Developing Economies Optimal Exchange Rate Regime: to Float or to Peg for Morocco?

Amina Haoudi[1], Ayoub Rabhi[2]

[1]*(Faculty of Law, Economics and Social sciences - Fez /University Sidi Mohamed Ben Abdellah, Morocco)*
[2]*(Faculty of Law, Economics and Social sciences - Fez /University Sidi Mohamed Ben Abdellah, Morocco)*

Abstract: *One of the most important and recent issues for the last decade in international finance, is the choice of an optimal Exchange Rate Regime for emerging and developing countries, because it stands as the major factor in the drive for economic stability according to different studies. In this context, encouraged recently by the IMF to introduce a greater flexibility to its Exchange Rate Regime, Morocco as a small economy has already started working on the process to establish the new reform in its Exchange Rate Regime, so as pledged, it can reinforce its integration in the international financial system in order to achieve different targets of the economy. However, the transition from the actual Regime to a more flexible one is not a simple equation; that's why we intended in our paper to answer different questions related to the fundamentals of the economy through a scrupulous analysis that helps have a more clear vision on whether to float or peg the Moroccan Exchange Rate Regime. Our study is based on a quantitative comparative benchmark between Morocco and other emerging countries in order to evaluate the decision made by the Moroccan Central Bank.*
Key words: *Monetary Policy, Exchange Rate Regime, Reforms, Developing countries, floating, Morocco*

I.   Introduction

The importance of the exchange rate in all economic transactions between a domestic economy and the rest of the world, gives it the key role in the economy. Therefore, the exchange rate policy has always been an important and powerful instrument of economic policy. The evolution of this economic variable can occur through a variety of institutional arrangements, known as exchange rate regimes. Thus, the question of choosing a suitable exchange rate regime for both developed and developing countries has gained in intensity since the end of the Bretton Woods system and the emergence of financial globalization. We must know that the issue of stability of the exchange rate in the past was an attribute of the global capitalist system itself, now it is a question left open for the action of each country. The freedom of choosing the suitable regime brought with it a large literature of exchange rate regimes classification and discussed different determinants responsible for adopting the right regime. However, there is still a heated debate on how the determinants should be quantified and classified according to their degree of impact.

Aware of the actual decision of Morocco to float its exchange rate regime, our paper seeks to evaluate this decision based on some factors that have been considered very important in the literature. The evaluation is based on a quantitative comparison between Morocco and 10 developing countries adopting a flexible exchange regime, have various economic structures and different levels of development. The chosen factors that are supposed to impact the exchange regime choice include (Economic integration, Financial integration, Diversification, Nature of shocks, Credibility and Fear-of-Floating).The methodology uses the arithmetic means as a decision making tool to provide a conclusion on whether to float or to peg. The idea behind the analysis is to figure out the position of the Moroccan exchange rate regime in this bipolar hypothesis. A case for float would welcome the eventual decision of transiting to a floating regime; while a case for peg would question this reform and its consequences.

Meanwhile and before jumping to that part of evaluating the decision made by the Moroccan government, it is undeniable to present a literature review on exchange rate regimes, as well on their theoretical and practical classification. The objective is to place The Moroccan exchange rate regime in its context before proceeding to the analysis of the different factors.

II.   The Everlasting Debate: Fixed, Flexible Or Something In Between

The theme of choosing the most appropriate exchange rate regime for emerging and developing countries is extremely controversial in the relevant literature and it is impossible to reach a consensus even among authors who follow the same economic school of thought.

The current issue of arbitration between fixed and floating exchange took its origin from the work of Friedman "The Case for Flexible Exchange Rates" published in 1953 who does not discuss the specifics of the emerging and developing countries, but offers an exchange rate regime that would be universal. Even at the height of the

golden age of global capitalism, when the Bretton Woods system was somewhat disputed and its fixed exchange rate regime was widely accepted Friedman's voice was discordant.

Friedman strongly defended the Idea that "*a system of flexible or floating exchange rate – is absolutely essential for the fulfillment of our basic economic objective: the achievement and maintenance of a free and prosperous world community engaging in unrestricted multilateral trade. There is scarcely a facet of international economic policy for which the implicit acceptance of a system of rigid exchange rates does not create serious and unnecessary difficulties. Promotion of rearmament, liberalization of trade, avoidance of allocations and other direct controls both internal and external, harmonization of internal monetary and fiscal policies – all these problems take on a different cast and become far easier to solve in a world of flexible exchange rates and its corollary, free convertibility of currencies*" (FRIEDMAN, 1953: 157)

Friedman proceeded to defend flexible exchange regimes declaring that, the stability of the exchange rate would be strengthened   by the action of speculators, because in fact, contrary to what the critics say, the agent's action would prevent excessive deviation of exchange rate from its path. The logic behind this idea is known as "stabilizing speculation" arguing that once having deviated from its normal path, the exchange rate would provide an opportunity of gain to the agents, because profitable speculation requires buying low and selling high, which is what it takes to make speculation stabilizing and return to the original rate[1]. Moreover, to face the excessive fluctuation of exchange rates, Friedman states that agents could seek protection through future markets (Using futures contracts); that tend to grow fast in a context of flexible exchange rates. Coming to the depreciation of the currency considered as a source of inflation, he responded that inflation cannot be produced except in a favorable monetary environment[2].

Nevertheless, in the 1960s Friedman as a free-market defender he advocated a fixed exchange rate regime (external anchor) for developing countries arguing that it's the best way to free them from exchange control. In one of his lectures he said "*The great advantage of a unified currency [fixed exchange rate] is that it limits the possibility of governmental intervention. The reason why I regard a floating rate as second best for such a country is because it leaves a much larger scope for governmental intervention.… I would say you should have a unified currency as the best solution, with a floating rate as a second-best solution and a pegged rate as very much worse than either*"[3]. This quote shows oppositely to what most people think, that Friedman was not only an advocate of floating exchange rates. However, Friedman emphasize the fact that the existence of a central bank in a fixed exchange rate regime is unsafe, because there is always a possibility of the central bank to engage in a discretionary policy, and that's exactly the reason of the convertibility crisis that happened in Argentina according to him.

