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EXIT OPTIONS FOR ARGENTINA WITH A SPECIAL FOCUS
On Their Impact on External Trade

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Exit Options for Argentina with a Special Focus On Their Impact on External Trade

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EXIT OPTIONS FOR ARGENTINA WITH A SPECIAL FOCUS ON THEIR IMPACT ON EXTERNAL TRADE

SUMMARY

The interest in currency board arrangement has increased in view of the favorable outcome obtained by countries experiencing such arrangement (especially in terms offsetting the time inconsistency problem of monetary policy) and given that no currency has, for now, to be abandoned as a result of a crisis. Thus for example, in Argentina the currency board was successful to stabilize the economy in the aftermath of the period of hyperinflation. Estonia and Lithuania have achieved credibility quickly for their newly established currencies. Nevertheless, the recent experience of Hong Kong and Argentina showed that even currency boards were not immune to costly speculative attacks. Therefore, the increased severity and frequency of the recent currency crises has increased interest on even more strict commitment, such as dollarization, as a solution to avoid currency and balance of payments crisis.

The prolonging economic recession in Argentina has also put under question the relevance of its exchange rate regime. Indeed, according to certain, the Argentina currency board arrangement has left the government with little flexibility to manage the impact of adverse external shocks on the domestic economy. This raises related issues especially on exit options from a currency board and the more suitable timing for a shift of regime to occur. As noted by Kopcke (1999): *"a currency board represents a start more than a destination for the monetary authorities. They can offer emerging economies a temporary shield for cultivating reputable central banks and financial institutions."* While dollarization has been highly debated and even suggested by the former Argentine President Carlo Menem in January 1999 to protect its economy from speculative attacks on its currency, other exit options from the current currency board arrangement might be considered. Thus Domingo Cavallo, Argentina's current Minister of Economy, has proposed in April 2001 to peg the peso to a basket including euro and dollar in the same proportion. Although in the wake of the Asian crisis and the growing integration of markets, a general consensus seems to have privileged one of the two corner solutions: either free floating or rigidly fixed exchange rate regimes. The case for intermediate regimes might nevertheless still be relevant for emerging countries according to their individual characteristics insofar as they can be seen as a way of reconciling stability with flexibility: lower exchange rate volatility and stable inflation expectation with flexibility in reacting to external shocks.

The reasons behind the analysis of Argentina's case are threefold:

- Argentina has been using a currency board arrangement for a decade and the question of exit option is still opened;

- The participation of Argentina to the Mercosur trade agreement adds a regional dimension to the question of exit options insofar as the floating of the real since 1999 has undermined Argentina's competitiveness. Moreover the renewed debate on the creation of a Free Trade Area of the Americas is also placing South American countries, and thus Argentina at a crossroads;

- The crisis in Argentina puts under question the relevance of its exchange rate policy in face of raising fear of devaluation and debt default.

Although Argentina is not very open with exports representing around 10% of GDP over the 90's, the Menem administration's reform program has made significant progress in transforming Argentina from a closed, highly regulated economy to one based on market forces and international trade. Therefore an exchange rate regime shift might raise concerns in terms of its external trade position.

In this paper we study the impact of various monetary scenarios in Argentina on its trade, focusing on its geographical repartition including for its regional dimension. To address this issue, we will first assess in **section 1** an export equation based on gravity models with exchange rate variables. Afterwards **section 2** will present various exchange rate regimes scenarios in order to gauge the plausible impact of a shift in terms of Argentina's exports.

ABSTRACT

The prolonging economic recession in Argentina has put under question the relevance of its exchange rate regime. This raises the issue on exit options from a currency board arrangement. While dollarization has been highly debated, other exit options might be considered. The exchange rate is also a key macroeconomic variable which influences a country competitiveness with spillover effects on its balance of payments position. Thus the shift from a currency board arrangement to another exchange rate regime might impact Argentina's external trade. To address these issues, we assess export equation with exchange rate variable for Argentina based on gravity models. Then we present various exit options scenarios to gauge the impact an exchange rate regime shift might have on Argentina's exports.

Keywords: Trade, Exchange Rate Regimes, Argentina.
JEL: F1, F3, O54.

**EXIT OPTIONS FOR ARGENTINA WITH A SPECIAL FOCUS
ON THEIR IMPACT ON EXTERNAL TRADE**

RÉSUMÉ

L'intérêt porté aux systèmes de *Currency Board* s'est amplifié à la fois de part les bons résultats obtenus par les pays appliquant de tels arrangements mais aussi du fait qu'aucun de ces pays n'a du, jusqu'à présent, abandonner sa monnaie suite à une crise. Ainsi, l'instauration d'un *Currency Board* en Argentine a été un succès pour stabiliser l'économie après la période d'hyper-inflation de la fin des années quatre-vingt. Néanmoins, les récentes expériences de Hongkong et de l'Argentine ont également souligné que même les *Currency Board* n'étaient pas à l'abri d'attaques spéculatives. Dès lors, et face à la fréquence accrue des récentes crises de change, d'autres solutions telle que la dollarisation ont été conseillées pour protéger les économies de telles attaques et de leurs conséquences néfastes.

La récession en Argentine a également remis en question le bien-fondé du régime de change en place. Ainsi pour certains, le *Currency Board* argentin, en laissant le gouvernement sans la flexibilité nécessaire pour gérer l'impact de chocs externes sur l'activité nationale, a contribué à aggraver la récession actuelle. Cette remise en cause du système de *Currency Board* soulève d'autres questions : quand sortir d'un *Currency Board* et par quoi le remplacer ? Alors que la dollarisation a souvent été préconisée, notamment par l'ancien président Menem, d'autres solutions peuvent être envisagées. Ainsi, Domingo Cavallo, actuel Ministre de l'Économie en Argentine, a récemment proposé de rattacher le peso à un panier de monnaies, comprenant l'euro et le dollar à part égales.

Suite à la crise asiatique, un large consensus a ainsi émergé, privilégiant les solutions en coin : soit le flottement, soit une fixité extrême sous la forme d'un *Currency Board* ou de la dollarisation. Néanmoins, les régimes de change intermédiaires peuvent s'avérer appropriés pour les économies émergentes étant donné leurs caractéristiques propres et dans la mesure ou ces systèmes peuvent être vus comme un moyen de réconcilier flexibilité et stabilité.

Le cas de l'Argentine est intéressant pour trois raisons :

- L'Argentine utilise depuis maintenant dix ans un système de *Currency Board* et les options de sortie sont sujet à de vives débats ;

- La participation de l'Argentine aux accords du Mercosur ajoute une dimension régionale au choix du régime de change à considérer dans la mesure où le flottement du real brésilien depuis 1999 a fortement affecté la compétitivité de l'Argentine. En outre, la reprise des discussions sur la création d'une zone de libre échange pour les Amériques place les pays d'Amérique du Sud à la croisée des chemins ;

- La crise en Argentine pose la question de la pertinence et de la soutenabilité de son régime de change dans un contexte où les risques de dévaluation et de défaut de paiement sont importants.

Bien que les exportations argentines ne représentent qu'environ 10 % du PIB, les réformes entreprises depuis les années quatre-vingt ont œuvré pour augmenter l'insertion internationale de l'Argentine. Dès lors, un changement de régime de change est susceptible d'avoir un impact sur le commerce extérieur argentin.

Cette étude propose : dans un premier temps d'estimer une équation d'exportation pour l'Argentine, basée sur les modèles de gravitation et introduisant des variables de change. Puis dans un deuxième temps d'analyser l'impact de différents régimes de change, autre que le système de *Currency Board*, sur le commerce extérieur argentin. Pour se faire, plusieurs scénarios de régimes de change sont simulés pour capter l'impact qu'aurait un changement de régime de change sur le commerce extérieur argentin.

RÉSUMÉ COURT

La récession prolongée en Argentine a remis en question le bien fondé de son régime de change. Dès lors la question se pose de savoir quand sortir du *Currency Board* et par quoi le remplacer. Alors que la dollarisation a souvent été préconisée, d'autres solutions peuvent être envisagées. Par ailleurs, le taux de change est une variable macro économique importante qui influence la compétitivité d'un pays. Ainsi, un changement de régime de change est susceptible d'influencer le commerce extérieur argentin. Cette étude propose donc d'analyser l'impact qu'aurait un changement de régime de change sur le commerce extérieur argentin. Pour se faire, une équation d'exportation, basée sur les modèles de gravitation et introduisant des variables de change, est estimée pour l'Argentine. Puis plusieurs scénarios de régimes de change sont simulés pour capter l'impact qu'aurait un changement de régime de change sur le commerce extérieur argentin.

Keywords : Modèles gravitationnels, Régime de change, Argentine.
JEL : F1, F3, O54.

EXIT OPTIONS FOR ARGENTINA WITH A SPECIAL FOCUS ON THEIR IMPACT ON EXTERNAL TRADE

Sophie Chauvin[1]

INTRODUCTION

Currency board arrangements display a long track record. They were first put in place under British Colonial rules. As noted by Ghosh, Gulde and Wolfe (2000): *"They may thus be viewed as an integral component of the colonial system of centralized control, providing an ironic parallel to the self-imposed limits on policy discretion underlying modern currency boards. The similarities between 'classic' and 'modern' currency boards are, however, limited. The classic boards functioned primarily as trade facilitators between a colonial power and its dependent territories, set up and run by an external agency deliberately insulated from domestic political pressures"*. The exit from classic currency boards system came together with national independence, with less economic considerations than political will. Moreover, the smaller magnitude of capital flows and the par-value system prevailing in the rest of the world rendered the transition to simple pegs without major disturbances.

The interest in currency board arrangements has increased in view of the favorable outcome obtained by countries experiencing such arrangements (especially in terms of gaining credibility and achieving macro economic stabilization through better inflation performance) and given that no currency board has, until now, been abandoned as a result of a crisis. For example, in Argentina the currency board was successful to stabilize the economy in the aftermath of the period of hyperinflation. Estonia and Lithuania have achieved credibility quickly for their newly established currencies. Nevertheless, the recent experience of Hong Kong and Argentina showed that even currency boards were not immune to costly speculative attacks. The increased severity and frequency of recent currency crises have increased interest on even stricter commitments, such as dollarization, as a solution to avoid currency and balance of payments crises.

The prolonged economic recession[2] in Argentina has also put under question the relevance of its exchange rate regime. Indeed, according to certain, the Argentina currency board

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[2] The recession led in January 2001 to the augmentation of Argentina's Stand by Credit by the IMF. Several factors such as a strong dollar, the recent devaluation of the real, the decrease of the prices of commodities have contributed to lower Argentina's growth. Moreover, the level of its debt remains high, which prevents the risk premium from decreasing and hinders investment and recovery. Another matter

arrangement has left the government with little flexibility to manage the impact of adverse external shocks on the domestic economy. This raises related issues especially on exit options from a currency board[3] and the more suitable timing for a shift of regime to occur. As noted by Kopcke (1999): *"a currency board represents a start more than a destination for the monetary authorities. They can offer emerging economies a temporary shield for cultivating reputable central banks and financial institutions."* While dollarization[4] has been highly debated and even suggested by the former Argentine President Carlos Menem in January 1999 to protect its economy from speculative attacks on its currency, other exit options from the current currency board arrangement might be considered. Thus Domingo Cavallo, Argentina's current Minister of Economy, proposed in April 2001 to peg the peso to a basket including euro and dollar in the same proportion. In the wake of the Asian crisis and the growing integration of markets, a general consensus seems to have privileged one of the two corner solutions: either free floating or rigidly fixed exchange rate regimes[5]. The case for intermediate regimes might nevertheless still be relevant for emerging countries according to their individual characteristics insofar as they can be seen as a way of reconciling stability with flexibility: lower exchange rate volatility and stable inflation expectation with flexibility in reacting to external shocks. As underlined by Calvo (may 2000, IMF Bulletin), it is important to keep in mind that emerging countries are still emerging, so that the option of fixing their exchange rate may be attractive. Nonetheless, as they will mature, they might be more attracted by flexible exchange rate regime, whereas if they dollarize, it will be more difficult to reverse their choice. Thus should not it be better for Argentina to first, have a sound banking and financial system and pursue its ongoing structural reforms (especially on its labor market and on the consolidation of its fiscal position) before taking an irrevocable commitment? Or should the debate on dollarization be broadened to the question of the evolution of the international financial structure and the trend toward fewer currencies and more currency unions?

The reasons behind the analysis of Argentina's case are threefold:

- Argentina has been using a currency board arrangement for a decade and the question of exit option is still opened;

- The participation of Argentina to the Mercosur trade agreement adds a regional dimension to the question of exit options insofar as the floating of the real since 1999 has undermined Argentina's competitiveness. Moreover the renewed debate on the

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of concerns is linked to structural rigidities still in place, which prevent also the economy from adjusting to shocks.

[3] See **Appendix 1** for a survey of the literature on exit strategies and the case of Argentina.

[4] Dollarization has been mainly seen as a mean to avoid substantial damages in response to a crisis, especially in a country recording a high level of *liabilities dollarization.* For more information refer to Calvo (1999, 2000).

[5] Nevertheless the debate is still hardy and open among academicians and policy makers which are not close to agreeing on a single appropriate exchange rate regime for Emerging Countries.

creation of a Free Trade Area of the Americas is also placing South American countries, and thus Argentina at a crossroads;

-   The crisis in Argentina puts under question the relevance of its exchange rate policy in face of raising fear of devaluation and debt default[6].

Although Argentina is not very open with exports representing around 10% of GDP over the 90's, the Menem administration's reform program has made significant progress in transforming Argentina from a closed, highly regulated economy to one based on market forces and international trade. Therefore an exchange rate regime shift might raise concerns in terms of its external trade position[7].

In this paper we study the impact of various monetary scenarios in Argentina on its trade, focusing on its geographical repartition including for its regional dimension. To address this issue, we will first assess in **Section 1** an export equation based on gravity models with exchange rate variables. Afterwards **Section 2** will present various exchange rate regimes scenarios in order to gauge the plausible impact of a shift in terms of Argentina's exports.

I. ARGENTINA'S TRADE PATTERN: A GRAVITY APPROACH

While the recent financial crises that have hit emerging economies have revived the debate on fixed versus flexible exchange rate regime, the prolonging economic recession in Argentina has also put under question the relevance of the currency board arrangement. The floating of the real since 1999 has undermined Argentina's competitiveness. While former president Menem advocated dollarization in 1999, in order to protect its economy from speculative attacks on its currency, other exit options might also be considered that would reconcile stability and flexibility.

The choice of an appropriate exchange rate regime is vital for an economy. Indeed, it influences international competitiveness (and hence the external position) and has important implications for the conduct of national and international economic policy. Whilst the degree of openness of the Argentina's economy is relatively small, the trade liberalization reforms undertaken in the 90's has opened the Argentine economy. Therefore an exchange rate regime shift might impact on Argentina's external position, and especially on its exports.

In the following, we will estimate trade equation based on gravity models with exchange rate variables. But first, a presentation of Argentina's trade pattern and issues related to its participation in the Mercosur agreement is necessary beforehand.

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[6] In this regard, the '*zero fiscal deficit*' policy undertaken by Cavallo in mid 2001 is aimed to improve the solvency of the public sector and thus to help to bring down the country risk premium and to reduce the risk of default and devaluation.

[7] This paper focuses only on the impact of various exchange rate regimes (other than the currency board) in terms of Argentina's trade. Nevertheless, the issues and consequences of exit options would also require to be gauged through other channels, especially financial.

