.6
Japan	4137	32600	-5.3%	JPY	No			87.18	1024	2132.0
Hong Kong	301.6	42700	3.0%	HKD	Yes	USD	7.8	7.7918	255.8	655.1
Taiwan	717.7	29800	-2.5%	TWD	No			32.19728	353	79.8
Singapore	235.7	50300	-2.1%	SGD	No			1.39149	187.8	19.2
Malaysia	381.1	14800	-2.2%	MYR	No			3.22346	95.5	48.26
Brunei	19.43	50100	-1.9%	BND	Yes	SGP	1.00	1.00	NA	0
Indonesia	969.2	4000	4.5%	IDR	No			9063	66.12	150.7
Macau	18.47	33000	13.2%	MOP	Yes	HKD	1.03	1.03	NA	0

**Source:** CIA Fact Book: 2009 rates. Estimated rates done by Central Intelligence Agency of United States. Exchange rates are taken 7th of July 2010 2.00 p.m +2 GTM. GDPs, reserves and depts. are in U. S. dollars.

**Table 2.** Dollarized economies (\$ US)

Economy	Population	GDP	Political Status; Other Remarks	Since
American Samoa	192 001	1.025	U.S. territory	1899
British Virgin Islands	NA	NA	British dependency	1973
East Timor	1 154 625	2.78	Independent	2000
Ecuador	14 790 608	108.2	Independent	2000
El Salvador	6 052 064	42.92	Independent	2001
Guam	180 865	2.5	U.S. territory	1898
Marshall Islands	65 859	0.1335	Independent	1944
Micronesia	107 154	0.2381	Independent	1944
Northern Mariana Islands	48 317	0.900	U.S. commonwealth	1944
Palau	20 879	0.164	Independent	1944
Panama	3 410 676	40.32	Independent; issues own coins	1904

Puerto Rico	3 977 663	68.14	U.S. commonwealth	1899
Turks and Caicos Islands	23 528	0.216	British colony	1973
U.S. Virgin Islands	109 775	0.1577	U.S. territory	1934

**Sources:** Kurt Schuler, "Encouraging Official Dollarization in Emerging Markets," staff report, Office of the Chairman, Joint Economic Committee, U.S. Congress, April 1999; CIA World Factbook 2001; press reports.

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**Notes:** Several countries (Bahamas, Guatemala, etc.) issue domestic notes and coins but grant the U.S. dollar or another foreign currency status as a parallel legal tender. GDP is in terms of purchasing power parity. GDP is counted in millions (\$ US).

**Table 3. Dollarized economies (Other currencies)**

Economy	Population	GDP	Political Status; Other Remarks	Currency	Since
Andorra	84,525	42.2	Independent	euro, own coins(Frenc franc)	2001 (1278)
Cocos (Keeling) Islands	596	NA	Australian external territory	Australian dollar	1955
Cook Islands	11,488	183.2	New Zealand self-governing territory	New Zealand dollar	1995
Cyprus, Northern	NA	NA	De facto independent	Turkish lira	1974
Greenland	57,637	2030	Danish self-governing region	Danish krone	before 1800
Kiribati	99,482	596.5	Independent	Australian dollar, own coins	1943
Kosovo	1,815,048	5300	Independent	euro	1999
Liechtenstein	35,002	4160	Independent	Swiss franc	1921
Montenegro	666,730	6708	Semi-independent	euro	2002
Monaco	30,586	976.3	Independent	euro (formerly French franc)	1865
Nauru	14,264	60	Independent	Australian dollar	1914
Niue	1,354	10,01	New Zealand self-governing territory	New Zealand dollar	1901
Norfolk Island	2,155	NA	Australian external territory	Australian dollar	before 1900
Pitcairn Island	48	NA	British dependency	New Zealand, U.S. dollars	before 1900
San Marino	31,477	1662	Independent	euro, own coins (lira)	2002 (1897)
Tokelau	1,400	1.5	New Zealand territory	New Zealand dollar	1926
Tuvalu	10,472	14.94	Independent	Australian dollar, own coins	1892
Vatican City	826	NA	independent	euro (lira), own coins	2002 (1929)

**Notes:** Data for some countries here are latest available from the CIA World Factbook; not all data are 2010. Some other countries issue domestic notes and coins but grant a foreign currency status as a parallel legal tender. GDP is in terms of purchasing power parity. GDP is announced in millions (\$ US).