Freely floating exchange rates are not suitable for developing countries because they can be extremely volatile and might go astray from the objectives of economic fundamentals by effecting trade, investment and growth. Authors like Black (1976) and Branson Katseli-Papaefstratiou (1981) believe that whereas the potential benefits of floating exchange rates are not necessarily limited to developed countries, certain characteristics found in many developing countries rule out floating as a feasible or realistic option[4].the main factor preventing developing countries from adopting a floating policy is the inadequate development of domestic financial markets and their lack of integration with world markets. Meanwhile, according to these authors, 2 conditions if fulfilled can make a floating exchange feasible in the short run for developing countries, first, the requirement of a certain depth in the domestic financial markets; second, that domestic and foreign currency assets are substitutes in the private portfolios of wealth holders.

Another bipolar hypothesis defended by Obstfeld and Rogoff (1995) and Eichengreen (1998), argues that that countries whose financial markets are integrated to global markets, or are in the process of being, cannot maintain intermediate regimes and will be forced to choose one of two extremes: either a rigid fixed exchange regime, or free floating. In their view, intermediate regimes that are fixed but adjustable will eventually disappear in countries open to international capital flows. Other authors do not share their views. Williamson (2000), for example, believes that intermediate regimes are a viable option for developing countries and will remain so[5]. Velasco and Felipe (2001) in contrast, considered revocable pegs (crawling, adjusting) as rightly discredited, as they are unable to resist massive capital flow reversals. Attempted defenses almost always result in large reserve losses and huge interest rates, which prompt major recessions and weaken the banking

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[1] Imad A. Moosa, 2005 Exchange Rate Regimes Fixed, flexible or something in-between?,p :64

[2] Inflation is always and everywhere a monetary phenomenon in the sense that it is and can be produced only by a more rapid increase in the quantity of money than in output"

[3] Steve H, Hanke , Cato Journal, Vol. 28, No. 2 (Spring/Summer 2008).p :282

[4] Peter Wickham; The Choice of Exchange Rate Regime in Developing Countries: A Survey of the Literature , Palgrave Macmillan Journals, Vol. 32, No. 2 (Jun., 1985), pp. 248-288

[5]Jeannine Bailliu, et John Murray, Les régimes de change dans les économies émergentes revue de la banque du canada • hiver 2002–2003 . p 20

system. This leaves hard pegs and floats as the only true options[6]. On the same track of the bipolar hypothesis, a recent theory of 'fear of floating' has surfaced; Calvo and Reinhart (2002) argue that in a world that is characterized by high capital mobility, the monetary authorities in developing countries are severely haunted by the fear of floating. This is because any significant depreciation of the domestic currency produces negative effects on inflation and on foreign currency debt[7].

It is common to read in the literature that countries with close links to the global financial markets must choose between a rigid peg and a floating exchange rate. This view is based on the thesis of the "impossible trinity" by Mundell (1963) in which a country can only pursue two of the following three objectives: a fixed exchange rate, independent monetary policy and integration to international financial markets. A country trying to achieve the impossible trinity will eventually be forced to abandon its fixed exchange rate or waive the achievement of one of the other two objectives. On the contrary, the bipolar hypothesis about exchange rates has come in for serious criticism. For example, Frankel (2004) dispute the line of reasoning of the impossible trinity, arguing that there is no analytic rationale for the argument of the disappearing intermediate regimes. He suggests that a variety of managed floats are fully consistent with the impossible trinity that one can have half stability and half independence[8].

III. Exchange Rate Regimes Classification: Theoretical Versus Practical

Any analysis of regime choice requires a system for classifying exchange rate regimes. Exchange rate regimes are classified from two major approaches "Theoretical "and "Practical". Theoretical means that the classified arrangements may or may not have been tried in practice. Practical, regroups the "de jure" classification based on country statements and the "de facto" classification which is based on their actions.

3.1 Theoretical classification

Theoretically and commonly, Exchange rate regimes can be classified according to their degree of flexibility or otherwise of the nominal exchange rate in a range between the extreme of perfectly flexible rates and the other extreme of perfectly fixed exchange rates. Intermediate regimes that lie in-between can also be found. The table below gathers the most three way current theoretical classification among academics, apart from the "de facto" classification that is also considered as an academic issue discussed between economists.

Table 1: Theoretical classification of exchange rate regimes

Type	Categories	Features
Fixed exchange rate regime	Perfectly fixed exchange rates	When a country chooses to fix its exchange rate, local currency is assigned a par value in terms of gold, another currency, or a basket of currencies. It is invariably the case that the fixed exchange rate is set below the equilibrium rate that is determined by the market. This means that the domestic currency will be overvalued, which results in a shortage of foreign exchange (excess demand that is equivalent to the deficit in the balance of payments). To maintain the fixed exchange rate, the monetary authorities must intervene in the foreign exchange market by selling an amount of foreign exchange that is equal to the excess demand for foreign exchange (otherwise, capital controls and rationing must be imposed). For this purpose the central bank uses its stock of international reserves.
Intermediate exchange rate regime	Fixed but adjustable exchange rates	Under a system of fixed but adjustable exchange rates, the fixed (or par or central) value of the exchange rate is adjusted whenever the need arises to correct balance of payments disequilibrium. The adjustment could take the form of devaluation (reducing the par value of the domestic currency) or revaluation (increasing the par value of the domestic currency).
	Fixed but flexible within a band	Under a system of fixed but flexible within a band, the exchange rate is allowed to fluctuate within upper and lower limits defined by a band around the par value of the currency. Otherwise, the exchange rate is fixed in the sense that it is not allowed, by central bank intervention, to move outside the band (below the lower limit or above the upper limit). To bring the exchange rate down or to rise it , the central bank intervenes by increasing the supply of foreign exchange or increasing demand of foreign exchange (buying the domestic currency or selling it), and as a result the exchange rate moves lower or upper to go back within the band
	Fixed adjustable but flexible within a band	A fixed exchange rate that is flexible within a band may also be adjustable. Initially the exchange rate is rather stable, fluctuating within an initial band 1, After a while the domestic currency depreciates so that the exchange rate breaches the upper limit of the band. When central bank intervention fails to take the exchange rate back to a level that falls within the band, the domestic currency is devalued, such that the exchange rate is allowed to fluctuate within a band 2 around a new (higher) par value. The same thing happens again after a while, when central bank intervention

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[6] Andrés Velaco, Felipe Larrain , essays in international economics , no. 224, december 2001. excgange rate policy in emerging market economies : the case for floation, p40

[7] Guillermo a. Calvo and Carmen m. Reinhart ; fear of floating* the quarterly journal of economics vol. cxvii may 2002 issue 2 pp 379-408