1.1. Argentina's Trade Pattern

1.1.1. General Overview

According to Catao and Falcetti (1999) Argentina's trade pattern since the 1980's has recorded several changes[8]. Firstly, the volume growth has risen sharply since the 90's while at the same time exports growth became less unstable. Secondly although the average growth rate of Argentina's exports remains below the one of Asian countries in the 90's it is nevertheless improving. Finally, Argentina's exports remain the most volatile among the largest economies in the Western Hemisphere. This substantial export volatility results from the fact that Argentina's merchandise exports are still highly concentrated on a few raw materials and lightly processed primary products. However, Argentina has experienced a rapid growth of its non-agricultural manufacturing exports especially to neighbor countries, due to the establishment of Mercosur[9] trade arrangement.

Among Mercosur countries, Brazil holds a key place. Thus while in 1990 manufacturing exports to Brazil accounted for 4,5% of total Argentina's exports, they rose to around 16% in 1997. On a more aggregated level the share of Argentina's exports to Brazil increased from 13.3% in 1991 to 31.9% in 1998[10], while at the same time, imports from Brazil to Argentina remained to around 22% of Argentina's imports for the same period. As underlined by Catao and Falcetti (1999): *"A conspicuous feature of Argentina's exports to MERCOSUR countries has been their prompt response to a set of government incentives and bilateral trade arrangements which, inter alia, lowered tariff rates for key industries (notably automobiles) and tied the exports of these products to the partner country's imports of a similar good, with a view to keeping bilateral trade roughly in balance. An important implication of these arrangements is that, while the price of Argentina's exports of (raw or lightly manufactured) primary products are largely determined at the world market, the price and quantity of Argentina's industrial exports to Mercosur tends to be mainly determined by different set of factors – namely intra-bloc trade policies, geographical proximity and income growth in the region."*

In short, Argentina's exports comprise two different groups of products from the point of view of their economic determinants: on the one hand, exports of primary and lightly manufactured goods, for which Argentina is basically a price taker in international markets

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[8] See **appendix 2** for figures on Argentina's trade pattern evolution by countries and products.

[9] The Treaty of Asuncion signed by Argentina, Brazil, Paraguay, and Uruguay on March 26, 1991 created Mercosur, known as the Southern Common Market. Chili and Bolivia became associate members in 1996 and 1997 respectively. A Common Market had to be in place by December 31, 1994 under the name of 'Common Market of the South' (Mercosur, *i.e.* Mercado Comun del Sur). Hence the treaty of Asuncion has been defined as a 'Treaty Framework'. For more information on Mercosur Trade Arrangement, visit the website: www.mercosurinvestment.com

[10] From CEPII CHELEM Database.

and subject to large fluctuations in terms of trade of primary commodities and on the other hand a still relatively small but thriving group of manufacturing exports to MERCOSUR which are mostly influenced by trade policies, regional proximity and regional macro economic developments. In this context, where Argentina's policies and macro economic performance play a key role and its exporters hold a substantial share of the foreign market, they no longer face an infinitely elastic demand schedule for their products, hence export prices become determined by the intersection of demand and supply variables. It is easy to see that failure to take this distinction into account may impart significant biases to estimate Argentina's foreign trade elasticities.

On the import side, Argentina imports mainly intermediate goods, which represented 50% of Argentina's total imports in 1989 but declined to 32% in 1998. Spares parts and pieces for vehicle, which represented only 0.15% of total imports reached 5% in 1998. In 1998, Mercosur accounted for 31.2% of the intermediate goods acquired by Argentina abroad and 26.6% of imports of parts and spares.

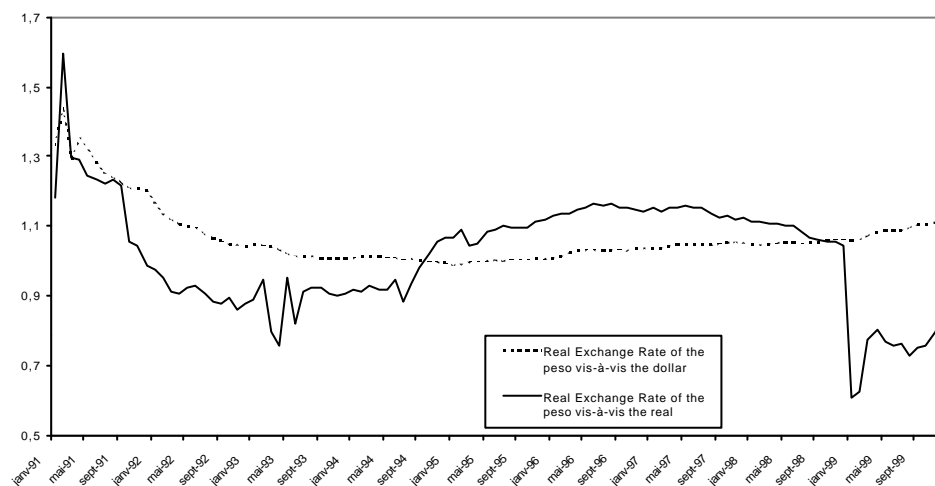### 1.1.2. Issues Related to Argentina and its Mercosur Partners

The increasing share of Brazil in external trade implies also that Argentina is very sensitive to economic activity in Mercosur and more specifically to the real exchange rate between Argentina and Brazil. In 1999 the devaluation of the real had therefore a disruptive impact on Argentina's external trade, participating hitherto to the prolonging recession of the economy. Moreover considering that the two countries are participating members of Mercosur, the devaluation of the real entailed Argentina's producers to call for retaliatory measures against goods imported from Brazil (such as the introduction of a specific tariff against Brazilian goods, safeguard measures and the establishment of quotas) to compensate for the loss of competitiveness. Although these measures were temporarily justified in the view of Argentina, they ran against the spirit of free trade that had marked the creation of Mercosur (Giambiagi, 1999). In the same vein, a current debate among Mercosur's partners concerns the decision taken by Argentina to suspend Mercosur's tariff, *i.e.* to abolish import duties on capital equipment while raising those on consumer goods to 35% (both currently average 14%) in the hope that it will mimic a devaluation and thus boost growth and dispel the likelihood of a debt default.

One related question is whether dollarization by Argentina would be compatible with deeper integration among Mercosur partners and with Brazil using floating exchange rate. As the real has been floating since January 1999, one might expect the bilateral exchange rate between the two currencies to be more volatile (even though less than during periods of hyperinflation or currency crisis). This flexibility is not bad *per se* as it permits to achieve changes in relative prices and macroeconomic balance, in particular when business cycles are idiosyncratic. Countries are better candidate for a currency arrangement if their disturbances are correlated and small and if adjustment to them takes place rapidly. According to Berg and Borensztein (2000), as neither demand nor supply shocks are positively correlated across Mercosur countries, changes in intra-Mercosur exchange rate may be appropriate responses to shocks while fixing these exchange rate would increase real output volatility.

But although fluctuations in the bilateral real exchange rate[11] (see **Graph 1** below) represent an adjustment to changing macroeconomic conditions for each countries, it also disrupts trade relation between Mercosur's member's countries and thus can increase political tensions and protectionist pressures.

The impact of bilateral exchange rate fluctuations also depends on the composition of trade between the countries. If they trade mainly commodities or homogeneous products (whose prices are set in international markets), the variations of the real exchange rate has not much of an impact (at least on the volume of exports even though it might impact on the reallocation of resources between sectors). While if bilateral trade takes place in sectors producing similar products and competing for market share in the domestic markets of both countries (intra-industry trade), where producers have some market power, large changes in the real exchange rate would have a quick impact on bilateral competitiveness, which will in turn affect investment and growth and might lead to protectionist pressures.

Graph 1: Real Exchange Rate Evolution

Source: based on International Financial Statistics, monthly data, from the IMF

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[11] The real exchange rate is measured as the amount of domestic currency per foreign currency. A decrease of the real exchange rate represents a real appreciation of the peso or a rise in the domestic cost of producing tradable goods. An increase, on the other hand, reflects a real exchange rate depreciation or an improvement in the country's international competitiveness.

The real exchange rate of the peso against the real is more volatile than against the US dollar. This might be explained by the exchange rate commitment that assures a control on the parity and enhances to subdue inflation. Nevertheless, even a peg regime cannot guarantee real effective exchange stability. Nontradable goods prices in a currency board can differ from non traded goods prices in the US due to differences in the growth of productivity in various sectors, so that bilateral real exchange rate stability is not perfect.

As the real exchange rate between Brazil and Argentina is quite volatile, flexible exchange rate regime between the two currencies are likely to be helpful as an adjustment's mechanism.

In fact the compatibility between Mercosur regional agreement and dollarization stresses two issues. Firstly, and according to Berg and Borensztein (2000), dollarization would not change dramatically the current situation with Brazil. Secondly, if integration were deepened, the question of a common currency would have to be addressed. But as pointed by Frankel (1999) the benefits to one country of a firmer dollar link are enhanced if others are moving in the same direction. The more countries use the same currency, the larger the benefits they can reap. At this point of time there is nevertheless little reason to forecast a mass regional movement towards the dollar.

To find out whether Argentina is a proper candidate for dollarization, one might, for instance, examine a trade similarity index. Indeed, countries with similar production or trade structure are likely to face symmetric terms of trade shocks, thereby reducing the effectiveness of the exchange rate as an adjustment mechanism among countries. The Finger index gauges the similarity of exports between two countries. For each country i, the Finger index of export structure similarity vis-à-vis country j is:

$$FING_{i,j,t} = 100 \sum_{k} Min \left[\frac{X_k^{i,j}}{X_t^{i,j}}, \frac{X_k^{j,i}}{X_t^{j,i}} \right]$$

With $X_k^{i,j}$ represents country i exports of product k to country j.

and $X_t^{i,j}$ represents total exports of country i to country j.

The index ranges between 0 and 100: a value of 0 meaning a complete dissimilarity in the composition of exports whereas a value of 100 a perfect similarity.

The evolution of export structure similarity between Argentina on the one hand and the United States and Brazil on the other hand are reported in **Table 1**, below.

Table 1: Index of Exports Structure Similarity

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Finger index between Argentina and the US	36.2	34.9	35.5	38.4	37.4	40.1	38.2	38.5	37.4
Finger index between Argentina and Brazil	55.8	52.0	50.4	54.8	55.6	56.9	53.8	52.7	54.3
Finger index between France and Germany	77.7	77.7	77.5	76.1	77.9	79.1	76.8	77.7	77.8

Source: authors' calculation based on the CEPII-CHELEM database, which encompasses 71 products.

The index of exports similarity between Argentina and the United States is quite small, giving the impression that both countries are likely to face asymmetric shocks. Although the index records higher value in the case of Brazil, the magnitude of the index remains nevertheless around 50 compared to around 78 between France and Germany.

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1.2. Panel Data Estimation

We propose a panel data analysis of trade flows between Argentina and 52 trading partners over the period 1980-1998. This accounts for around 91% of Argentina's exports and 92% of imports in 1998. We estimate export equation based on gravity models. The inclusion of an exchange rate variable will allow us to subsequently simulate various monetary scenarios in **Section 2**.

Gravity models shed light on the size of international trade among countries and provide elasticities of bilateral trade to income, country size and distance[12]. In general a per capita income (difference of GDP) variable is included to represent specialization or factor endowment. Dummy variables are also added to control for different factors that might affect transaction costs, such as common border, language, or membership in a custom union. The distance between the countries, which represents impediments to trade such as information and transportation costs, have not been introduced as they are captured by the fixed effect term in our panel estimation. Several authors have also included exchange rate variables (Matyas, 1997, 1998, 2000; Rose, 2000). In our case, exchange rate variables have also been introduced, as the model will be used to analyze the impact of the exchange rate regime on trade.

Gravity models usually consist of assessing an equation of bilateral trade for a sample of reference. In the following, we nevertheless will consider only trade between Argentina and its partners, deeming that its trade pattern shows specificities requiring the assessment of specific export equation[13].

Equation **(1)** to be estimated is:

$$\text{Log}(X_{jt}) = a_1\log(GDP_{jt}) + a_2\log(DE_{jt}) + a_3DFT_{jt} + a_4\log(RER_{jt}) + a_5MER_{jt} + a_6YD_t + u_j + \mathring{a}_t \quad (1)$$

Where j represents Argentina's partner country and t the year. A detailed presentation of our data and method is provided in **Appendix 3**.

- X_{jt} represents the volume of exports of Argentina to partner j at time t;

- GDP_{jt}, which is taken as a proxy for output, is the real GDP of country j;

- DE_{jt}, is introduced in order to gauge the intensity of comparative advantage and factor endowments and represents the income per capita gap between Argentina and its j trading partner;

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[12] Issues related to the economic modeling and specification of gravity models have been highly developed by Matyas (1997, 1998, and 2000), Egger (2000). According to Matyas, the correct gravity specification is a three way model including local, country and time effects, with a panel data approach. Indeed the more specific effects are added, the more the variable's elascticities are significant with the appropriate sign.

[13] As our method of estimation might be deemed unusual, we have also estimated an import equation, which is presented in **Appendix 4**.

- DFT$_{jt}$ is the difference of size (in GDP) between Argentina and country j, which gauges the relative weight of Argentina's GDP to the GDP of the country j;

- RER$_{jt}$ measures the price competitiveness of Argentina and is proxied by the real exchange rate of the peso against the currency of the trading partner j (amount of units of goods of country i per unit of goods of country j). For our estimation, we have used the CEPII CHELEM database which provides real exchange rate data in levels;

- MER$_{jt}$ is a mercosur dummy, which takes the value of 0 if the trading partner is not a member of Mercosur at time t and 1 otherwise;

- YD$_t$ is a year dummy;

- u$_j$ is a fixed effect for Argentina's trading partners which takes into account some traditional effects such as geographical distance or historical and cultural diversity.

The within (fixed effects) method has been used in accordance with Hausman test. The results are displayed in **Table 2**.

Table 2: Estimation Results for Equation (1)

	(1)	P.Value	(1')	P.Value
LGDP$_j$	1.08	.000	1.07	.000
DFT$_j$	-1.38	.018	-1.51	.010
LDE$_j$	-0.12	.094	-0.14	.057
LRER$_j$	0.22	.058	0.22	.060
MER$_j$	0.48	.000	---	---
Nb obs	988		988	
R^2 adjusted	0.79		0.79	

Source: Author's calculation.

The elasticity to GDP$_j$[14] is positive and significant and corresponds to the usual results of the impact of national income on exports.

Economic distance enters the equation with a negative sign, which means that less difference in GDP per capita favors trade intensity. This result is a bit surprising for Argentina which is an emerging country and for which one might have thought that the traditional international trade theory based on factor endowment could have been more relevant. Nevertheless, the special trade pattern of Argentina may explain this result. In this respect, the study of Yeats (1997) on Mercosur's Trade performance and the effects of regional trade arrangements has to be mentioned. Indeed, Yeats has studied whether the discriminatory trade barriers applied in regional trade arrangements encourage high-cost imports from member countries at the expense of lower cost goods from non-members in the case of Mercosur. To this aim, he has looked at the evolution of exports to determine if recent trade was evolving along lines compatible with Mercosur's countries comparative advantage. According to his results, the most dynamic (fast-growing) products in

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[14] Equality test has been performed with a result different from 1.

