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Flexibility Versus Fixity of Exchange Rate Regimes in Developing Countries: An Empirical Assessment of Macroeconomic Effects

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The process of financial integration initiated by developed countries has been accompanied by a flexible exchange rate regime which is based on market supply and demand. A regime considered as being more acceptable for developed countries in a liberal context. However, developing countries, with their own economic structures, often find it difficult to choose an optimal exchange rate regime for their economies. Although many countries are floating their exchange rate regimes, touting its superiority over other exchange rate regimes, fixed exchange rates are still a resilient regime that can economically compete with flexibility. In this context, this study being presented has taken the liberty to econometrically study through panel data, the evaluation of the macroeconomic effects of exchange rate regimes on a set of emerging and developing countries through the periods of 2000-2016.

Keywords: exchange rate regimes, flexibility, fixity, floating panel data, emerging markets, developing countries

INTRODUCTION

The question of the optimal exchange rate regime choice for developing countries in remains at the heart of the economic policy debate and continues to generate a lot of interest among researchers and international financial institutions. However, this question of choice remains linked mainly to the macroeconomic performance of each exchange rate regime. In fact, according to the theoretical literature and recent experiences, no clear answer as to the superiority of one regime over the other has been identified, and there does not seem to be a consensus on the impact of exchange rate regimes on the economy. Indeed, even the thesis that defends the migration from a fixed to a flexible exchange rate regime is hardly unanimously supported and does not find scientific arguments to defend this shift. Thus, the trade-off between fixed and floating exchange rate regimes depends on the specificities of each country and the level of development it has reached, both economically and institutionally. However, it is theoretically argued on the one hand that the fixed exchange rate is more conducive to economic growth because it eliminates exchange rate volatility and creates a stable business climate that is favorable to trade and investment. On the other hand, a floating exchange rate allows central banks to exercise a more independent monetary policy and stimulates economic growth through its favorable effect on the effectiveness of monetary policy and its resilience to real shocks. However, research in this area has yielded mixed results on the impact of exchange rate regimes on economic growth, partly because of how economic conditions

in each country interact with the chosen exchange rate regime. Another issue being debated in the same vein is the view that fixed exchange rates provide the stability and credibility needed to reduce inflation, while flexible exchange rates are inherently inflationary. Thus, all the issues raised regarding exchange rate regimes remain largely empirical. This is one of the reasons why our study focuses on empirically assessing the macroeconomic effects of the nature of exchange rate regimes on economic growth and inflation using panel data from a sample of 29 countries[1], including both emerging and frontier market countries, over the period from 2000 to 2016.

EXCHANGE RATE REGIMES AND ECONOMIC GROWTH

After the implementation of the Jamaica Agreements (1976), some economic implications of the exchange rate regimes anticipated before the adoption of the new monetary system quickly became evident; for example, it appeared that flexible rates were more volatile than they were predicted by the prevailing monetary models at the time. At this early stage, however, it was difficult to assess and attribute differences in economic performance towards a change in the exchange rate regime. The decade of the 1970s was marked by a number of events, such as high energy and food prices, as well as currency instability, that distinguished it from the postwar decades. It was not until the late 1980s that the first empirical efforts to examine differences in the economic performance of long-term exchange rate regimes across a wide range of countries were published[2].

Literature Review

Analyses of the effect of the exchange rate regime on the economic performance of countries go beyond simple correlations between the exchange rate regime and economic growth. Levy-Yeyati and Sturzenegger (2003) have made an important contribution in this regard. They used the exchange rate classification system, which they developed[3], to generate explanatory variables representing fixed, intermediate, and flexible exchange rate regimes. Their main regressions included annual data from 1974 to 2000 for 183 countries (although not all countries have observations for all the years). Thus, they proved that countries with a flexible exchange rate regime in a given year grew significantly faster than countries with less flexible regimes, with an estimated difference of 0.78% per year[4]. They pointed out that this was due to the performance of non-industrialized countries, the result being that greater exchange rate flexibility was associated with significantly higher growth rates, especially for non-industrialized countries. On the other hand, there is evidence from (Baxter and Stockman 1989), that real exchange rates are more stable when a country operates under a fixed exchange rate regime than when it floats its currency, and more recent evidence shows a similar result for the terms of trade (Broda 2001).