[8] Stanley fischer , Mundell-Fleming lecture: exchange rate systems, surveillance, and advice imf staff papers vol. 55, no. 3 & 2008 international monetary fund

		fails and the currency is devalued for the second time. After the second devaluation the exchange rate fluctuates within a band 3 around a new par value. As long as central bank intervention is capable of bringing the exchange rate within the band when it reaches the upper or lower limits of the band, there is no need for further devaluation. It is noteworthy that as the band width increases the system becomes a de facto flexible exchange rate system, which is exactly what happened to the European Monetary System in 1993, when the band width was taken from _2.5 to _15 per cent.
	Flexible exchange rates with market intervention	Managed floating (also called dirty floating), independent floating and target zones are exchange rate regimes that fall under the heading 'flexible rates with market intervention'. The main difference lies in the degree and frequency of market intervention, and hence the flexibility of the exchange rate. Exchange rate flexibility is lower under managed floating than under independent floating. But under both of these systems, intervention is mainly directed at combating speculative pressure and reducing exchange rate volatility (this is at least what is normally claimed, although there is the view that managed floating has the objective of influencing the market trend of the exchange rate).Indeed, the difference between managed floating and independent floating is often blurred. Some further reference to the distinction between managed floating and independent floating will be made when we discuss the practical classification.
	Dual exchange rates	A dual exchange rate system in its basic form is a mixed (hybrid) system of fixed and flexible exchange rates. A commercial (fixed) rate is used for imports and exports (current account transactions), whereas a financial (flexible) rate is used for trading financial assets (capital account or financial account transactions). This system is resorted to when there is a desire to insulate commercial transactions from exchange rate fluctuations that result from speculative capital flows.
Floating exchange rate regime	Perfectly flexible exchange rates	Perfectly flexible exchange rates under pure or clean floating are determined by market forces alone without any intervention by the central bank or any other government body. The exchange rate in this case resembles a price determined in a competitive market by the intersection of the supply and demand curves. However, the exchange rate is still influenced by monetary policy except that policy is not directed towards the achievement of an exchange rate target. Monetary policy affects the exchange rate via its effect on the interest rate.

3.2 Practical classification

We consider practical classification as the realistic method used to classify exchange rate regimes, because it reports what countries claim to use (de jure) and what they really use (de facto), the gap between claims and the actual behavior is another issue debated among economists and analysts. As noted by Ghosh et al. (1996:2): Beyond the traditional fixed-floating dichotomy lies a spectrum of exchange rate regimes. The de facto behavior of an exchange rate, moreover, may diverge from its de jure classification[9].

Before 1998, the classification of exchange rate regimes was performed on the basis to what countries officially communicated to the IMF, which was presented in *the Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER). This classification is known as the IMF de jure exchange rate regime classification. The issue is that the exchange rate regime effectively followed by countries (de facto) was not that communicated, "*There are countries that announce a free-floating regime, but intervene in the market to avoid variations in the value of the foreign currency, practically implementing a dirty float mechanism. Others commit to a fixed exchange rate, while regularly realigning the parity by following a monetary policy inconsistent with the regime announced, such that the regime appears to be more of a floating exchange rate than a fixed*"[10].

After 1998, the IMF began to present the de facto classification according to the exchange rate policy effectively adopted by countries and based on a survey of IMF desk officers for each country. In the 2014 *Annual Report on Exchange Arrangements and Exchange Restriction,* the IMF distinguishes between the de jure arrangements as described by the countries and the de facto exchange rate arrangements, which are classified into 10 categories as seen below (Table 2).

Table 2: IMF Classification of Exchange Rate Arrangements[11]

Type	Categories				
Hard pegs	Exchange arrangement with no separate legal tender	Currency board arrangement			
Soft pegs	Conventional peg	Pegged exchange rate within horizontal bands	Stabilized arrangement	Crawling peg	Crawl-like arrangement
Floating regimes (market-determined rates)	Floating	Free Floating			
Residual	Other managed arrangement				

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[9] *Glauco De Vita* and *Khine Sandar Kyaw* . Journal of Developing Areas*, 2011, vol. 45, issue 1, pages 135-153*
[10] Cristina Terra Principles of International Finance and Open Economy Macroeconomics: Theories, Applications, and Policies, Broché – june 2015. Chapter: 10. P : 267
[11] IMF, Annual Report On Exchange Arrangements and Exchange Restrictions 2014,p : 1

Ever since the end of the 90s, exchange rate regime classification published by the IMF has inspired researchers to develop alternative schemes that attempt to characterize more accurately countries" *de facto* regimes. In his proposal, Shambaugh (2004) mainly classifies countries as pegged or nonpegged exchange rate regimes based on exchange rate behavior. The criterion of classifying exchange rate regimes is to verify whether the exchange rate stayed within (-/+1) percent (-/+2) percent) bands against the base currency. Following the criterion, he classifies countries into **five groups**: *Zero percent change in the exchange rate, Stays within 1 percent bands, stays within 2 percent bands, Realignment, but zero change in 11 of 12 months, No peg*
While Shambaugh (2003) classifies countries into pegged and nonpegged regimes, he does not definitely distinguish hard pegs or intermediate regimes from pegged regimes. For this reason, we cannot examine whether the bipolar view holds, by using this data classification.

The second major *de facto* classification belongs to Levy-Yeyati and Sturzenegger (2005), they classify regimes into **four categories**: *Flexible, Dirty float, Crawling peg, and Fixed, plus an "inconclusive"* category. This classification is based on three variables related to exchange rate behavior: Exchange rate volatility, the volatility of exchange rate changes and the volatility of reserves[12].