Mercosur's intra-trade generally are capital-intensive goods in which members have displayed a strong export performance in outside markets. Neither the revealed comparative advantage indices nor statistics about factor proportions indicate that Mercosur has a comparative advantage in these products. Moreover, the evidence suggests that Mercosur's own trade barriers are responsible for these trade changes. Most favored nation tariffs on the fast growing products are above the average for all inputs and provide Mercosur member with significant preferences. These findings constitute evidence of the potential adverse effects of regional trade arrangements on members and on third countries, as judged by the variance in their trade patterns from what current comparative advantage would predicts. Moreover, since the introduction of Mercosur trade agreement, the manufactures provided the catalyst for the increase of intra trade with transport and machinery products being the most dynamic sub sector within this group. As underlined by Yeats, these products are generally protected by higher than average discriminatory trade measures. As a result local producers would have a strong incentive to seek the higher prices available on sale to Mercosur markets. Given the option of selling locally at higher prices producers would have a strong incentive to divert exports from more competitive foreign markets to less competitive regional markets. This is particularly relevant and obvious for Argentina and its exports of vehicles[15] to Mercosur's partners, which increased by almost 10% between 1990 and 1998.

The difference of size between Argentina and trading partner j has a negative impact on Argentina's export. This means that less difference in GDP among partners tends to favor trade. This finding can be related to new theories of international trade which assess that countries with similar development level will trade more intensively similar goods. This might seem a bit weird for an emerging country like Argentina. The question of how exports of capital intensive goods from one developing country to another can compete with exports from industrial countries has often been raised. According to Dongues (1987), Preferential Trade Arrangement among developing countries foster this exchange. For Argentina, Mercosur has not only increased intra-trade with its partners but has also entailed a modification of the structure of its exports. For instance, the automobile exports[16] to Brazil, which represented 6.2% of Argentina's total exports to Brazil in 1991, amounted to 32% in 1998. At the same time, the exports of automobile from Brazil to Argentina raised from 17% (of Brazil total exports to Argentina) in 1991 to 29% in 1998. In fact our result goes along the same line that what we have previously found for our variable of economic distance.

The Mercosur dummy, which reflects the effect of trade arrangements, is positive and significant.

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[15] Argentina had a complex quota system and high tariffs to protect the domestic automobile industry until the year 2000, when a common Mercosur automobile policy was scheduled to take place.

[16] The Argentine/Brazil auto agreement establishes preferential market access treatment for both countries to protect the MERCOSUR automobile industry.

Finally, the real exchange rate has a positive impact on exports[17]; a 1% rise of the exchange rate, representing a depreciation of the peso against the currency of trading partner j, boosts Argentina's exports by 0.22%. Other studies that have included exchange rate variables found the following results. Larue and Mutunga (1993) have estimated gravity models to explain trade flows among less developing countries, LDCs, among developed countries, DCs, from LDCs to DCs and from DCs to LDCs. They have introduced a nominal exchange rate variable which even though had the expected sign in the LDCs to LDCs equation was not significant. On the contrary in both the 'DCs to LDCs' and 'LDCs to DCs' equation, the variable had the right sign and is significant at one percent level (elasticity of 0.16). Matyas (2000) also has introduced a variable of real exchange rate in studying the case of APEC countries. In his case, the elasticity of the variable amounts to around 0.40. The difference of elasticities between our results may result from our "one way" estimation as well as the composition of our sample and the nature of products exported by Argentina.

Several authors have also added exchange rate volatility variables in their study. Therefore we have also reassessed equation (1) but with introducing exchange rate volatility. The uncertainty on the nominal exchange rate (which is more a proxy of exchange rate risk) has been tested both in level and variation[18]. Nevertheless the introduction of volatility

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[17] Two remarks have to be stressed concerning our results:

- the first one is related to our measure of the real exchange rate. For our estimation, we have used the RER from the CEPII CHELEM database, which provides exchange rate data in levels. Indeed to calculate the real exchange rate requires to use CPI index with a base year as a benchmark. But to do this is similar as presuming that the real exchange rate of all countries in the sample is at the same level in the base year. To avoid such a bias, Bergstrand (1985) has fixed a benchmark year corresponding to a year of *'normal'* economic activity for the countries included in his sample. Nonetheless, choosing a base year for a sample encompassing OECD countries seems easier than to do it for a sample including too dissimilar countries. Although our results are based on the RER provided by the CEPII CHELEM database, the equation has also been estimated with a "*calculated*" exchange rate.

- Secondly, on a reduced sample (24 countries, principally NAFTA, MECORSUR, EU11 countries) the RER was not significant. The importance of MERCOSUR in the sample might therefore bias our results.

  24 countries: CEPII RER was positive but non-significant, while the calculated RER was negative and significant.

  38 countries: CEPII RER was negative but non-significant, while the calculated RER was negative and significant.

[18] The volatility in variation has been measured by the standard deviation of the first difference of the logarithmic exchange rate (using average of the period exchange rate monthly data from the IFS). The volatility in level has been measured by the standard deviation of the exchange rate of the peso vis-à-vis the currency j on the average of the exchange rate peso/j on the year.

variables proved to be not significant[19]. This result is not surprising insofar as the literature has found difficult to establish a strong negative effect of the exchange rate volatility on international trade. According to McKenzie (1999), who did a survey on the literature on the debate on the impact of exchange rate volatility on trade flows, a fundamental unresolved ambiguity exists.

II. IMPACT OF DIFFERENT EXCHANGE RATE REGIMES ON ARGENTINA'S EXTERNAL TRADE

Argentina is currently having a currency board arrangement but the shift to another exchange rate system is highly debated. While dollarization was advocated in the late 1990's, other exit options, more flexible, are now also considered. The impact an exchange rate shift might have on Argentina external position merits some consideration insofar as it could have spillover effects on its growth. Indeed, in a situation of recession and over-indebtedness, whether a shift of exchange rate entails gains in terms of Argentina's external trade balance, it might contribute to restore growth. In the following, we examine what would be the impact of various exit options from the currency board on Argentina's exports. Another issue to be addressed is the trade-off resulting from an exchange rate regime shift in a context of regional integration. While a currency board arrangement for Argentina has increased credibility in terms of inflation control, the use of different exchange rate regime arrangements by Mercosur's countries (especially the floating of the Brazilian real) might be a matter of concern for Argentina's competitiveness. Moreover, it raises the interconnection between monetary and real integration. European countries have put much emphasis on the importance of monetary cooperation as a step toward improving trade integration. ASEAN countries seem also to stress the importance of monetary cooperation as a component to real integration. This is not the case so far in Mercosur.

From the point of view of external competitiveness, dollarization is not very different from a currency board arrangement. Hence we will focus on more flexible arrangements. Therefore in this section we will consider the currency board arrangement as the benchmark and that Argentina might only opt for more flexible arrangements[20]. In this regard, intermediate

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[19] Both volatility in variation and in level have been tested but without success. Catao and Flacetti (1999) have obtained the same results. On their research on supply and demand on Argentina's manufacturing exports to MERCOSUR they have found that RER instability variable did not add any significant explanatory power to their regression. It lacked statistical significance for both the level and first difference in the equation. Indeed, inclusion of this variable in the Error correction supply equation yielded a positive (through statistically insignificant at any conventional level) coefficient, contrary to the theory. This contrasts with results obtained when considering export supply excluding MERCOSUR manufacturing trade which indicate that the RER instability tended to undermine Argentina's commodity exports, particularly in the 80's when Argentina's operated a flexible exchange rate regime and experienced relative price stability.

[20] Our simulations are backwards-looking and based on real exchange rate data (CEPII CHELEM Database). The issue raised is to see what would have happened if Argentina had experienced exchange rate arrangements other than the currency board in order to learn lesson for the future.

exchange rate regimes will be considered as they can provide a way for reconciling stability and flexibility. A regional scenario will also be considered insofar as Argentina is a member of Mercosur. But first, the issue the Argentina's currency board is facing in the short run have to be addressed.

2.1. The Status Quo

2.1.1. Dollarization Versus Currency Board: What's the Difference?

Bergsten (1999) defines dollarization[21] as a *'currency board plus'*. The implications of dollarization are quite similar to those obtained under a currency board arrangement. Nevertheless, two main differences remain. First, the government will lose seigniorage revenue[22]. The loss of seigniorage encompasses two elements: the stock cost which is the cost for initially obtaining the dollar notes and coins required to replace the national currency in circulation and the flow cost which comes from the increase in national currency over years and which have been ruled out. As estimated by Bogetic (1999), the stock flow of dollarization in Argentina amounted to 3.7% of GDP for the period 1991/97 while at the same time the flow cost amounted to 0.5% of GDP. Second, dollarization is a fully and irrevocable commitment which rules out devaluation. In this respect, dollarization has often been advocated in order to avoid any negative spillover effect a devaluation might have on banks and firms balance sheets. Indeed with the high level of dollarization[23] of the Argentina economy, any devaluation of the peso might increase the probability of default. Nevertheless, the question remains to know whether it is really relevant for Argentina to dollarize its economy in terms of economic structures, trade flows with the United States, exchange rate stability and macro-economic environment.

According to Frankel (1999) the main benefits Argentina could reap from dollarization concerns the reduction of interest rates[24] while the main drawbacks will be the irreversible

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[21] For more details on dollarization refer to **Appendix 1** and **Box 1**.

[22] Seigniorage can be defined as the revenue raised by the government through the printing of money. Under a currency board arrangement, much of this loss can be offset by investing the excess foreign exchange reserves in interest-bearing liquid foreign assets.

[23] The ratio of foreign currency deposits on M3 is usually used to assess the level of dollarization of an economy. For Argentina, this ratio is around 55%.

[24] According to Frankel's results (1999) when the US federal fund rates increases 1 basis point, the Argentine dollar interest rate on average rises more than one for one, an estimated 2.73 basis points. The interest rate differential consists primarily of a country premium, supplemented by a small currency premium. The country premium is compensation for perceived risk of default, measured as the Argentine dollar interest rate minus the US Treasury bill rate. The currency premium is compensation for perceived risk of change in exchange rate policy, measured as the Argentine peso interest rate minus the dollar denominated argentine interest rate. With dollarization currency premium will vanish. Nevertheless, the country risk even though remaining may diminish as the probability of devaluation vanishes (which will reduce the probability of default). By looking at Panama, which is dollarized, Frankel finds that when the US fed funds rate rises 1 basis point, the Panamanian interest rate on average rises by only an estimated 0.43 basis points. This means that somewhat paradoxically, Argentina might be less at the mercy of the

commitment to such a rule (and the loss of the function of Lender of Last Resort by the monetary institution). Thus, any shift to dollarization from a currency board arrangement should not have any major impact in Argentina, especially in terms of trade. Therefore in the following, we will focus on more flexible arrangements.

2.1.2. Problem Raised by a Devaluation of the Real

One cost of the Argentina's currency board lies in the potential beggar-thy-neighbor policy its Mercosur partners might lead insofar as the block's two largest members have different currency regimes. Brazil's floating (or sinking) real has lost over 40% of its value since its force devaluation in 1999, whereas Argentine's peso is pegged to the dollar. Increasingly Argentina is blaming its economic troubles on its link to a partner that can gain 'unfair' advantage by letting its currency fall. Thus the substantial exchange rate fluctuations within the group, as well as vis-à-vis the industrial countries, can have destabilizing effects and then undermine regional economic cooperation. Before the floating of the Brazilian real in early 1999, fluctuations in the bilateral nominal exchange rate between the real and the Argentine peso were limited because of their link to the dollar. But now with Brazil moving to a floating exchange rate regime and Argentina still committed to the currency board arrangement, the exchange rates between the two largest Mercosur members might be more volatile than in the past undermining Argentina's competitiveness.

Here, we assess the effect of a 20% real depreciation of the Real in 1998, on Argentina's exports in 1998[25].

The simulated real exchange rate between the peso and the currency j is:

$RERS^{98}_{peso/j, j \ real}$ is unchanged

$RERS^{98}_{peso/real} = 0.8 * RERO_{peso/real}$

With RERS, the simulated real exchange rate and RERO, the observed real exchange rate.

According to our result a 20% devaluation of the real will entail a loss of around **4.9%** in terms of Argentina's exports to Brazil (and **1.71%** in terms of total exports), which is important but not surprising given their close trade links.

2.1.3. Devaluation of the Peso

A possible reaction to the evolution of the real would be to devaluate the peso in order to restore Argentina price competitiveness. We consider a real devaluation of 20% of the peso

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federal reserve if it dollarizes its economy. But a drawback would be that increases in Argentine interest rates would bear US fingerprints more visibly from a political standpoint.
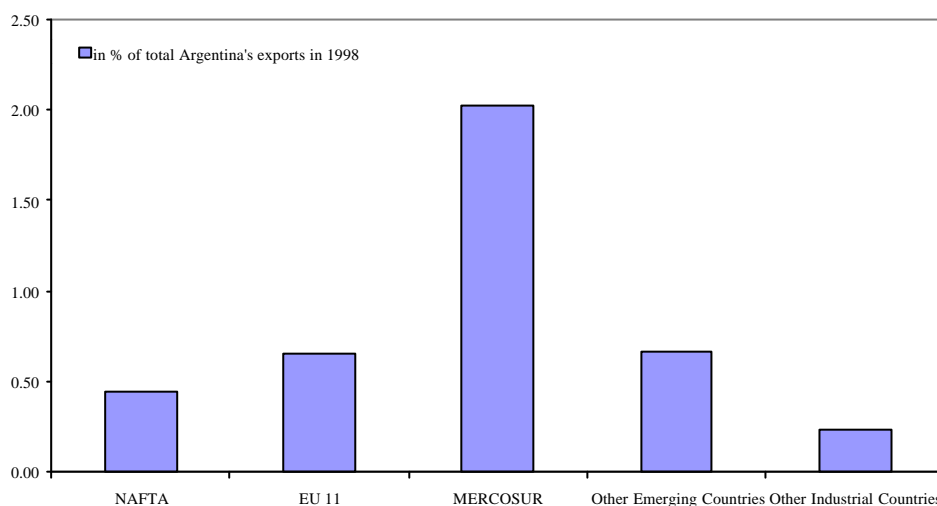
[25] In the following we express gains versus losses of each simulated exchange rate regimes in percent of Argentina's exports. Argentina's exports refers to exports of the sample of countries used in **Section 1**, *i.e.* which accounts for 92% of total Argentina's exports.

vis-à-vis the dollar in 1998, while maintaining unchanged the exchange rate of the dollar vis-à-vis the currency j of all other Argentina's trading partner.

The real exchange rate simulated between the peso and the currency of the partner j in 1998 is:

$$RERS^{98}_{peso/j} = 1.2 * RERO^{98}_{peso/j}$$

Impact of a Simulated Devaluation of the Peso on Argentina's Exports in 1998, by Geographical Destination

According to our results the gains resulting from a devaluation of the peso would have amounted to **4.01%** of aggregated Argentina's exports[26]. Nevertheless, the magnitude by geographic region remains low, with less than 1% for each area, except for the Mercosur area. The gains reaped by region gauge the geographical distribution of Argentina's exports, underlining Mercosur as the larger trading partner. In the long run, the net gains on the economy resulting from a devaluation would depend on the evolution of inflation.