A fixed exchange rate regime can also be a means by which a country achieves a consistently undervalued real exchange rate, which can be a means of promoting export-led growth (Mundell 2000, Rodrik 2008). Macroeconomic stability, particularly low inflation that accompanies a highly pegged exchange rate, can also contribute to economic growth by promoting the development of a country's financial sector (Dornbusch 2001). (Calvo 1999) argued that investment may be reduced, and thus long-run growth adversely affected, in a country with a fixed exchange rate because interest rates rise due to the uncertainty associated with the potential collapse of a parity and its defense in the event of a speculative attack. The evidence of a link between currency crises and banking crises (Kaminsky and Reinhart 1999) and the significant negative consequences of banking crises on economic growth explain why Levy-Yeyati and Sturzenegger found an economic growth performance associated with flexibility in non-industrialized countries. (Ghosh, Gulde, and Wold 2002), controlling for factors that are generally considered as being the determinants of economic growth, found that exchange rate regimes that are fixed against a basket of currencies and intermediate regimes exhibit higher growth rates than flexible exchange rate regimes or fixed exchange rate regimes (against a single currency).

Levy-Yeyati and Sturzenegger's result was supported by two papers written by (Bailliu, Lafrance and Perrault 2000), In their paper, using a panel of 25 emerging countries between 1973 and 1998, they found that flexible exchange rate regimes were associated with higher economic growth for emerging countries,

if these countries were open to international capital flows. In their 2003 paper, they used a larger panel of sixty countries over a shorter period from 1973 to 1988 and showed that more flexible exchange rate regimes were associated with faster economic growth than regimes with a monetary andchor.

(Husain, Mody, and Rogoff 2005) also found that flexible exchange rate regimes were associated with faster growth, but only for richer economies. Using the Reinhart-Rogoff classification scheme, they found that the flexible exchange rate category was not significantly associated with faster growth for emerging and developing countries, and the pure floating category was associated with lower growth. This contrasted the result obtained by Levy-Yeyati and Sturzenegger for the effect of exchange rate volatility on growth in non-industrial economies. Husain, Mody, and Rogoff attributed the difference in their results from those of Levy-Yeyati and Sturzenegger to the fact, that several missing and inconclusive observations in the classification of (Levy-Yeyati and Sturzenegger 2003) raised doubts regarding their conclusions. However, (Bleaney and Francisco 2007) found that fixed exchange rate regimes were associated with low growth rates and that flexibility was not associated with rapid economic growth.

As we have just seen above, the contrasting results in this line of research do not point to a single commonplace. We therefore propose our own empirical analysis in the following section.

Choice of the Econometric Model: Motive and Development

The choice of a particular model in panel data is conventionally made by means of tests, supposed to be comparison tests that allow the choice between the random effect model and the fixed effect model, the best known of these tests and the most widely used since the 1980s is the Hausman test[5]. However, the current literature has recently taken the liberty of emphasizing the random effects model[6], because in the standard practice of econometric analysis, it is assumed that there are a large number of factors that can affect the value of the explained variable and which are not explicitly introduced in the form of explanatory variables. These factors are then approximated by the structure of the residuals. This problem arises in a similar manner in panel econometrics. The only difference is that three types of omitted factors can be considered. Firstly, there are factors that affect the endogenous variable differently, depending on the period and the individual considered. Then, there may be factors that affect all individuals in the same way, but whose influence depends on the period considered (time effects). Finally, other factors may, on the contrary, reflect structural differences between individuals, that is, factors that are independent of time (individual effects). Indeed, beyond the purely statistical approach, the philosophical aspect is crucial in the choice of the model (Jones 2010). This reasoning takes into consideration the structure and nature of the data studied (in our case: country heterogeneity and the time effect) and thus giving economic reality a legitimate place in the econometric analysis.