Another issue pointed out by Reinhart and Rogoff (2004) in the *de facto* classification, is related to the existence of dual exchange rate markets (official or unofficial)[13] or multiple exchange rate systems[14].The authors based their analysis on the market determined rates to propose a classification of 14 categories. *No separate legal tender, Pre-announced pegs or currency boards, and Pre-announced horizontal bands narrower than, or equal to, plus/minus 2%. De facto pegs, Pre-announced crawling pegs, Pre-announced crawling bands narrower than, or equal, to +/-2%, De facto crawling pegs, De facto crawling bands narrower than, or equal to, +/-2%, Pre-announced crawling bands wider than, or equal, to +/-2%, De facto crawling bands narrower than, or equal to, +/-5%, and Moving bands narrower than, or equal to, +/-2%* (allowing for both appreciation and depreciation over time), *Managed floating, Freely floating and Freely Falling*.
As we see, the different *de facto* classification proposals aim to identify the effective exchange rate regimes implemented by each country, but it's obvious that there is no consensus between these classifications. Klein and Shambaugh tried recently a method by distilling all classifications into only three categories: pegged, intermediate, and floating to show the degree of agreement between the four classifications (Table 3 blow)

Table 3: Percentage of Agreement in Exchange Rate Regime Classification[15]

	IMF	Levy-Yeyati and Sturzenegger	Reinhart and Rogoff	Shambaugh
IMF	100%			
Levy-Yeyati and Sturzenegger	59%	100%		
Reinhart and Rogoff	59%	55%	100%	
Shambaugh	68%	65%	65%	100%

Besides the disagreement on the *de facto* classification; in comparison with the *de jure* classification we notice that unlike the latter, which communicates information about future policy intentions, *de facto* is based on the observed behavior that pertains to the past. This issue appealed Ghosh et al. (2002), so they come up with what they call a '*consensus classification'* by using 'the intersection of the de jure classification and their own de facto classification. It was considered as an acceptable classification by Reinhart and Rogoff but represents some weaknesses such as:
-   Reliance to a large extent on stated policy intentions, which may deviate significantly from what is actually practiced
-   The requirement of subjective judgment, which may differ across countries and over time
-   Failure to cover all countries for all time periods.

IV.   Moroccan Exchange Rate Policy: Evaluation Of The Regime
Since the early 80s, Morocco stepped to engage its economy into a broader process of financial and economic liberalization that has affected almost all sectors, this reform process was followed by an increase in exchange rate adjustments strategies, that aim to improve the effectiveness of the exchange rate policy in a threefold objective: first, improve the competitiveness of the national economy and make the national currency

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[12]Hisayuki Mitsuo. New Developments of the Exchange Rate Regimes in Developing Countries, First published 2007 by PALGRAVE MACMILLAN p: 15
[13] Unofficial: the parallel exchange rate or the "black market
[14] The multiple exchange rate markets establish different exchange rates for different types of transactions. Typically, the government establishes exchange rate parity for commercial transactions, while it allows the exchange rate to float for financial transactions. Thus, commercial transactions are protected from the exchange rate volatility caused by the financial market. Latin American countries during the foreign debt crisis in the 1980s used this type of system.
[15] Michael W. Klein Jay C. Shambaugh Exchange Rate Regimes in the Modern Era**.** 2010 (pp. 29-50)

more stable, second, reduce fluctuations and currency risk, and finally reinforce economy's resilience to external shocks.

Over the last decade, with reference to the taxonomy established by the IMF in its annual report "*Exchange Arrangements and Exchange Restrictions*", Morocco has adopted and still, a conventional peg within the framework of an exchange rate fixed to a currency composite[16] that was modified in 2015 (60% for the euro and 40% for the US dollar). The updating of the currency basket was considered by Bank Al-maghrib as the first step to a more flexible exchange regime. It is worth noting that, according to Reinhart and Rogoff (2004) classification previously exposed, Morocco's exchange rate regime can be described as a "fixed" exchange regime with a moving band of plus or minus 2 percent around the Euro[17]. The merit of this anchor to a basket of currencies on international currency markets is to strengthen the policy against inflation and avoid imported inflation that can be attributed to the free float or anchoring to a single currency. Further, since the introduction of the euro, Morocco has benefited from an advantage due to the improvement of the value of the euro against the dollar, which reduced the burden of external debt (The debt is denominated and payable in dollars). Similarly, imports of oil, expressed in dollar give a slight advantage in favor of Morocco, since the value of the euro is widely appreciated against the dollar and because the revenues of Moroccan exports, money transfers by Moroccan expatriates and tourism revenues are mostly from Europe.

Generally, it appears from the evolution of the exchange rate policy throughout history[18], that the exchange rate regime adopted by Morocco was successful in overcoming difficulties. The Moroccan economy managed to counteract shocks, and all political actions were consistent with the policy exchange implementation.

4.1 The road to flexibility: how fast?

To evaluate the exchange rate regime behavior, in other words, to analyze its degree of flexibility during the last decade, we will use a criterion [19](International reserves over M2) that will allow us to draw some conclusions about the eventual Moroccan exchange rate regime.

One of the features in which floating countries differ from fixed ones is the level of reserves they maintain. A country that floats does not need a lot of reserves to manage the exchange rate. In contrast, countries that cannot let the exchange rate take any level need a large cushion of reserves to conduct exchange rate policy. , Hausman et *al*, found that "*Most striking is the high level of reserves held by emerging country floaters, as compared to industrialized floaters. While countries such as Singapore, Moldova, Peru and Chile have reserves that exceed 50% of M2, most industrial countries keep a stock of reserves below 10% of M2…….. On average, emerging market floaters keep reserves equivalent to 38% of M2*" (HAUSMAN et al, 2001: 391). Results of the *Hausman et al* article were established for the period 1998-1999 and show as well that besides emerging countries there are other developing countries that have an average of reserves over M2 of 32%.
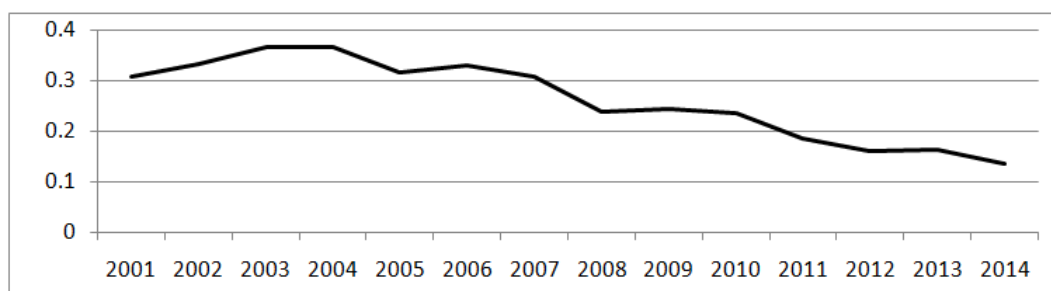

Figure 1: International reserves over M2 in Morocco
Source: International Monetary Fund, International Financial Statistics and Authors' calculations.