The issues related to such a scenario is twofold: First, if the dollar is de facto unit account so that many wages and prices are tied to the dollar, domestic prices will quickly rise by the same amount as the rate of devaluation. Second, if financial assets and liabilities are denominated in dollar, devaluation will likely worsen the balance sheet of the domestic banks and firms. As stressed by Berg and Borensztein (2000): *"devaluation in a context of weak banking systems and large foreign exposure in the private sector can damage the*

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[26] We refer to the sample of countries of **Section 1** which represents 92% of total Argentina's exports, which means that we consider Argentina's total exports as exports to these countries only. Given this, NAFTA represents 11.1% of Argentina's exports, EU11 16.2%, Mercosur 50.3%, Other Emerging Countries 16.6% and Other industrial countries 5.8%.

financial health of banks and firms, sharply disrupting real activity. This implies that
devaluation as a policy option may be too costly for highly dollarized economies and that
moving to full dollarization would not entail the loss of an important policy tool". Calvo
(2000) therefore suggests that the larger the degree of liability dollarization and lack of
credibility, the greater the attractiveness of dollarization. Nevertheless, Cespedes, Chang
and Velasco (2000) show that while the impact of adverse foreign shocks can be strongly
magnified by the balance sheet effect of the associated real devaluation, the fall in output,
employment and investment is stronger under fixed exchange rates than under flexible ones
(thus under fixed exchange rate while devaluation will not occur in response of shock,
expectations of devaluation will be higher which will lead to increasing domestic real interest
rates that will tend to be higher under a peg adversely affecting current investment and
future output).

2.2. Toward More Flexible Arrangements

2.2.1. Crawling Peg Arrangement on the Dollar

As underlined by Eichengreen, Masson and alii (1998), a country wishing to shift from a
currency board arrangement to a more flexible one should seriously consider first a currency
peg. Indeed, a peg or intermediate regimes might help to smooth transition to greater
flexibility. Moreover it would rather be successful if it is accompanied by supporting
measures[27]. Under a crawling peg arrangement, par values are changed by small
preannounced amounts or percentage at frequent and clearly specified intervals so as to
both maintain international competitiveness and bound price expectations.

Here the crawling peg is defined so as to maintain the international competitiveness of the
peso vis-à-vis the dollar, *i.e.* by keeping it unchanged. Hence, we fix in 1998 the real
exchange rate of the peso vis-à-vis the dollar at its level of 1991 while taking into account the
variation between 1991 and 1998 of the bilateral real exchange rate between the dollar and
the currency j of other trading partners. The evolution observed of the real exchange rate of
the peso and the dollar vis-à-vis other currencies is reported in **Appendix 5**.

The simulated real exchange rate between the peso and the currency of the partner j in 1998
is thus:

$\mathrm{RERS}^{98}_{\mathrm{peso}/j} = [\mathrm{RERO}^{91}_{\mathrm{peso}/\$}]/[\mathrm{RERO}^{98}_{j/\$}]$

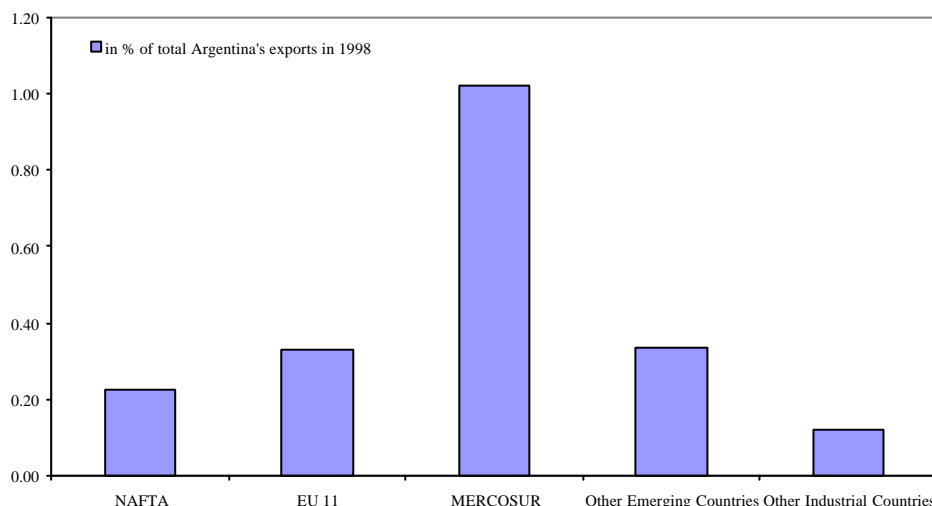With RERS, the simulated real exchange rate and RERO, the observed real exchange rate.

While in real terms, the exchange rate of the peso vis-à-vis the dollar appreciated between
1991 and 1998, a crawling peg arrangement might have been beneficial, as it would have
limited this appreciation. However since the dollar appreciated between 1991 and 1998,
especially vis-à-vis European countries but less than the peso did, this might have a positive
effect in terms of Argentina competitiveness vis-à-vis the European Area.

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[27] Such as strengthening financial sector regulation and supervision, reasonable fiscal discipline.

The gain resulting from a crawling peg arrangement in terms of aggregated Argentina's exports amounts to **2.03 %** , which is quite significant.

The crawling peg would have prevented the peso from appreciating against the us dollar in real terms, benefiting exports to all regions in similar proportion[28]. The benefits in percent of total Argentina's exports hence reflects the initial distribution of exports. As seen **below**, the gains recorded are higher for MERCOSUR for two reasons: firstly, it is Argentina's main trading partner; secondly, although the dollar and the peso depreciated in real terms against Mercosur currencies between 1991 and 1998, the crawling peg arrangement would have increased this effect (insofar as the dollar depreciation against mercosur currencies has been higher than the one of the peso vis-à-vis these currencies).

Impact of a Crawling Peg Arrangement on Argentina's Exports in 1998, by Geographical Destination
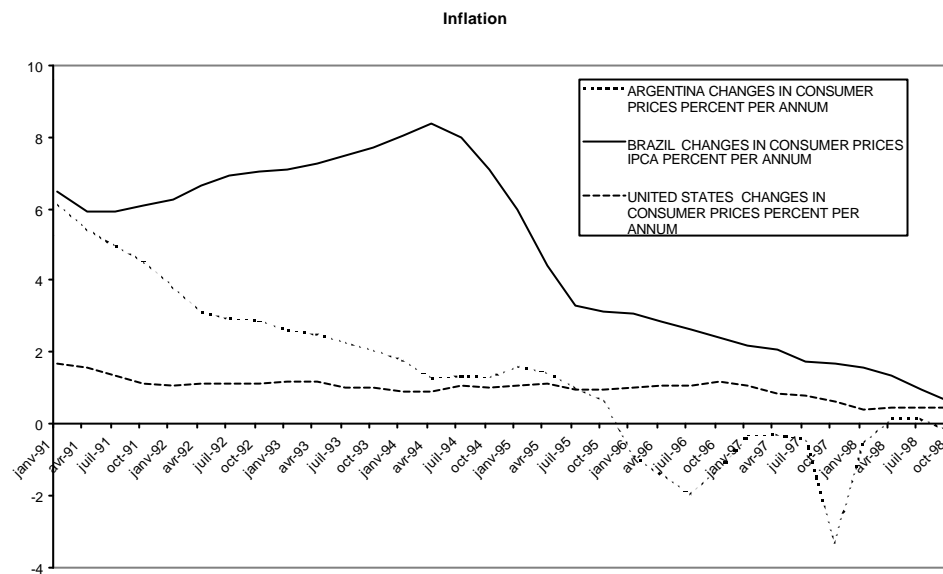

Since a few years, Argentina has suffered from the appreciation of the dollar and from the strict monetary policy led by the United States to cool down their economy. By allowing the adjustment of the exchange rate more frequently and by providing more flexibility in the conduct of their monetary policy, a crawling peg might help also to keep Argentina's competitiveness.

2.2.2. Hypothesis of Inflation 'à la Balassa'

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[28] In all our simulations, (but except in the case of a crawling peg of Mercosur currencies to the dollar, section **2.3.1**), an exchange rate regime switch of the peso impacts in similar proportion all the countries. Thus the gains/losses in percent of total exports gauge the initial geographical distribution of Argentina's exports.

The currency board arrangement consists in both a fixed, nominal exchange rate and a highly constrained monetary growth, which limits inflation at a level potentially lower than what would be consistent with productivity catch-up (the Balassa-Samuelson effect). A more flexible arrangement such as a crawling peg may end in higher inflation, making the real exchange rate appreciate in line with the Balassa effect. This is what is simulated here[29].

Inflation

Source: based on Statistics from the IFS, IMF.

First we simulate the real exchange rate between the peso and the dollar[30]:

$$RERS^{98}_{peso/\$} = [RERO^{91}_{peso/\$}] * [1 + RERSBal_{peso/\$}]$$

$$\text{With } RERSBal_{peso/\$} = [1 - n]/ n * Ä(GDPC^{91/98}_{us} - GDPC^{91/98}_{arg})$$

GDPC, which represents the income per capita, is used as a proxy for productivity. The first term, n, represents the degree of openness, which is taken as a proxy for the share of tradable goods in the economy, and thus $[1 - n]$ is taken as a proxy for the non-tradable sector. We have set n equals to 0.3, insofar as the observed one might not provide full

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[29] It could be argued that the Balassa effect does not entail any loss in competitiveness since the real appreciation stems from the non traded goods sector. However given the lack of export price data, the export equation was estimated with the CPI real exchange rate. Hence an appreciation of the latter does reduce export volumes.

[30] The Balassa effect vis-à-vis third currencies is taken into account through cross exchange rates.

information concerning the share of the production effectively exposed to the international competition[31].

Then the simulated real exchange rate between the peso and the currency j is:

$$\text{RERS}^{98}_{\text{peso/j}} = \text{RERS}^{98}_{\text{peso/\$}} * \text{RERO}^{98}_{\text{\$/j}}$$

**Impact of a Scenario with 'Inflation à la Balassa' on Argentina's Exports,
by Geographical Destination, in 1998**

Note: under this scenario, the real exchange of the peso against the dollar appreciate in line with the Balassa effect.

Under this scenario, Argentina would have encountered a net aggregated loss of **5.3%** which is rather important. Mercosur records the highest losses which amounts to **2.67%** of Argentina's exports. Whilst the peso (and the dollar) depreciated vis-à-vis Mercosur currencies between 1991 and 1998, simulating a Balassa effect (and thus an appreciation of the peso vis-à-vis the dollar) would have negated this effect, impacting negatively the exports of Argentina's to Mercosur. This suggests that the depreciation of the peso vis-à-vis Mercosur currencies would have been less important than what would have been effectively the case between 1991 and 1998. Moreover the large share of Mercosur in Argentina's exports increases the effect.

The simulation under this scenario provides some idea on the amount of loss Argentina might incur in the long run. Argentina has been less affected by the Balassa effect than

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[31] We refer to the Thesis of Amina Larhèche Révil that considers that the share of 'potential' tradable goods in an economy might be higher than the effectively traded goods. Indeed, several rules (such as the existence of trade barriers, specific reglementation…) may impede goods to be traded on the international market. For further details, refer to A. Larhèche (1998),*'Taux de change réel et développement'*.

what could have been expected. Thus exports have benefited from the fact that the Balassa effect did not apply. This suggests that the shift to a more flexible arrangement that would allow a real appreciation of the peso might then impact negatively Argentina's exports. While the currency board has been quite efficient to bring inflation under control with positive spillover effects on Argentina's competitiveness, in the long term a real appreciation of the peso exchange rate is difficult to avoid through the 'Balassa effect' which then will impact negatively Argentina's exports.

2.2.3. Crawling Peg to a Basket of Main Trading Partner Currencies

Pegging to a basket of currencies would smooth bilateral exchange rate fluctuations between Argentina and its main trading partners[32]. We consider that the peso is crawled to a basket of currencies weighted by one third of the dollar, one third of the euro (proxy by the DM) and one third of the real.

First we have to define the constant basket expressed in logarithm:

$$\text{Constant } 91 = á_1 \text{ RERO}^{91}_{\text{peso/\$}} + á_2 \text{ RERO}^{91}_{\text{peso/dm}} + á_3 \text{ RERO}^{91}_{\text{peso/real}}$$

With $á_1 = á_2 = á_3 = 1/3$

From this we can derive:

$$\text{RERS}^{98}_{\text{peso/\$}} = \text{constant } 91 + á_2 \text{ RERO}^{98}_{\text{dm/\$}} + á_3 \text{ RERO}^{98}_{\text{real/\$}}$$

And thus in logarithm we have,

$$\text{RERS}^{98}_{\text{peso/j}} = \text{RERS}^{98}_{\text{peso/\$}} - \text{RERO}^{98}_{\text{j/\$}}$$

Through this formulation we gauge the stability of the real competitiveness vis-à-vis the basket.

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[32] Domingo Cavallo, Argentina's Minister of Economy, has proposed in April 2001 to peg the peso to a basket (while still maintaining the currency board arrangement) including euro and dollar in the same proportion. This proposal nevertheless could only become effective when the euro regain parity with the dollar. The reasons behind such a decision are threefold :

- a peg will reflect Argentina's trade pattern better (even though the real is not included, in the long run, the peg could be extended to the yen and the real and provide some basis for a regional currency) ;

- such a shift would not lead to any devaluation of the peso as the change would occur on the day of the euro-dollar parity;

- the introduction of the euro in the basket might led to a diversification of the currency denomination of the debt.

Through this proposition, Cavallo might desire to stop any speculation about a devaluation of the peso or a move to full dollarization.

According to our results, the gain resulting from such an arrangement would only amount to **0.15%** of Argentina's exports, which is rather very small.

In the same way as in the crawling peg scenario, the peg to a basket of currencies seems to be beneficial to Argentina vis-à-vis all the regions and in the same magnitude (the gains are lower because with the basket the competitiveness vis-à-vis other partners is also taking into account). But the low gains reaped suggests that such an arrangement should have overall only a very limited impact on Argentina competitiveness.

2.3. Regional Dimension

2.3.1. Crawling Peg of Mercosur Currencies to the Dollar

One might analyze what would be the impact of having similar exchange rate regimes across Mercosur countries. Thus we assume that all Mercosur countries follow a crawling peg against the US dollar from 1991 onward.

$$\text{RERS}^{98}_{\text{peso/\$}} = \text{RERO}^{91}_{\text{peso/\$}}$$

$$\text{And RERS}^{98}_{\text{peso/mercosur}} = \text{RERO}^{91}_{\text{peso/mercosur}}$$

As the peso exchange rate to the dollar is constant and the exchange rate of the Mercosur currencies vis-à-vis the dollar is also constant, the exchange rate of the peso is only evolving vis-à-vis the currencies of countries which are different from the Mercosur ones.
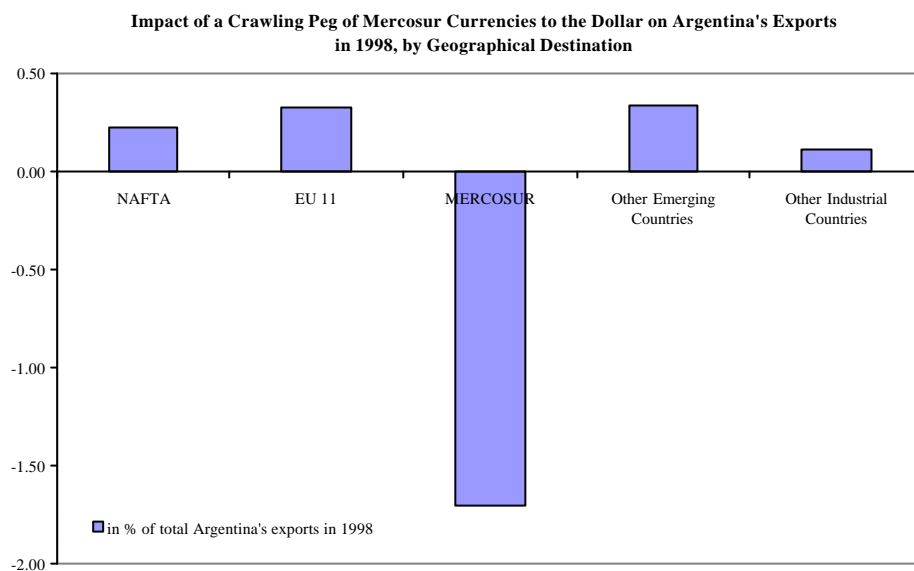
Thus the real exchange rate of the peso vis-à-vis the j currency is:

$$\text{RERS}^{98}_{\text{peso/j}} = \text{RERS}^{98}_{\text{peso/\$}} * \text{RERS}^{98}_{\text{\$/j}}$$

$$\text{With RERS}^{98}_{\text{\$/mercosur}} = \text{RERO}^{91}_{\text{\$/mercosur}}$$

$$\text{And RERS}^{98}_{\text{\$/j mercosur}} = \text{RERO}^{98}_{\text{\$/j mercosur}}$$

As we assume that Mercosur countries peg their currencies to the dollar, the exchange rate peso/mercosur is fixed at its 1991 level.