**Table 4. Currency boards**

Economy	Currency board	Currency	Fixed	Fixing rate	Fixed
	(from)	(code)	(to)	(1 to X)	
Argentina	1992-2002	ARS	US\$	1	Fluctuating
Hong Kong	1983-	HKD	US\$	7,8	

Economy	Currency board	Currency	Fixed	Fixing rate	End of CB	Dollarization	Fixed	Fixing rate
	(from year)	(code)	(to)	(1 to X)	(Estimation)		(to)	(latest)
Bosnia	1996	BAM	DM	1	No	No	Euro	1.95583
Bulgaria	1999	BGN	DM	1000	2015?	Joining to EMU	Euro	1.95583
Estonia	1992	EEK	DM	8	40544	Joining to EMU	Euro	15.646
Lithuania	1994	LTL	US\$	4	2013?	Joining to EMU	Euro	3.4528

Economy	Dollarization	Currency	Anchor
	(year)	(code)	
British Gibraltar	1934	GIP	GDP
Falkland Island	1899	FKP	GDP
St. Helena	1917	SHP	GDP

**Remarks:** BAM is Bosnia and Herzegovina's currency called convertible mark which was fixed from 1996 to Deutsche Mark by 1:1 exchange rate through currency board. After Germany joined EMU the BAM was fixed to euro at rate 1 : 1,95583 through currency board which is still working.

Dollarized countries using GBP has backing up rule of 100% of reserve assets. (Gibraltar, Falkland Island and St. Helena)

**Sources:** CIA World Factbook (Central Intelligence Agency) 2009 report and Kurt Schuler, "Encouraging Official Dollarization in Emerging Markets," staff report, Office of the Chairman, Joint Economic Committee, U.S. Congress, April 1999; CIA World Factbook 2001; press reports.

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**Table 5.** Foreign reserves in time of dollarization

Economy (in time of dollarization)	Dollarization year	GDP	FX reserve assets	Inflation	Currency board	Fixing rate	Estimated loss in seignorage
		(US\$ billion)	(US\$ billion)				(US\$ billion)
Hong Kong (current)	2001	209.5	256.8	2.50	Yes	7.792	1.081
El Salvador	2001	42.92	NA	5.1	No	8.79	0.23
Ecuador	2000	18.8	0.95	23	No	25.00	0.18

**Sources:**

www.bec.fin.ec

[www.censtatd.gov.hk](http://www.censtatd.gov.hk)

www.bcr.gob.sv

**Table 6.** Oversea Chinese in Asian region

Country	Population	Year of data	%-of local population	%-of all overseas Chinese globally
(in millions)				
ASIA	30,97	2006	0,8	78,8
INDONESIA	7,5	2005	3,1	11,7
MALAYSIA	7,1	2008	26	12,1
THAILAND	7	2005	14	11,7
SINGAPORE	2,7	2009	74,2	4,2
VIETNAM	1,2	2005	3	3
PHILIPPINES	1,1	2005	2	2,4
MYANMAR	1,1	2005	3	2,1
JAPAN	0,65	2008	0,5	1,7
SOUTH KOREA	0,6	2009	0,2	0,5

CAMBODIA	0,34	2005	1,2	0,87
USA	3,5	2007	1,2	3,8

Source: "The Ranking of Ethnic Chinese Population", Oversea Compatriot Affairs Commission. RPC (Taiwan).