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[16] Morocco's currency is officially pegged to a basket of currencies dominated by the Euro, but also including the US dollar. The weights of the currencies in the basket reflect the pattern of Morocco's trade. Bank Al-Maghrib (BAM), the central bank, intervenes in the market during the day by setting the buying and selling rates applicable to its operations with banks based on the aforementioned basket of currencies.

[17] IMF Country Report No. 05/419 .Morocco: Selected Issues. 2005. P: 43.

[18] For more details on the historical evolution of the exchange rate policy, check: A. El Bouhadi et al, The Exchange Rate Determinants in Morocco: An Empirical Investigation, 2008.

[19] Ricardo Hausmann , Ugo Panizza , Ernesto Stein. Why do countries float the way they float?. Journal of Development Economics Vol. 66 .2001. 387–414

Table 4: Percentage of International reserves over M2 in Morocco

Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
International reserves over M2	31%	33%	36%	36%	31%	32%	30%	24%	24%	23%	18%	16%	16%	13%

Source: International Monetary Fund, International Financial Statistics and Authors' calculations

Applying this measure to the Moroccan economy (Figure 1 and Table 4), we can clearly see a downward trend in this indicator, it went from the average value of emerging and developing countries between (2001 and 2006) to 13% in 2014 which reflects an eventual floating in the exchange rate regime in the future in case this trend pursuits its decline.

4.2 To float or not: A benchmarking analysis

The choice of an exchange rate regime depends on the authorities' economic objectives, the structural characteristics of the economy, and the nature of shocks to the economy (real or monetary).

In the following section, we are interested in making an assessment of whether the Moroccan's economic and financial characteristics make it a successful candidate to float its exchange rate regime. We based our analysis on a template proposed by Husain (2006). The model is guided by a broad set of quantitative indicators and cross-country comparability. In our case we chose 10 random emerging economies of various sizes and levels of development adopting a floating exchange rate regime according to *the annual report on exchange arrangement and Exchange Restrictions*, (**Brazil, Colombia, India, Indonesia, Peru, Philippines, Turkey, South Africa, Thailand, Uruguay**) and we tried to compare them to the Moroccan economy in order to identify its position based on main analytical considerations that have been identified in the literature.

Comparisons with other countries are used on the basis of the arithmetic means of the yearly quantitative indicators of the different chosen economies. Each indicator's evolution has a different interpretation from the other, for example while a high value of an indicator (above the arithmetic mean) means a case against float, another low indicator (under the arithmetic mean) might have the same meaning, it depends on the definition of each indicator. The decision here is simply whether choose to float not. It is important to note that this method doesn't take into account something in between the bipolar regimes and considers the Moroccan exchange rate regime as a pegged one. Furthermore, the importance of each consideration tends to change over time.

4.2.1 Economic integration

An argument that has often been advanced in favor of pegged exchange rates is that exchange rate variability discourages trade and investment. A high degree of trade with a specific partner or partners means a high economic integration that requires a pegged exchange rate or a common currency because of its greater benefits to the economy (low transaction costs) as it was concluded by Rose (2000) and Frankel and Rose (2002). The indicator used to measure the degree of economic integration and hence the magnitude of its potential gains from nominal exchange rate stability, is the ratio of its exports plus its imports to GDP [(X+M)/GDP]. The greater is this ratio, the tendency to not float with a stable exchange rate is appropriate for the economy.

In the context of the Moroccan economy using a currency composite (60% for the euro and 40% for the US dollar), it is stated in the last *economic and financial report* of 2017 published by the Moroccan Ministry of Finance, that the first client of the country is the European Union by 63,4% of total exports, not including exports destined to other countries that either use the top currency (Euro) or peg their exchange rates against the top currency. The peg used as predominantly perceived by economists, eliminates the volatility of exchange rate and lower the cost of transactions with the largest partners using the top currency. This observation gives a hint somehow that the pegged regime used now is suitable for the Moroccan economy.

Another important issue is related to the business cycle that might create some difficulties if it's not synchronized with the main trading partners. The degree of cycle synchronization gives an idea about the utility of a peg and it can be measured by the correlation of the annual growth of GDP between the country and its major trading partner. The correlation coefficient between Morocco and the European Union after calculations is 0, 05174998. This value shows that there is no cyclical synchronicity between the Moroccan economy and its major trading partner, which means a case for floating; however we do not attribute much weight to this variable because the basic fundamentals of the 2 economies are quite different. What matters the most is the degree of economic integration.
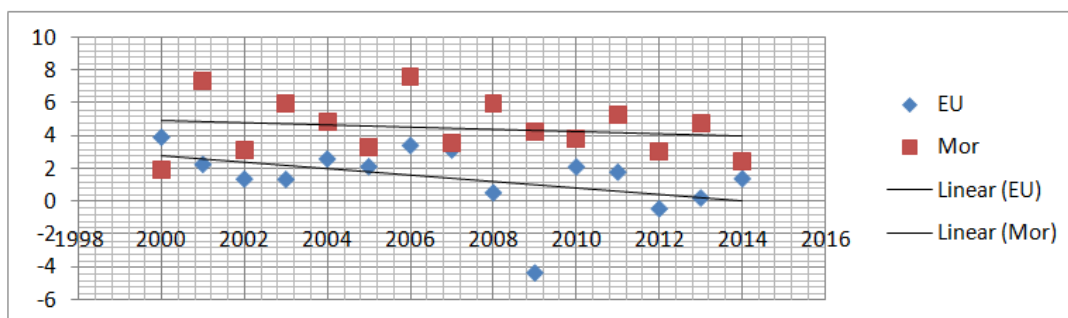
Figure 2: Distribution of Annual GDP growth of European Union and morocco