**Impact of a Crawling Peg of Mercosur Currencies to the Dollar on Argentina's Exports
in 1998, by Geographical Destination**

According to our results, the impact of regional crawling peg to the dollar in 1991 would have a negative aggregate effect on Argentina's exports, amounting to **0.71%**. Such a scenario would have gauged not only the initial distribution of Argentina's exports but also the evolution of Mercosur countries exchange rates vis-à-vis the dollar. The loss recorded for Mercosur countries are particularly important. This might be explained by the fact that between 1991 and 1998, the exchange rate of the peso and the dollar vis-à-vis the Mercosur currencies depreciated in real terms. But by fixing the exchange rate of these countries at their level of 1991, it does not report the depreciation effect, and then impacting negatively Argentina's exports[33]. On the other side, the gains recorded vis-à-vis the EU 11 area result from the crawl to the dollar that has limited the appreciation the peso would have recorded in reality vis-à-vis European currencies and thus been benefic.

2.3.2. Crawling Peg to a Regional Basket

Mercosur countries have significant intra regional trade. As already mentioned in **Section 2.1.2.** the use of different exchange rate arrangements by the two largest Mercosur partners might raise concerns. One option to address this issue might be to consider some form of regional monetary and exchange rate arrangement, following the case of the creation of EMU for example[34]. While the necessary conditions for monetary union do not yet exist in

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[33] Between 1991 and 1998, the real appreciated against the dollar more than the peso did. Thus a crawling peg of mercosur countries (and hence the real) to the dollar would have limited this effect, impacting negatively Argentina's exports.

[34] For a detailed presentation on the issues on greater integration among Mercosur countries and the reference to the case of EMU, refer to Giambiagi (1999) as well as to Levy Yeyati and Sturzenegger

Mercosur (that is the development of a common market that goes beyond a Common External Tariff as well as the coordination of macroeconomic policy and fiscal harmonization) to promote advances in Mercosur integration process, we might consider the case where they decide to peg to a basket encompassing regional currencies, in a similar way as the EMS.

This scenario is similar to the one developed in **Section 2.2.3** except that here the basket includes the Brazilian real, the Paraguayan guarani and the Uruguaya peso, the currencies of the countries that have initiated the Mercosur agreement.

First we have to define the constant basket in 1991 in logarithm:

Constant 91 $= á_1$ $RERO^{91}_{peso/real} + á_2$ $RERO^{91}_{peso/paraguayanguarani} + á_3$ $RERO^{91}_{peso/uruguayanpeso}$

With $á_1 = á_2 = á_3 = 1/3$

From this we can derive:

$RERS^{98}_{peso/\$} = constant_{91} + á_1$ $RERO^{98}_{paraguayanguarani/\$} + á_2$ $RERO^{98}_{real/\$} + á_3$ $RERO^{98}_{uruguayanpeso/\$}$

And,

$RERS^{98}_{peso/j} = RERS^{98}_{peso/\$} - RERO^{98}_{j/\$}$

Impact of a peg to a regional basket on Argentina's exports in 1998, by geographical destination

(2000). Both papers are interesting as they share opposite views on the feasibility of a monetary union for Mercosur.

According to our results, pegging to a regional basket would have had a negative impact amounting to **2.43%** of Argentina's exports. The loss is more important for Mercosur insofar as it gauges the geographical distribution of Argentina's exports. This suggests also that pegging to a basket of currencies is not always a benefit. Indeed, pegging to a basket including currencies of countries that control their inflation increases the credibility of the peg while pegging to a basket of currencies that appreciate might be detrimental. By pegging to a basket that appreciate, Argentina looses in terms of exports. The loss incurred vis-à-vis industrial countries results from the appreciation of the basket vis-à-vis the dollar. The loss vis-à-vis Mercosur means also that the peso did not depreciate vis-à-vis other Mercosur countries as it did in reality.

CONCLUSION

The motivation of this paper was twofold:

- Although the 1997/1998 crisis together with increasing international markets integration have revived the debate on the most suitable exchange rate system for emerging countries and underlined the benefits of the two corner solutions, intermediate regimes might still be relevant as a way of reconciling stability and flexibility. Moreover, until now, exits from *modern* currency boards have been quite seldom raising concerns about the switch to other exchange rate regimes. In this regard, the case of Argentina is interesting insofar as Argentina operates under a currency board arrangement while at the same time is also a member of the Mercosur regional trade agreement. This participation raises the question of deeper economic integration among its member countries;

- Although Argentina is not very open, the Menem administration's reform program made significant progress in transforming Argentina from a closed, highly regulated economy to one based on market forces and international trade. Thus a shift of exchange rate regime might impact its external position. For this purpose, the use of gravity equation, with exchange rate variable was also intended to gauge the long term impact that financial variable may have on trade.

Several conclusions may be drawn from our investigation on Argentina.

- First, while dollarization has been highly debated and suggested for Argentina mainly because of the adverse effects that a devaluation might have in terms of balance sheets of private and public agents, other options might be considered, particularly more intermediate, flexible arrangements.

- Second, the determination of an export equation for Argentina based on a gravity model with exchange rate variables highlighted several points: the real exchange rate of the peso influences Argentina's trade; the establishment of the Mercosur agreement did also have a boosting effect on exports; but Argentina does not seem to trade accordingly to its comparative advantages. This latter results tend to underline the

contrasted effects that Mercosur may have on Argentina: increasing trade with its Mercosur partners but with possible trade diversion.

- Thirdly, the scenarios on various exchange rate regimes developed suggest:

  - A *devaluation of the peso* is the option under which Argentina reaps the higher benefits in terms of exports. Nevertheless two broader problems may remain: the resulting inflation if not controlled and the spillover effects on balance sheets of the domestic bank and firms which have financial assets and liabilities in dollar.

  - While a *crawling peg of the peso to a basket of main trading partner currencies* has almost no impact on Argentina's exports, a *crawling of the peso to the dollar* is significant in keeping Argentina's competitiveness.

  - Taking into account of the *Balassa effect* also underlines that it is difficult in the long run for the peso to avoid any real appreciation, which therefore will undermine Argentina's competitiveness.

  - On a regional dimension, a *devaluation of the brazilian real*, appears to be detrimental on Argentina's exports, stressing that the fragility of any Argentinean monetary regimes is related to any arrangement that would prevent the real from appreciating in real terms. In the same vein, over the past a *crawling peg to a regional basket* would have impacted negatively Argentina's exports.

While this paper focuses on exit options for Argentina in terms of external trade, it also mentioned the question related to the process of monetary and real integration among Mercosur countries. Indeed while Mercosur countries have implemented trade agreements, one of the main problem these countries are currently facing is the different exchange rate arrangements used within the bloc that might entail competitiveness bias vis-à-vis some member countries. Thus further research should be undertaken concerning the interconnection between monetary and real integration that might be beneficial to every members.

To conclude, our results point out that a shift of exchange rate regime might impact Argentina's exports. Nonetheless, the issues and impact of exit options would also require to be gauged through other channels especially financial.

The choice of an exit option for Argentina depends also on the ongoing economic reforms. The current recession stresses that although the currency board has been highly beneficial in terms of controlling inflation, this system needs to be backed by appropriate macro economic policies, such as internal labor market flexibility and tight fiscal policy, to be efficient. The structural reforms undertaken by Argentina in the 90's have helped to reduce inflation and to sustain growth, but the country is still having a growing debt burden with high risk premium and negative effects on growth.

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APPENDIX 1: SURVEY OF THE LITERATURE ON EXIT STRATEGIES AND PRESENTATION OF ARGENTINA CURRENCY BOARD

I. Exit Options Strategies from a Currency Board Arrangement: Some Theoretical Background

Several reasons may explain the introduction of a currency board arrangement. Currency boards are usually set up to improve financial discipline and to promote economic stability in cases of high instability or hyperinflation[35]. They must then help to restore investors and economic agents' confidence.

According to Williamson (1996), currency board arrangement will be advantageous in three specific cases: the first one concerns a small open economy, the second one concerns a country where the collapse of confidence in the domestic monetary authorities is such that only the renunciation in monetary sovereignty will help to restore confidence and the third one concerns a country whose main interest is to stabilize inflation whatever the cost.

The establishment of a currency board as a tool to restore confidence in economic policy or as a nominal anchor might be seen as an unnatural arrangement and hence is likely to prove temporary (Williamson, 1996; Kopcke, 1999). Then as developing economies and their institutions mature, they might attain a more secure foundation for shifting to other exchange rate arrangements. Economies that leave currency boards can take several courses, ranging from fixing their exchange rates to adopting floating rates.

1.1. Dollarization

Bergsten (1999) defines dollarization as a '*currency board plus*'. The implications of dollarization[36] are quite similar to those obtained under a currency board arrangement. Nevertheless, two main differences remain. First, the government will lose seigniorage revenue[37]. Second, dollarization is a full and irrevocable commitment, which rules out devaluation.

Several advantages may be expected from dollarization. First, by eliminating the risk of devaluation of the domestic currency, the risk of currency or balance of payments crisis should be reduced. The resulting reduction of the currency risk premium would lower

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[35] Several studies analyze the links between macroeconomic performance and currency board arrangement. Refer for example to Ghosh, Ostry, Gulde and Wolfe (1997 and 1998) as well as to Kwan and Lui (1996).

[36] In this paper, dollarization or full dollarization will be associated with the adoption of the US dollar as sole currency. For additional information on issues of dollarization, see **box 1**.

[37] Seigniorage can be defined as the revenue raised by the government through the printing of money. Under a currency board arrangement, much of this loss can be offset by investing the excess foreign exchange reserves in interest-bearing liquid foreign assets.

interest rates[38]. As underlined by Borenzstein and Berg (2000), while dollarization will not eliminate the risk of external crisis, it will tend to smooth market sentiment and thus limit the incidence and magnitude of crisis and contagion episodes. Dollarization can also reduce the incidence of external shocks especially those resulting from the capital account (Calvo and Reihnart, 1999). Second, dollarization should enhance economic growth through monetary and fiscal policies it requires. The limitation of the government to create inflation imposes a fiscal and financial discipline that may be conducive to better economic performance (creating positive sentiment toward investment…). Third, lower transaction costs and stability of prices in dollar terms should contribute to promote closer integration with the United States. According to several studies, transactions among Canadian provinces are 20 times higher than those with the US states despite free trade area and geographic promiscuity. This is partly explained by the existence of two currencies and the fluctuating exchange rate between them. Financial integration should also deepen as the use of the dollar enhances integration of the domestic market into the rest of the world and lower the cost of international financial transactions.

Nevertheless dollarization brings some drawbacks. First, dollarization entails the surrender of the national currency, which is a symbol of national and political sovereignty. Thus given the tradeoffs involved, decision to dollarize should be analyzed cautiously. Second, the government will lose seigniorage[39] revenue which flow to the Federal Reserve Bank. The magnitude of the cost might depend on the ability to negotiate a seigniorage sharing agreement with the US. The loss of seigniorage encompasses two elements. The stock cost which is the cost of initially obtaining the dollar notes and coins required to replace national currency in circulation. In addition, the flow of additional seigniorage that comes from the increase in currency over years, have to be taken into account (**Table 1** below provides some assessment of these two components for few Latin American countries). There are two ways of estimating this flow costs. Either they can be measured as the change in reserve money in a given year, expressed as a percentage of GDP (Bogetic, 1999). Or they can be estimated by using the interest currently earned on reserves that will be forgone, as these reserves will be used as fiat money.

Third, central banks can not act as lender of last resort. Under dollarization the monetary authorities will lose the ability to inject liquidity into the financial system in face of a

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[38] Although interest premiums owing to devaluation risk would vanish, the sovereign risk would remain. Indeed the risk of default, which may result not only from the risk of currency crisis but also from an unsustainable fiscal stance or political turmoil, will still exist.

[39] Nevertheless an agreement for sharing seigniorage might be agreed with the United States. For details on the implication of dollarization for the United States, refer to Frankel (1999), Calvo (2000). Frankel (1999) identifies three possible approaches to dollarization: bilaterally negotiated through a treaty agreement with the United States, unilateral and regional. For indication, Namibia, which is a member country of the Common Monetary Area, receives compensatory payments from the government of South Africa, which represents a return on the rand circulating in Namibia.

banking crisis through monetary creation[40]. Nevertheless, by eliminating the risk of devaluation, bank run should be reduced. The dollarization of monetary assets together with the reduction of problems stemming from currency mismatches in banking balance sheet should enhance confidence in the domestic banking system and thus reduce possible speculative attacks. Moreover, domestic banks may have access to other sources of liquidity (by arranging for example credit lines from foreign banks).

**Table 1: Estimated Stock vs Flow Costs of Official Dollarization
in Selected Latin American Countries**

Country	Period	Stock cost: currency/GDP	Flow cost: change in reserve money as % of GDP
Argentina	1991/96	3.7	0.5
Brazil	1994/96	2.1	1.3
Bolivia	1991/97	4.6	1.4
Ecuador	1992/97	12.2	7.4
El Salvador	1991/96	4.1	2.3
Mexico	1991/97	3.3	0.8
Peru	1991/97	2.1	2.5

Source: Official or full dollarization: current experiences and issues, Bogetic, IMF 1999.
Calculations based on IMF IFS, lines 14 (reserve money), 14a (currency outside deposit money banks and 99a (GDP).

Finally, as under other fixed exchange rate regimes, it precludes the pursuit of independent monetary and exchange rate policies. In economies with nominal rigidities, monetary policy can be useful in stabilizing business cycles. To the extent that the shocks affecting the dollarized economy are different from those affecting the US economy or affect the two economies asymmetrically, dollarization will come at the cost of higher macroeconomic instability. Dollarization reduces the ability to accommodate to asymmetric shocks.

The shift from a currency board to dollarization depends to several things among which the strength of the commitment and the period under which the shift is undertaken. Shu-ki Tsang (2000) considers different situations. By referring to the case of Estonia, he underlines that the introduction of a currency board can be seen as a transition to a clear intention to re-tracking, i.e. to join the European monetary union. In that case, the cost of exit should be limited insofar *euroisation* is already popular. Nevertheless, some costs might be incurred as re-negotiation of the central rate before joining the union might lead to speculative attacks and the fulfillment of criteria to be eligible might be painful in especially terms of fiscal policy. On the other hand, dollarization may be seen as a response to a crisis. In that case, would dollarization be effective to address the problems that gave rise to the crisis in the first place? To answer this question, Tsang distinguishes internal from external

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[40] As noted by Borenzstein and Berg (2000), the monetary authorities should nevertheless be able to provide short-term liquidity to the system or assistance to individual (small) banks in distress. They just need to save funds in advance or secure credit lines with international banks.

crises. According to him, as internal crisis results from wrong policies management or weak leadership, dollarization may be an appropriate response to foster discipline. On the other hand, in face of an external crisis, re-pegging or floating should be better. The structure of the economy should nevertheless be taken into account as a country already highly dollarized may incur severe damage with a depreciation of its exchange rate. By referring to the case of Hong-Kong, using dollarization to solve a short term crisis does not seem a good solution especially because of the implied balance sheet adjustments (many contracts are settled in Hong-Kong dollars) that would be required by the quick process of impromptu dollarization.

1.2. Fixed Exchange Rate

According to Eichengreen, Masson and alii (1998), if a country should want to exit from a currency board arrangement, then an initial move to a currency peg merits serious consideration[41]. Fixed exchange rates might either take the form of a constant target or a crawling peg under which the adjustment of the exchange rate takes place at frequent and clearly specified intervals so as to maintain reasonable international competitiveness. Although fixed exchange rate regimes share many of the attributes of currency boards, they allow emerging economies somewhat more freedom for executing monetary policy. Kopcke (1999) underlines that with fixed exchange regime, open market operations can limit temporary strains on the liquidity of the banking system and foster the development of the domestic money market. For instance, domestic interest rates might be less volatile if the monetary authorities were to provide more base money to answer a temporary increase in the demand for currency, instead of allowing domestic rates to rise enough to induce the banks to incur the cost of selling foreign exchange assets. The decrease in the backing of the money base in this case is only temporary. A fixed exchange rate regime also allows the monetary authorities to provide, within limits, loans to its banking system.

Recent financial crises in emerging market economies have nevertheless put into question the relevance of fixed exchange rate regimes. Indeed, in a world of free capital movements, the management of fixed regimes is becoming very challenging as strains may be put on the central bank to use independent monetary policy.

The success of fixed exchange rate regimes, much like that of currency boards, depends on the links between their economies and those to which they back their currencies. The theory of Optimum Currency Areas determines criteria's such as high factor mobility, symmetric shocks or trade integration as factors that are conducive to a potential currency area. The benefits of monetary integration in terms of smaller exchange rate volatility are compared to the costs of giving up the exchange rate as an adjustment's mechanism. Frankel and Rose (1997) have nevertheless reassess the theory by suggesting that the existence of a common currency itself might strengthen the optimal currency area conditions by improving integration among regions of the area over time. Thus increased integration may result in more highly correlated business cycles because of common demand shocks or

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[41] In order to smooth the shift to more flexibility.

intra-industry trade, making endogenous the OCA conditions to the type of exchange rate regime in a given area. While the OCA theory offers some criteria for choosing the appropriate exchange rate regime, these factors may evolve over time both because of the evolution of the country and its environment.

1.3. Floating Exchange Rate

Defenders of floating exchange rates usually advocate that floating make it less costly to react to shocks through exchange rate adjustments rather than changes in nominal prices that may be costly in terms of output and unemployment. This might be particularly relevant for countries without flexible labor and goods markets. Nonetheless as stressed by Calvo and Reinhart (1999), fiscal policy may serve as a substitute for devaluation. If the real exchange rate is over-appreciated, for example, labor subsidies can be put in place to replicate, in a more controlled way the desired real depreciation.

Eichengreen, Masson and alii (1998) have focused on exit strategies for countries seeking greater exchange rate flexibility. They have dissociated shift from a pegged regime to a more flexible one during crisis period and tranquility period. In general countries can make a successful transition to a more flexible exchange rate regime without substantial economic disruption if they make the regime shift during a period of calm in the foreign exchange market or when there is upward pressure on the exchange rate. Indeed, by becoming more open to international markets, developing and transition countries have to deal with the difficulty to sustain fixed exchange rate regime. In case of surge in capital inflows, a nominal appreciation of the exchange rate may be less costly in terms of confidence in the authorities' policies than a real exchange rate appreciation that might lead to a deterioration of the current account deficit and downward pressure on the exchange rate.

When a country wants to exit from a fixed exchange regime, Eichengreen, Masson and alii (1998) emphasize that several factors may support an orderly shift. This includes among others: the establishment of a new credible anchor for monetary policy, fiscal discipline to enhance confidence, preannounce schedule to increase flexibility of the exchange rate regime by widening the bands or increasing in the trend of the central parity, and strengthening the soundness of the financial sector through proper prudential regulation and supervision.

Although the transition from a pegged regime to a more flexible one is likely to be successful in a period of tranquility, countries have on average exited from a fixed regime once their currency was already under pressure. Thus, exit results from speculative attacks. Under crisis period, the shift to a more flexible exchange rate regime may be more difficult as the circumstances are likely to be ones where the economy and the financial system are already in some difficulty. Therefore monetary and fiscal policies have to be tightened to reduce external payments imbalance and to restore policy credibility. The problems of the financial system and the management of foreign exchange liabilities have also to be addressed.

II. Historic of the Argentina's Currency Board and Issues Raised Concerning the Exchange Rate Regime

Following the period of hyperinflation of the 80's that caused a collapse of confidence in the Argentine's government, Argentina has established a currency board arrangement. This was seen as the only way of restoring credibility and reassuring the public that the government 's fiscal hands were tied.

2.1. Specificities of Argentine's Currency Board

Generally speaking, under a currency board arrangement, the Monetary Authorities commit themselves to issue domestic currency only in exchange for a reserve currency (usually the dollar), at a preannounced fixed parity. Thus a currency board needs to have sufficient foreign reserves to honor its commitment. Under an orthodox currency board, its foreign reserves must at least equal the value of its monetary liabilities (the monetary base).

The main technical characteristics of an orthodox currency board may be summed up as follows:

- a currency board can not fulfil the role of lender of last resort. The banking system has thus to be liquid and solid;

- a currency board is not allowed to finance a budget deficit, which is supposed to enhance fiscal discipline and inflation by tying up the hands of the monetary authorities. Nevertheless, the government can finance a deficit either by resorting to foreign lenders or private agents. Both sources are submitted to constraint: the first one to the sustainability of the external debt and the second one to crowding out;

- as the money supply is endogenous and not under the control of the monetary authorities, interest rates are market determined and linked to interest rates from the country to whose the national currency is anchored;

- as the government is not allowed to print money, it may lose a main source of revenue, the seigniorage;

- to compensate the absence of exchange rate movements as a mechanism of adjustments, wages and prices have to be flexible and labor markets free of distortion.

Along with orthodox currency board, there exits '*currency board like system*' which have some discretionary power for monetary policies, though much less than most central banks. This is the case of the currency board arrangement in Argentina.

The Argentina's currency board arrangement was introduced in 1991 by the Convertibility Plan. The main elements of the Monetary regime and exchange arrangements[42] stipulate that:

- the exchange rate is fixed with a conversion parity of US $ 1 = Peso 1;

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[42] Main features of the regulatory framework of the Argentine financial system, April 2000.

- the monetary base is fully backed by international reserves. Up to one third of this backing may consist of public bonds, denominated in US $ and market to market;

- according to its charter, the BCRA[43] can not lend to national, provincial, or local governments, or to the non-financial sector. It may only finance the Treasury through the purchase of government bonds at market prices. The growth in bond holdings of the BCRA must not exceed 10% per year.

Since 1991, financial policies have been steered to strengthen the banking system and to remove institutional obstacles to financial intermediation. To this end, a comprehensive regulatory framework was developed along three main lines (IMF, 1998):

- measures to ensure that banks operate with high liquidity margins and capital adequacy ratios,

- measures to reduce banks' exposure to credit, market and trading risk through stricter bank supervision and high provisioning requirements,

- efforts to minimize information asymmetries in credit markets and reduce structural costs of financial intermediation.

Before 1991, reserve requirements were applied but which paid no interest. Since the end of 1995, reserve requirements were replaced by a system of liquidity requirements with more uniform rates than before, which do not discriminate between pesos or dollar or against checking accounts. The rates for the liquidity requirements are applied according to the residual time to maturity and are higher for the shorter residual times to maturity. Only 20% of these requirements need to be channeled through the central bank; the rest can be invested in a wide range of safe and liquid international assets. The central bank can not pay interest rates on reserve requirements. But as reserves may be held in foreign banks, they receive a market rate of interest (Kurt and Schuler, 1999).

As the central bank is not allowed to grant credit to commercial banks, they need to have a strong capital base. Therefore, minimum capital requirements, which were about 3% in mid 1991, were increased and reached 11.5% since January 1995. That compares with an international standard under the Basle agreement of 8%. Capital is weighted according to the riskiness of a bank's assets, and Argentina's standards for calculating minimum capital are stricter than those of the Basle Agreement (Kurt and Schuler, 1999).

In order to avoid a similar liquidity crisis as happened in the wake of the Mexican crisis, the central bank has established in 1996 a contingent repo facility with some of the major banks (13 private international banks). The aim is to provide the financial system with additional liquidity without restricting domestic credit. This policy allows the central bank to sell Argentina US dollars denominated government securities or mortgage bonds and receiving the proceeds in US dollars. On the maturity of the transaction, the central bank will repurchase the Government securities. The maturity of the Facility amounted between 2

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[43] Banco Central de la Republica de Argentina (BCRA).

years and 5 years, with clause that extends the life of the program by three months renewable every three months. As specified by Kurt and Schuler (1999): *"The contingent repo facility is not a lender of last resort like arrangement resting on the power to inflate. On the contrary, it is a commercial borrowing facility between the central bank and the commercial banking sector."*

Capital controls on financial or commercial operation between residents and non-residents have been ruled out before 1993.

In Argentina, the central bank has a thin but effective margin of discretion (through changes in reserve requirements, repos facilities) to ease strains in the financial market. Moreover, Argentina has the possibility to change the convertibility law and could switch to another exchange rate arrangement if United States monetary policy is deemed inappropriate. So while dollarization removes the margin of discretion of the central bank and therefore increases the credibility of the government's promise not to devalue, it will also be an irrevocable commitment.

The issue of exit options for Argentina raises several questions: should dollarization be just a mean to avoid substantial damages in response to a crisis, or are there deepen reasons such as close integration with the United States or the possible use of the dollar as a regional currency, that could justify the shift to dollarization? Although liabilities dollarization has to be taken into account to formulate exit options for Argentina, is it a sufficient condition?

If dollarization is perceived as a way to cope with possible crisis, this might not be the best solution. Indeed, one has to consider the reasons behind the establishment of a currency board. It was to restore confidence due to hyperinflation. As the situation reversed and as Argentina is pursuing structural reforms (especially on its labor market and on the consolidation of its fiscal position) would it not be better to end it before shifting to another exchange rate arrangement?

The paradox is that dollarization is proposed while the currency board like system already used entails some flexibility to the Argentina's monetary authorities. Nevertheless according to Hanke and Schuler (2000) a potential problem with currency board like systems is that they are a compromise between the discipline of orthodox currency board and the desire of governments to retain some discretion in monetary policy, particularly the ability to fulfill the function of lender of last resort. But discipline and discretion are incompatible elements, and often when they clash under central banking it is discipline that is sacrificed. Therefore, according to them currency boards are more likely to succeed if they are orthodox as credibility and durability will be higher.

As underlined by Calvo (may 2000, IMF Bulletin), it is important to keep in mind that emerging countries are still emerging, so that option of fixing their exchange rate may be attractive. Nonetheless, as they will mature, they might be more attracted by flexible exchange rate regime, whereas if they dollarize, it will be more difficult to reverse their choice. Therefore should not it be better for Argentina to first, have a sound banking and

financial system and pursue its ongoing structural reforms before taking an irrevocable commitment? Or should the debate on dollarization be broadened to the question of the evolution of the international financial structure and the trend toward fewer currencies and more currency unions?

2.2. Exit Options for Argentina

a. Dollarization

One of the main benefits Argentina could reap from dollarization concerns the reduction of interest rates. According to Frankel's results (1999) when the US federal fund rates increases 1 basis point, the Argentine dollar interest rate on average rises more than one for one, an estimated 2.73 basis points. The interest rate differential consists primarily of a country premium, supplemented by a small currency premium. The country premium is compensation for perceived risk of default, measured as the Argentine dollar interest rate minus the US treasury bill rate. The currency premium is compensation for perceived risk of change in exchange rate policy, measured as the Argentine peso interest rate minus the dollar denominated argentine interest rate. With dollarization currency premium will vanish. Nevertheless, the country risk even though remaining may diminish as the probability of devaluation vanishes (which will reduce the probability of default[44]). By looking at Panama, which is dollarized, Frankel finds that when the US fed funds rate rises 1 basis point, the Panamanian interest rate on average rises by only an estimated 0.43 basis points. This means that somewhat paradoxically, Argentina might be less at the mercy of the federal reserve if it dollarizes its economy. But a drawback would be that increases in Argentine interest rates would bear US fingerprints more visibly from a political standpoint.

A already mentioned in **section 1** and **2**, a related issue concerns the consequences of dollarization on Mercosur and whether dollarization by Argentina would be compatible with deeper integration among mercosur partners and with Brazil using floating exchange rate.

One major drawback of dollarization results from the inability to steer independent cyclical monetary policy. If a country shares common symmetric shocks with the reference country, the need for an independent monetary policy will be less acute than in case of asymmetric shocks. In their study on stabilization policy and the costs of dollarization, Schmitt-Grohé and Uribe (2000) quantify the cost of dollarization arising from the inability to accommodate asymmetric shocks. While focusing on Mexico, their study merits some attention. They compare the welfare costs of business cycles in a dollarized economy to those arising in economies with different monetary arrangements, namely devaluation rate rules, inflation targeting, monetary growth rate rules. The model is calibrated to the Mexican economy and is driven by three external shocks: terms of trade, world interest rates, and import price inflation shocks. One of their main results is that dollarization is the more costly arrangement considered. Consumers are indeed willing to give up between one tenth and

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[44] Nevertheless the risk of default may remain because of unsustainable fiscal stance or high level of indebtedness.

one third of one percent of their steady state consumption[45] to see a policy other than dollarization implemented. The intuition behind this result is simple. They consider the effect of an increase in the world interest rate –the most important source of disturbances of Mexican output. In response to such a shock, aggregate demand falls. The decline in aggregate demand triggers a fall in the relative price of nontradables in terms of tradable because in the short run the supply of nontradables is less than perfectly elastic. Under dollarization, the nominal price of tradables cannot adjust because it is exogenously given from abroad. Thus the decline in the relative price of nontradables would have to come about through a decline in the nominal price of nontradables. however, as their model assumes price stickiness in the nontraded sector, this price adjustment is not possible. The rigidity in the relative price of nontradables that arises from the combination of dollarization and nominal price stickiness exacerbates the contraction in the nontraded sector compared to the one that would arise were prices are not sticky. It follows that if the monetary authorities could respond to the adverse interest rate shock by devaluing the domestic currency, then the relative price of nontradable would be allowed to fall, making the adjustment of the sticky price economy more akin to that of a flexible price economy.