The economic integration indicator indicates a case in favor of a peg (not floating) for Morocco, because it shows a higher degree after comparing it to the 10 emerging economies. The arithmetic mean value calculated for the variable of economic integration for the emerging countries from a yearly data is equal to 0,4 while the Moroccan value is 0,55. The graphic representation of the data below between 1960 and 2014, shows the evolution of the Moroccan indicator and it is evident that it has always surpassed the evolution of our random chosen emerging economies, which defend the not floating decision of exchange rate regime for Morocco.
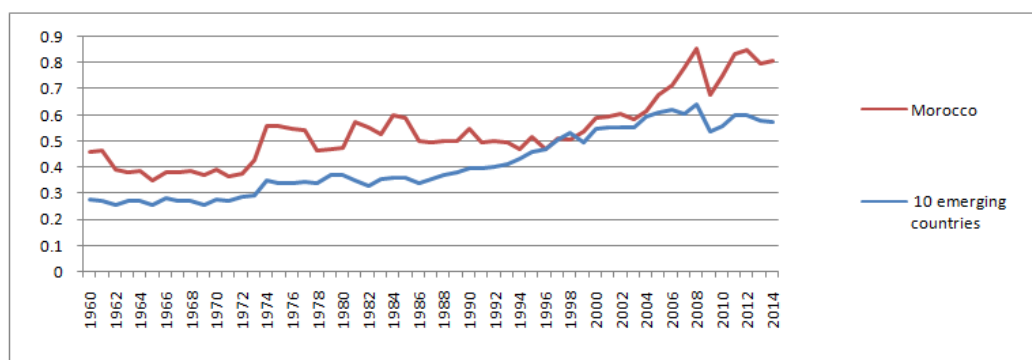

Figure 3: Arithmetic mean of economic integration indicator
Source: World Bank data and Authors' calculations

4.2.2 Financial integration
It is argued that disadvantages of a pegged exchange rate regimes rise as economies integration into global markets increases and as stated *"In emerging market economies, where exposure to international financial flows is greater, less flexible regimes have had a higher propensity to experience banking and/or currency crises. In advanced economies, free floats have, on average, registered faster growth than other regimes, without incurring higher inflation"[20].*

Different methods and indicators were used to determine if a country has access to private external capital. One of the indicators is the existence of a country in the Morgan Stanley Capital International (MSCI[21]emerging markets index. Another measure is the International Finance Corporation's (IFC) various emerging market indices. Among the IFC's indices we find:
- The IFCI covers the emerging market economies whose stock markets are considered the most liquid (based on market capitalization and turnover)
- the IFCI plus covers a number of other countries where stock markets are somewhat less liquid
-   The IFCI Frontier covers countries that have less extensive information availability and are not included in the other indices.

Clearly, countries that are not in any of these indices would appear not to be integrated into global financial markets; countries that are only in the IFCI Frontier would also appear to be relatively less integrated.
Verifying these indicators, place Morocco in the last category of the weakest integrated countries into global financial markets as seen below.

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[20] Aasim M. Husain. *Choosing the Right Exchange Rate Regime for Pakistan , SBP-Research Bulletin Volume 2, Number 1, 2006, p : 95*
[21] This index is based on a number of qualitative and quantitative indicators of each economy, including GDP per capita, local government regulations, perceived investment risk, foreign ownership limits, and capital controls.

Index	Morocco's position
MSCI emerging markets index	**0**
the IFCI emerging	**0**
IFCI plus	**0**
IFCI Frontier	**1**
0: doesn't' exist among the countries	
1: exist among the countries	

Another measure for financial integration is represented by the level of financial development. The quantitative indicator used is the ratio of Money to GDP (M/GDP). A country having a low ratio is less exposed to financial risks under a fixed regime because its access to private international capital is low.
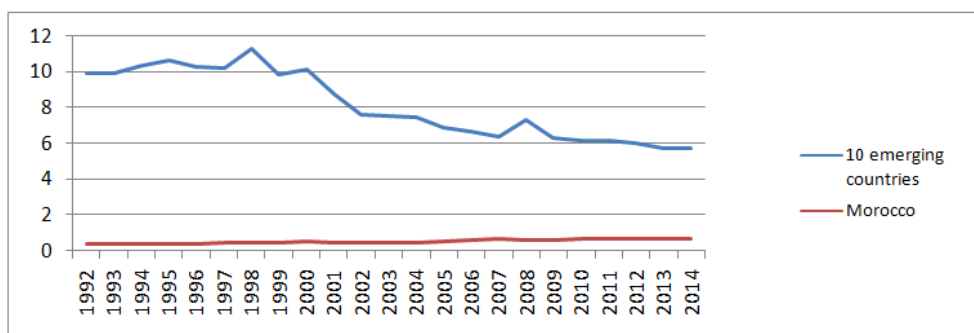

Figure 4: Arithmetic mean of financial integration
Source: World Bank data and Authors' calculations

Comparing the financial arithmetic mean value[22] of Morocco (0,4) to the 10 emerging countries value (10,1) and as seen in the evolution of the data through the years from 1992 to 2014 (figure4), Morocco is clearly less integrated in the global financial markets. Taking the financial integration considerations both "MSCI" and "IFCI" indexes exposed previously, also the last indicator of Money to GDP; we suggest a case against floating for Morocco.

4.2.3 Diversification

It is believed that an economy should adopt a floating exchange rate regime if its production and exports are not diversified. Economies largely dependent on a single commodity or group of commodities will likely require exchange rate flexibility to face changes in world commodity prices to reduce effects that might get other sectors. Diversified economies are resistant to trade shocks and hence don't require a floating.

A measure is used to capture the country's vulnerability to terms of trade shocks by calculating the historical volatility of its terms of trade (export unit value divided by import unit value).
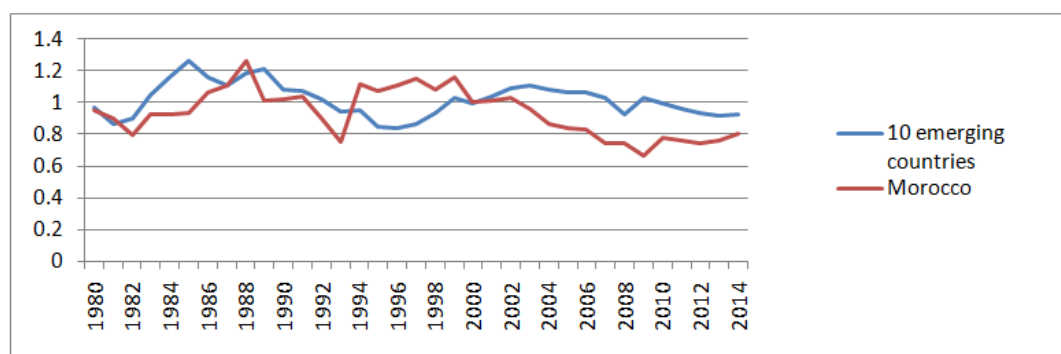

Figure 5: Arithmetic mean of terms of trade[23]
Source: World Bank data and Authors' calculations.