In the same vein, Ahmed (1999) analyses the sources of economic fluctuations in three Latin American countries: Argentina, Brazil and Mexico, so as to see the implication for the choice of exchange rate regimes. According to its results, several conclusion may be drawn[46]. Output fluctuations in these countries do not appear to be driven by output shocks in the countries they export to (including the United States). This undermines the case for rigidly fixed exchange rate arrangements as it is unlikely that US monetary policy pursued might be always appropriate monetary policy for these countries. Nevertheless, these countries historical experience indicates that real exchange rate are not very responsive to external shocks, in general, and that exchange rate depreciation tend to be contractionary in the short run. Thus rigidity of exchange rates may not be as costly for these countries as economic theory leads us to expect.
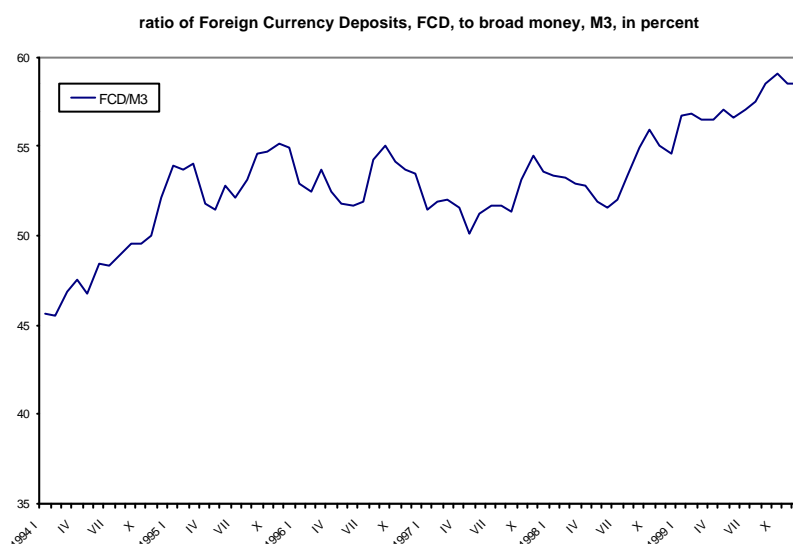
b. Devaluation and floating

While adjustments of the exchange rate may be helpful in face of large shocks, it may not be successful for every countries, especially for two reasons. First, if the dollar is already de

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[45] The welfare costs of business cycles associated with a particular monetary policy regime is measured by the fraction of nonstochastic steady-state consumption that households would be willing to give up in order to be indifferent between the corresponding constant sequences of consumption and hours and the equilibrium stochastic processes for these two variables associated with the monetary policy under consideration. The difference in the welfare cost of dollarization and that associated with another monetary policy indicates the fraction by which the sequence of consumption under dollarization would have to be increased in every period for agents to be indifferent between dollarization and the alternative monetary policy.

[46] As acknowledged by the author : *'Although the historical experience of these countries is certainly relevant, the caveat that is characterized by several failed fixed exchange rate regimes, thereby making it a less than ideal testing ground for evaluating a pure floating exchange rate system, should be noted.'*.

facto unit account so that many wages and prices are tied to the dollar, domestic prices will simply rise by the same amount as the rate of devaluation. Second, if financial assets and liabilities are denominated in dollar, devaluation will likely worsen the balance sheet of the domestic banks and firms. To gauge the magnitude of dollarization in Argentina, one can examine the evolution of the ratio of foreign currency deposit on broad money and the composition by currency of the debt (insofar as the public debt represents around 2/3 of Argentina's external debt). Even though the ratio of FCD on M3 is often used as a proxy to assess the level of dollarization, it is just a proxy as it does take into account neither cash in dollars nor foreign deposits abroad.

The ratio of FCD on M3 underlines the quite high level of dollarization of the Argentina's economy. **Table 3** and **4** highlight also the substantial level of dollarization of the Argentine's economy, even though the issues of international bonds have diverted from dollar especially since 1995.

ratio of Foreign Currency Deposits, FCD, to broad money, M3, in percent

Source: Economic Report, Ministry of Economy, Republica Argentina, 1999.

Table 3: Composition by Currency, Net Debt of the Federal Public Sector at 31/12/99

Currency	Millions US$	In %
US dollar	74 608	65.28
Euro	23 583	20.63
Argentina Peso	7 501	6.56
Yen	6 706	5.87
Sterling Pound	1 071	0.94
Swiss Franc	736	0.64
Other currencies	96	0.08
Total	114 301	100.00
Minus:		
Pre-financing operations	878	
Brady guarantees	2 483	
Total Net Debt	110 940	

Source: Ministry of Economy, www.mecon.gov.arg.

Table 4: International Bond Issues, in millions of US dollars

	1992	1993	1994	1995	1996
Total Bond placement	1 619	6 308	5 320	6 356	13 988
Public sector	389	2 406	2 740	5 403	11 448
Private sector	1 230	3 902	2 580	953	2 539
By currency					
US dollar	1 609	5 688	4 070	2 426	5 526
DM	0	620	300	1 533	4 004
Yen	0	0	352	1 672	2 029
Other	10	0	598	725	2 429

Source: Argentina: recent economic development, IMF staff country report n°98/38.

To sum up, the problem to shift to dollarization has to be weighted up to the costs of accepting it and to the costs/benefits of adopting more flexible arrangements. Indeed, while dollarization might be feasible given the high level of dollarization of the economy, is it really relevant for Argentina to dollarize its economy in terms of economic structures and trade flows with the United States?

Table 5: Costs Versus Benefits of Each Exchange Rate Regime

		Dollarization	Currency Board	Flexible arrangements
Costs		Loss of monetary tool Real exchange rate misalignment		Inflation Volatility of the exchange rate
		Loss of seigniorage Irrevocable commitment	Risk of speculative attacks which might endanger the system	
Benefits		Reduction of inflation Reduction of risk premium Increasing discipline that should favor credibility and confidence		Availability of an adjustment mechanism
		Better integration with the United States	Some leeway for the monetary policy	

Box 1: Issues on Dollarization

Dollarization is the holding by residents of a large share of their assets in foreign denominated form. Dollarization may be partial or full, unofficial or official. While dollarization is usually a response to high inflation or economic instability and to the will to diversify portfolios assets, it may continue even one stabilization has been reached.

The reasons behind the holding of foreign currency assets are twofold: first currency substitution stems from period of inflation during which the holding of national currency is too costly for currency transactions purpose. Second, assets substitution results from the diversification of assets portfolio to hedge against risks.

To assess the importance of dollarization, one can focus on foreign currency deposits (FCD) in the domestic banking system. But the major drawback of such an approach is that foreign currency in circulation are not taken into account although they are a major component of dollarization in some countries and may be inversely correlated to FCD. Cross deposits (deposits of domestic reserves at banks abroad) may also serve to capture the magnitude of dollarization. They do not directly imply dollarization but provide close substitute for FCD.

The fact that dollarization may still continue after stabilization program have been enforced may be explained by '*hysteresis phenomenon*'. Indeed, it may be take time to change habits concerning the settlement of transactions. In addition, dollarization may also result from an accrue confidence in the domestic economic and banking system (which is not in the domestic currency) and be part of the remonetization of the economy.

Another question raised by dollarization concerns the choice of an exchange rate regime [box 1]. A key implication of currency substitution is that exchange rates will tend to be more volatile. This may result from frequent and unexpected shifts in the use of domestic and foreign money for transactions as well as the higher interest elasticity of domestic money demand. As this higher elasticity and instability of money demand may increase exchange rate volatility, this strengthens the argument for adopting a fixed exchange rate regime. Nevertheless, the source of shocks that conduct the choice of an exchange rate system still matters. Fixed exchange rate will be better in case of shocks originating in money market while flexible will be more suitable in case of real shocks.
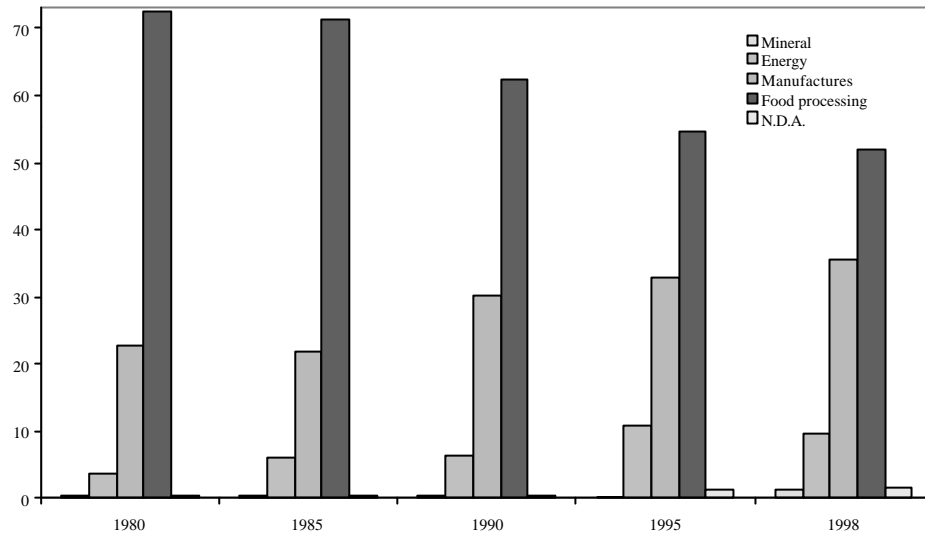
There is a clear case for fixing the exchange rate when a highly dollarized economy is stabilizing from hyperinflation insofar as currency substitution and monetary shocks are likely to predominate. As far as assets substitution is concerned, the existence of foreign currency deposits increases the capital mobility which means that various assets are likely to become close substitutes for savers. Thus, the increasing links between different interest rates might limit the control the central bank exert on monetary conditions, such as the level of interest rates on domestic currency. In order to enhance monetary independence, flexible exchange rate regime may be preferred. Moreover, high capital mobility together with substitutability may make sterilization more difficult and costly.

[box 1] For a more stylized analysis on the issue on the choice of the exchange rate regime and monetary policy in dollarized economies refer to Balino, Bennett and Borensztein (1999) and to Berg and Borentsztein (2000).

Another issue raised by dollarization concerns the choice of assets to take into account in monetary aggregates that are used by monetary authorities as indicator or target variables. Aggregates including foreign currency cash and deposits are relevant if the use of foreign currency as a medium of exchange weakens the relationship between domestic money and inflation. There may be less reason to consider such aggregates if dollarization represents asset diversification, with little significance for aggregate demand and inflation.
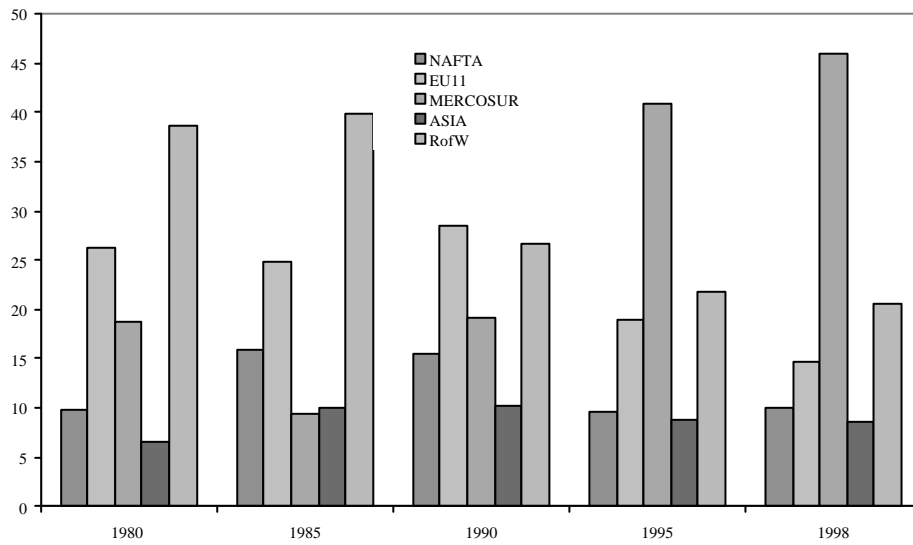
APPENDIX 2: ARGENTINA EXTERNAL TRADE PATTERN

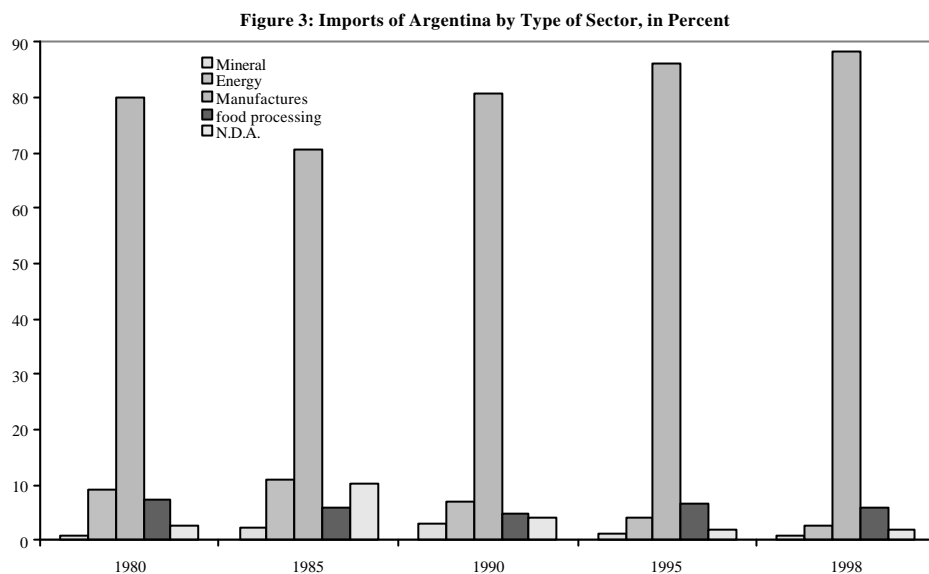**Figure 1: Exports of Aregntina by Sectors, in Percent**
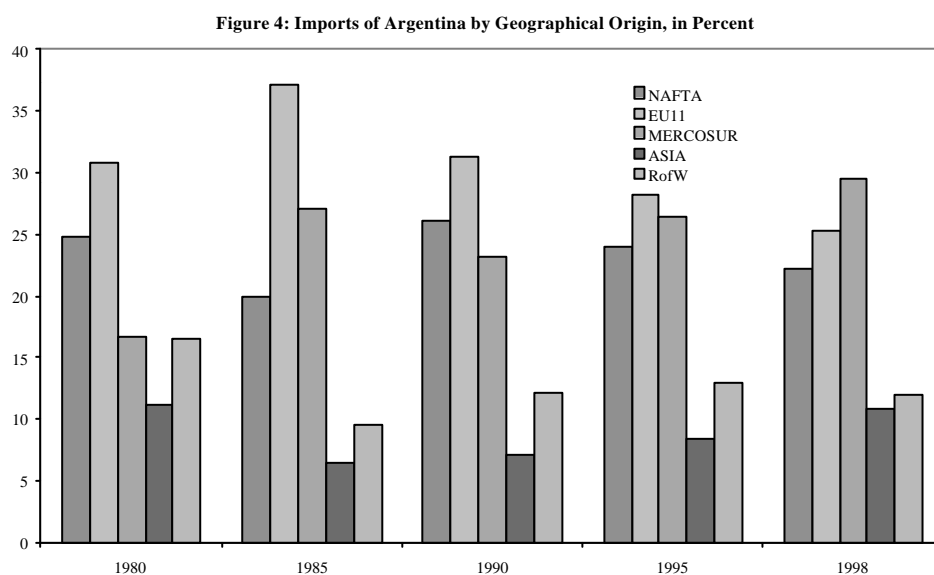

Source: CEPII-CHELEM Database.

Figure 2: Exports of Argentina by Geographical Destination, in Percent

Source: CEPII-CHELEM Database. Asia includes Indonesia, Korea, Thailand, Malaysia, Philippines, Japan, Singapore, China, Hong-Kong, India, Pakistan. Figure based on the sample of countries defined in Appendix 3.

Figure 3: Imports of Argentina by Type of Sector, in Percent

Source: CEPII-CHELEM Database

Figure 4: Imports of Argentina by Geographical Origin, in Percent

Source: CEPII-CHELEM Database. Asia includes Indonesia, Korea, Thailand, Malaysia, Philippines, Japan, Singapore, China, Hong-Kong, India, Pakistan. Figure based on the sample of countries defined in Appendix 3.
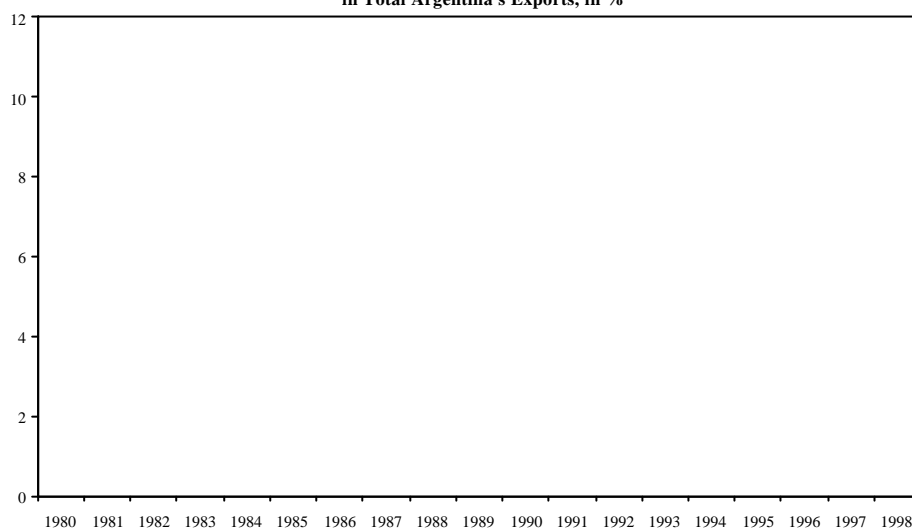
Figure 5: Share of Vehicles Exports to Mercosur Partners
in Total Argentina's Exports, in %

Source: CEPII-CHELEM Database. Mercosur restricted to Brazil and Chili.

APPENDIX 3: DATA AND VARIABLES DESCRIPTION

For equations in real terms:

- X_j: Exports of Argentina to its j partner. CHELEM Database, except for Uruguay, Paraguay, Bolivia and South Africa, which are provided by the Direction of Trade and Statistics from the IMF. Exports are in millions us dollars, deflated by the US CPI index.

- GDP_j: real GDP of the j partner (constant 1995), in millions US dollars, World Development Indicators, World Bank, 2000.

- DFT_j: the difference of size between Argentina and j proxied by the difference in GDP between the two countries

$$DFT_j = \{1 + [w \ln w + (1-w)\ln(1-w)]\}/\ln 2$$

With $w = GDP_{Argentina}/(GDP_{Argentina} + GDP_j)$

DFT_j ranges between 0 and 1. The more similar are the size of the countries, the more w will tend to 0.5 and thus the more DFT_j will tend to 0.

The more dissimilar are the size of the countries, the more w will diverge from 0.5 and thus the more DFT_j will tend to 1.

- DE_j: economic distance between Argentina and country j proxied by the difference in absolute terms of GDP per capita.

$$DE_j = | GDPC_{Argentina} - GDPC_j |$$

- RER_j: real exchange rate, base 100 for the United States, provided by the CEPII CHELEM Database. An appreciation of RER_j, represents a depreciation of the peso vis-à-vis the j currency.

For the equation in PPP:

The CEPII CHELEM database has been used to calculate every variables.

Table : Variable Dependent Xij in PPP Terms

	Xij	P.Value	Xij	P.Value
LGDPj	1.37	.000	1.33	.000
DFTj	0.23	.739	---	---
LDEj	-0.11	.002	-0.09	.007
LRERj	0.25	.028	---	---
MERj	0.58	.000	0.56	.000
Volj	---	---	-0.01	.979
Nb obs	988		988	
R^2 adjusted	0.80		0.80	

Source: Author's calculation.

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Countries of the sample:

NAFTA: United States, Canada, Mexico.

UE11: Germany, France, UEBL, Italy, Netherlands, Ireland, Spain, Austria, Portugal, Finland.

OECD countries: Japan, United-Kingdom, Norway, Denmark, Sweden, Switzerland, Greece, Australia, New Zealand.

Mercosur: Brazil, Paraguay, Uruguay, Chili, Bolivia.

Other western hemisphere: Venezuela, Colombia, Peru, Ecuador.

ASEAN: Indonesia, Singapore, Malaysia, Philippines, Thailand.

Others in Asia: Korea, India, China, Pakistan, Hong-Kong.

Eastern countries: Poland, Rumania, Hungary.

Africa: Algeria, Turkey, Israel, Tunisia, Egypt, Morocco, South Africa, Nigeria.

For Tables in Section 2

NAFTA: United States, Canada, Mexico.

EU 11:Germany, France, UEBL, Italy, Netherlands, Ireland, Spain, Austria, Portugal, Finland.

MERCOSUR: Brazil, Paraguay, Uruguay, Chili, Bolivia.

Other Emerging Countries: Indonesia, Singapore, Malaysia, Philippines, Thailand, Venezuela, Colombia, Peru, Ecuador, Korea, India, China, Pakistan, Hong-Kong, Poland, Rumania, Hungary, Algeria, Turkey, Israel, Tunisia, Egypt, Morocco, South Africa, Nigeria

Other Industrial Countries: Japan, United-Kingdom, Norway, Denmark, Sweden, Switzerland, Greece, Australia, New Zealand.

APPENDIX 4: IMPORT EQUATION

As our method of estimation might be deemed unusual, we have also estimated an import equation of the following form:

$$Log(M_{jt})=a_1 log(GDP_{jt})+a_2 log(DE_{jt})+a_3 DFT_{jt}+a_4 log(RER_{jt-1})+a_5 YD_t+a_6 MER_{jt}+a_7 Vol_{jt}+u_{jt}+\mathring{a}_t \quad (2)$$

With M_{jt}[48], the imports of Argentina from j's partner. We have considered the lagged of the real exchange rate insofar as the real exchange rate enters the equation as predicted but less significantly. Results are presented in **Table 1**, below.

Table 1: Estimation Results for Equation

	M_{ij} (3)	P.Value	M_{ij} (3')	P.Value
$LGDP_j$	1.85	.000	1.85	.000
DFT_j	-1.52	.051	-1.53	.051
LDE_j	-0.26	.086	-0.26	.091
$LRER_j$ (-1)	-0.36	.016	-0.39	.011
MER_j	-1.05		-1.00	.000
Vol_j[49]	---	---	1.55	.034
Nb obs	987		987	
R^2 adjusted	0.858		0.859	

Source: Author's calculation.

As in the export equation, the variables of GDP, economic distance DE, and difference of size DFT, have the same sign and are significant. The real exchange rate enters the equation with a negative sign, which stresses that a devaluation of the peso will have a contractionnary impact on imports of Argentina[50]. The introduction of the exchange rate volatility is quite surprising as it enters the equation with a positive and significant sign. This result underlines, as already mentioned, the difficulty stressed in the economic literature to establish a strong consensual view about the effect of the exchange rate volatility on international trade. The dummy for Mercosur is negative and significant, which suggests that

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[48] M_j: Imports of Argentina from its j partner. CHELEM Database, except for Uruguay, Paraguay, Bolivia and South Africa, which are provided by the Direction of Trade and Statistics from the IMF. Exports are in millions us dollars, deflated by the US CPI index.

[49] VOL$_j$: standard deviation of monthly exchange rate data in variation, based on nominal exchange rate data in the IFS from the IMF. VOL$_j$ has also been estimated in level.

[50] Catao and Falcetti (1999) underline that while the appreciation of the real exchange rate in the 1990's did contribute to the rapid growth of imports during that period, the main driving force was the buoyancy of economic activity.

the Mercosur trade agreement might have been detrimental to Argentina's imports[51]. To interpret this result one can analyze the evolution of Argentina's exports and imports since 1991.

Table 2: Argentina's Imports by Geographical Areas of Origin, in %

	1980	1988	1991	1998
NAFTA	24.73	23.18	25.51	22.27
MERCOSUR	12.29	17.42	20.14	26.03
EU 11	30.83	30.18	23.77	25.35
Other Industrial	16.56	12.40	11.08	9.41
Other Emerging	5.56	5.17	7.73	9.42

Source: Based on CEPII CHELEM Database. Mercosur includes only Brazil and Chili. Other Industrial Countries and Other Emerging Countries encompass countries defined in **appendix 3**.

According to the CHELEM CEPII database, between 1991 and 1998, Argentina's exports grew by 106.10% (in value) while at the same time imports increased by 241.86%. But **Tables 2 and 3** highlight that, the share of Mercosur in Argentina's trade is more significant for exports than for imports. In this regard, considering the increase of imports that took place in Argentina between 1991 and 1998 compared to the one of exports, one might have expected the share of Mercosur in Argentina's imports to be more important than that was actually the case. This might help to understand the negative sign we find in our equation for the dummy MER insofar as it means that Argentina imports around 65% (exp(-1.05) – 1) less than what might have been expected with Mercosur countries from the gravity model.
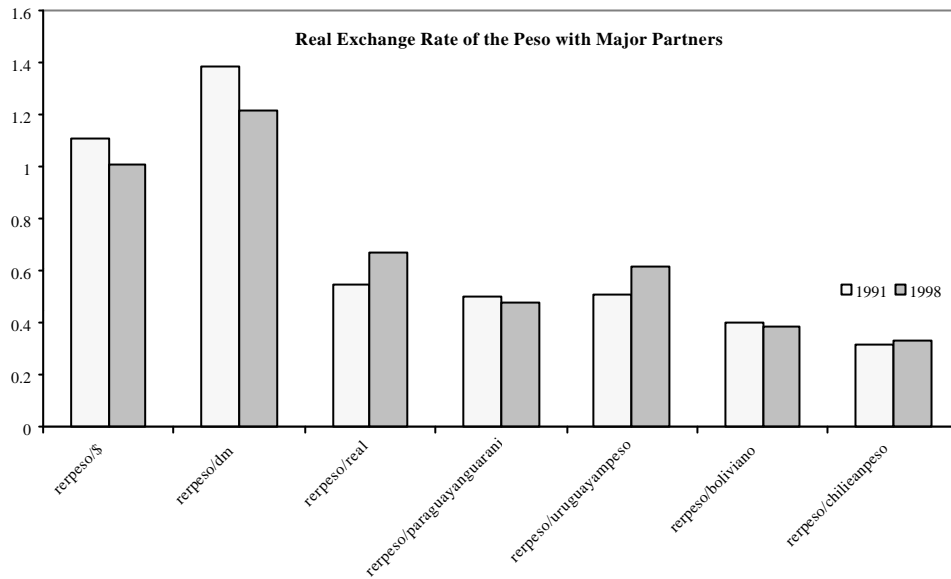
Table 3: Argentina's Exports by Geographical Areas of Destination, in %

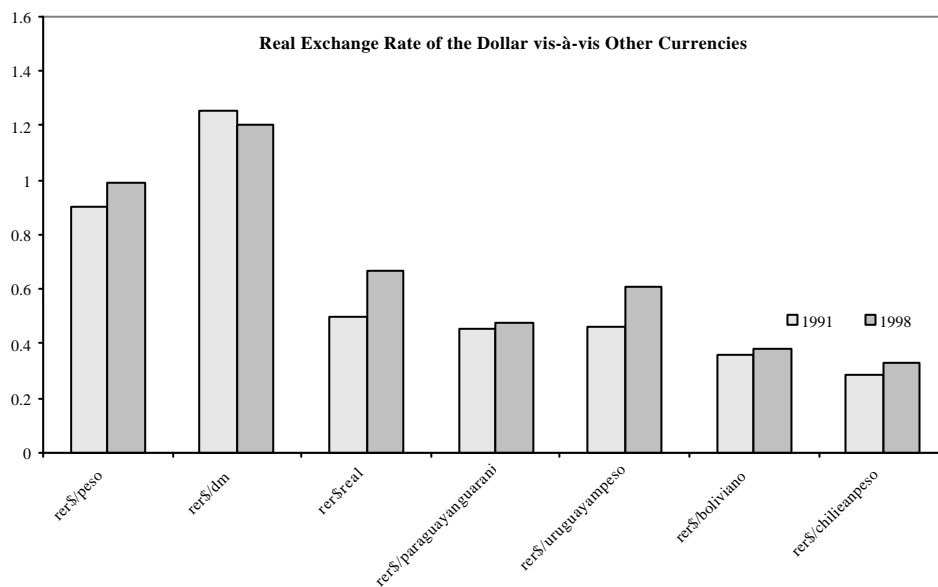|	1980	1988	1991	1998
NAFTA	9.79	16.33	12.93	10.09
MERCOSUR	12.55	10.18	17.43	38.81
EU 11	26.21	27.31	29.81	14.77
Other Industrial	9.55	8.97	9.50	5.29
Other Emerging	9.60	14.47	13.70	14.20

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[51] A related issue raised is whether Mercosur might have led to trade diversion. Nevertheless, according to Yeats (1997), Mercosur's arrangements had impacted intra-block trade pattern in such a way that: *"the implication is that if the Mercosur countries had achieved an equivalent degree of liberalization on a non-discriminatory basis they would have maintained a more efficient import structure, paying less and/or obtaining better goods, and they would have purchased more from their trading partners outside the block. Given the size of the trade effects identified, the evidence that preferences and the application of industrial policies within RTAs can be distortionnary is both compelling and disturbing."* Moreover to the extent that declines in import volumes from third countries are associated with increasing imports from Mercosur countries, there might be a strong presumption of trade diversion.

Source: Based on CEPII CHELEM Database. Mercosur includes only Brazil and Chili. Other Industrial Countries and Other Emerging Countries encompass countries defined in **appendix 3**.

APPENDIX 5: REAL EXCHANGE RATE EVOLUTION OF THE PESO AND THE DOLLAR *VIS-À-VIS* MAJOR PARTNERS

Real Exchange Rate of the Peso with Major Partners

Source : Real exchange rate, base 100 for the United States, provided by the CEPII CHELEM Database. An rise in RER_j, represents a depreciation of the peso vis-à-vis the j currency.

Real Exchange Rate of the Dollar vis-à-vis Other Currencies

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