We notice some kind of similarity in the volatility of terms of trade, but the annual data frequency shows a difficulty in interpreting this volatility. It is noted by Hussain (2006) that the quality of the data may

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[22] Calculated from the annual data.
[23] It's calculated from the annually data of(Export value index 2000=100/import value index 2000=100)

well be uneven across countries, especially as the structure of trade has changed significantly in some countries over the past two decades.

An alternative measure of production and export diversification is the share of primary commodities in a country's exports. The higher is the ratio, the more dependent is the country on its main commodity(ies), the less diversified its economy, and the strongest case for a floating. After consulting the world trade statistics for our studied countries we came across some significant remarks concerning the ratio of the share of primary commodities in a country's exports.

Table 5: share of primary commodities in a country's exports in 2014

Primary commodities share	Bra	Colo	Ind	Indo	Per	Phili	S.A	Thai	Turk	Uru	Moro
Agriculture	39%	13,4%	13,5%	25%	20,9%	11,2%	12,5%	17,5%	11,7%	75,1%	19,5%
Fuel	9,2%	65,6%	20,1%	29,1%	12,1%	3%	10,4%	5,3%	3,7%	M	M
Ores and Metal	14,4%	1%	3,2%	4,7%	45,8%	6,6%	26%	1,3%	4,1%	0,3%	7,8%
share of total in exports	62,6%	80%	36,8%	58,8%	78,8%	20,8%	48,9%	24,1%	19,5%	75,04%	27,3%
Bra: Brazil- Colo: Colombia- Ind : India- Indo: Indonesia- Per: Peru- Phili: Philipine- SA: South Africa- Thai: Thailand- Turk :Turkey-Uru: Uruguay- Moro: Morocco – M :Importer											

Source: World Bank data, international trade statistics of 2015 (world trade organization and) and Authors' calculations

The share of primary commodities in Morocco's export is relatively low compared to the majority of the other emerging countries of the sample; it's even classified under the arithmetic mean of all of them (27, 3% < 50, 5%), this explains the relatively high diversification of the economy. Diversification considerations suggest a moderate case in favor of pegging. We should note that Morocco is one of the largest exporters of phosphates, which point out an exposition to price changes in the global market. Morocco is also an importer of fuel (table 5) which makes it dependent of the commodity in terms of imports and therefore it can create somehow a sort of trade shocks. Nevertheless, shocks have been small for Morocco.

4.2.4 Nature of shocks (monetary vs real)

Choosing to peg or to float depends on the degree of capital mobility and on the relative importance of real and nominal shocks. A pegged exchange rate regime may be suitable for economies where monetary shocks are relatively more important than real shocks. A simple measure of an economy's exposure to real shocks is the variability of its terms of trade. However, an economy that is highly trade oriented will be affected more by a given terms of trade shock than an economy that trades relatively little. For this reason, it is useful to consider both the ratio of money velocity variability to terms of trade variability as well as the variability of money velocity by itself.
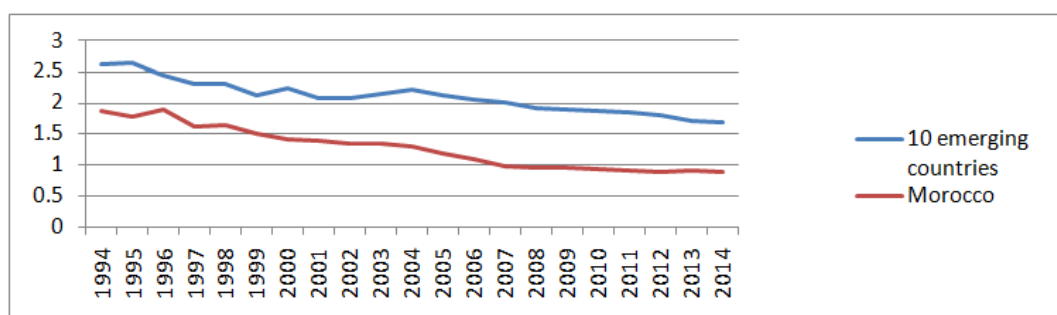

Figure 5: money velocity in morocco
Source: World Bank data and Authors' calculations

A relatively high value of money velocity would suggest that nominal shocks are relatively large and money demand is relatively volatile. Comparing Morocco's money velocity value (1,2) to its opponents arithmetic mean (2,1) we notice that money velocity is low in the Moroccan economy which means that monetary shocks are relatively small.
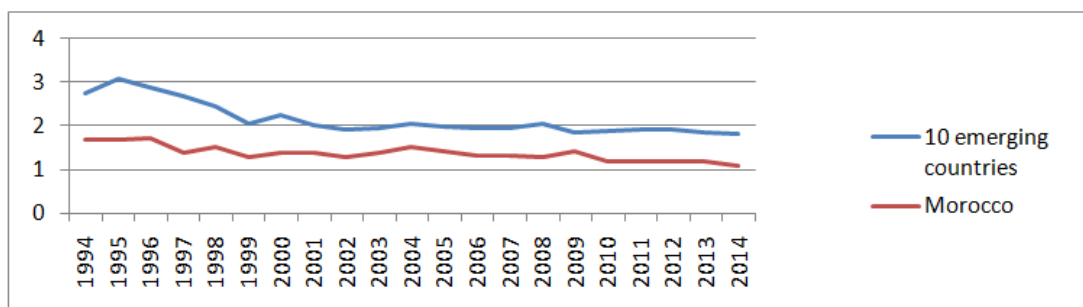
Figure 6: money velocity to terms of trade (monetary to real shocks)
Source: World Bank data and Authors' calculations

Considerations emanating from the 2 Figures 5 and 6 show that monetary shocks have been relatively small in Morocco (Figure 5), as has the ratio of monetary to real shocks (Figure 6). It is also important to note that a pegged exchange regime may also be appropriate in economies where real shocks are relatively more important but international capital mobility is low especially in relation to international trade flows. Placing the Moroccan economy in this framework, we notice that shocks in Morocco derive mainly from variations in agricultural output rather than variations in terms of trade which favors a pegged exchange rate.

4.2.5 Credibility

Credibility is when markets and general public trust a central bank's capacity to provide a well articulated and transparent rules and policy goals such as a price stability. A central bank facing difficulties maintaining low inflation is considered less credible. One way to strengthen its credibility is by importing monetary policy credibility and lower inflation through pegging the exchange rate or adopting a foreign currency. Countries that have a history of high inflation or frequent episodes of high inflation may therefore benefit from a pegged regime. The credibility measure used, is the inflation history of different countries. The threshold inflation used in Hussain (2006) is 8 percent during a period of 10 years.
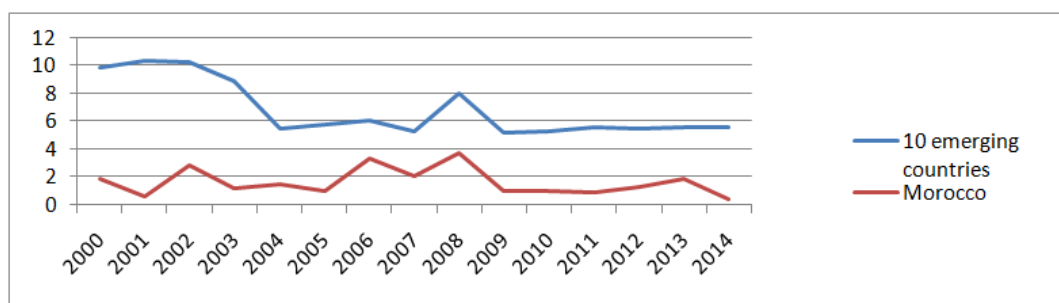

Figure 7: Inflation history
Source: World Bank data and Authors' calculations

Given the inflation history of Morocco during the last 14 years, displaying a mean[24] of 1,6 %, and a rate never surpassed 5% (Figure7) , an exchange rate peg to disinflate may not be needed. Based on these measures, the inflation history of Morocco presents a case for a floating regime. However, the pegged exchange rate regime has contributed to Morocco's low inflation record.

4.2.6 Fear-of-Floating

There are some factors influencing some countries to not allow much exchange rate flexibility. One of these factors for example is the high degree of liability dollarization that that can result in major balance-sheet effects of large exchange rate shocks. Another factor is the high degree of pass-through of exchange rate changes to the domestic price level that will result in a serious inflationary impact of large exchange rate shocks. It is asserted in the fear-of-floating literature, that a gradual and eventual move to floating may help restrict dollarization and, consequently, the prospect of balance-sheet effects and high exchange rate pass-through. The presence of these types of effects means that exchange rate changes may be highly volatile and disruptive. Pegging the exchange rate over time contributes to increase dollarization and fear-of-floating-type effects, countries that do not have such effects at present may be well advised to float and thereby avoid having the effects develop in the future.

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[24] The arithmetic mean calculated for the other 10 emerging countries is equal to 6,9 %

The quantitative measures adopted are the degree of dollarization[25] .a summary composite measure comprising information on the share of bank deposits in foreign currencies, the share of domestic debt denominated in or indexed to a foreign currency, and the share of private external debt in total debt. Highly dollarized economies are those where at least 10 percent of broad money or domestic public debt is foreign currency denominated and where private external debt constitutes at least 10 percent of total debt. Economies with a medium degree of dollarization are those where only one of these conditions is met, while economies with low dollarization meet neither condition. The second measure is the correlation of exchange rate changes with the economic activity that may provide an alternative, and possibly more direct, measure of the presence of possible balance-sheet effects. Exchange rate pass-through may be measured by the correlation of a country's consumer price index with its nominal effective exchange rate.

Measuring the degree of dollarization for the Moroccan case we focus our analysis only on the share of private external debt in total debt due to the lack of data of the two other composites.

Table 6: Share of private non guaranteed external debt in total debt

	2010	2011	2012	2013	2014
Total debt in billion $	40	45	51,5	57,8	61,2
Total external debt in billion $	26,36	29,04	32,95	38	41,96
Share of private non guaranteed external debt in external debt in %	9,8 %	9,8%	11,2%	12,4%	10,9%
Private non guaranteed external debt in billion $	2,7	2,96	2,94	3,06	3,84
Share of private non guaranteed external debt in total debt in %	6,75%	6,75%	5,7%	5,3%	6,27%

Source: World Bank data, IMF and Authors' calculations

From (Table 6) the low degree dollarization of the Moroccan economy would not make it a candidate for a peg. About the other analytical considerations, the presence of possible balance-sheet effects doesn't show a correlation[26] of exchange rate changes with the economic activity (0,11 <0,5). Concerning the Exchange rate pass-through[27], it shows a correlation between the 2 variables (0,69> 0,5) which is an evidence of a significant pass-through of exchange rate changes into domestic inflation[28] . On the basis of fear-of-floating-type effects we conclude that Morocco shows a relative case for a float.

V. Conclusion

Morocco's currency is officially pegged to a basket of currencies dominated by the Euro, but also including the US dollar. The weights of the currencies in the basket reflect the pattern of Morocco's trade (60% for the euro and 40% for the US dollar), as European Union is considered the major trading partner of the country. The different measures in the article show: a high degree of economic integration of the Moroccan economy compared to the other developing countries, a weak financial integration, a relatively high diversification, small monetary shocks, relatively important real shocks combined with low capital mobility, a high credibility and the absence of fear of floating effects. The analysis carried out on the different factors based on historical evidence allowed us to see clearly that there isn't a strong proof supporting the reform of transiting to a floating exchange rate. Furthermore, it is stated that the actual exchange rate regime has served Morocco well in terms of maintaining price stability and a comfortable balance of payments position. However according to the IMF, The future regime choice, will depend on which considerations are likely to become more important in light of the authorities policy intentions and Morocco's economic challenges.

It is worth noting at the end, that -*never changing a winning team*- doesn't apply on the Moroccan exchange rate regime, because the number of countries adopting a fixed exchange rate regime between 2009 and 2014 according to the IMF classification has increased from 78 to 95 including an increase in *Conventional peg regime* (current regime in Morocco) and a decrease in *Pegged exchange rate with horizontal bands,* the regime that Morocco is willing to adopt in order to relatively float its exchange rate in the next coming years.

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[25] Reinhart, Rogoff, and Savastano (2003) assess the degree of dollarization in a large sample of countries

[26] The presence of balance-sheet effects is calculated from correlation between the data of NEER (Nominal Effective Exchange Rate) and annual percent changes of real GDP for the period (1990-2014).

[27] The existence of Exchange rate pass-through is measured by correlation between changes in NEER and CPI (Consumer price Index) using annual data during the same period.

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