The classical econometric estimation routine which adopts the ordinary least squares method (OLS), often requires the study of the autocorrelation and the heteroscedasticity of the residuals in order to be able to validate an estimated model, however, the panel data are often characterized by these problems of heteroscedasticity and autocorrelation[7], which indeed makes the ordinary least squares method unsuitable for the estimation and calls for the Generalized Least Squares (GLS) method[8]. This remark is decisive in our study because it calls into question the ordinary least squares method (OLS) on the indicator variables (LSDV)[9] used in the case of the fixed effect model. (Gujurati 2012) further finds that when N (Individuals) is greater than T (periods), the random-effects model is more efficient than the fixed-effects model when it comes to estimating panel data which indeed corroborates the adoption of the random-effects model in our analysis (29 countries for 17 years).

Notwithstanding, the arguments put forward for the choice of the random-effects model, which is not yet widely known among econometricians, we will follow the classic path found in most econometric manuals in order to compare the results obtained in the two models and thus conclude pertinently on the impact of the type of exchange rate regime on economic growth.

Empirical Evidence

Presentation of Data and Methodology

The objective of this axis is to be able to empirically analyze, through an economic growth model, the impact of an exchange rate regime (Fixed or Flexible) on economic growth, in order to clarify this ambiguous relationship in the literature and to compare the flexibility versus the fixity of exchange rate regimes. To do so, we used a set of variables whose data were drawn from the World Bank database and the IMF (International Monetary Fund) annual reports on exchange rate regimes "*Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER)".

The study is conducted within the framework of a Balanced Panel data model, wherein we estimated an economic growth equation for 29 countries with emerging and frontier market[10], and this over the period from 2000 to 2016. The main variables of our econometric study and their measures in our sample countries are as follows:

- **Economic growth:** It constitutes the endogenous variable in our model, represented by the annual change in gross domestic product (GDP), this variable is frequently used in the empirical literature as the major variable that determines the macroeconomic performance of any country. Indeed, several factors are likely to influence this macroeconomic quantity.
- **Inflation**: Represented by the inflation rate. According to a study conducted by (Barro 1995) on 100 countries, the estimated effects of inflation on economic growth were significantly negative. He found that an increase in average inflation of 10% per year resulted in a reduction, in the growth rate of real GDP per capita, of between 0.2% to 0.3% per year. Inflation and economic performance are negatively correlated because a higher price level causes people to have less purchasing power. For this reason, consumers will buy fewer goods, a decrease in the demand for goods will lead to a decrease in the number of goods produced and result in a decrease in the level of GDP. Therefore, the higher the inflation rate, the lower the expected GDP growth.
- **Public expenditure**: the index used is that of the "Heritage Foundation". This component takes into consideration the level of government spending as a percentage of GDP. Public spending, including consumption and transfers, accounts for the entire score. No attempt has been made to identify an optimal level of government spending. However, the ideal level varies from country to country, depending on factors which range from culture to geography to the level of development. However, studies and research reports have shown that excessive government spending, which leads to chronic budget deficits and the accumulation of sovereign debt, is one of the most serious impediments to economic dynamism[11].
- **Gross capital formation**[12]: Measured by capital formation as a percentage of GDP. Capital has always been considered a central element of economic growth. The greater the capital formation of a country, the more capital workers will have to work with. This increase in the capital-to-labor ratio will result in higher output produced by each worker and boost the gross domestic product for a particular country. Indeed, higher capital formation is assumed to lead to higher GDP growth.
- **Exchange rate regimes:** The variable representing exchange rate regimes here is an indicator variable for the type of exchange rate regime (which takes 1 in the case of a fixed exchange rate regime and 0 in the case of a flexible exchange rate regime), which we constructed from a consultation of the IMF annual reports on exchange rate regimes since 2000. Thus, to avoid the classification problem discussed in the literature on the fact that one cannot know whether a country is adopting a fixed or an intermediate regime, we included intermediate exchange rate regimes in the class of fixed exchange rate regimes (hard pegs and soft pegs) since countries with intermediate regimes hold large foreign exchange reserves and do not let their currencies float freely as is the case in flexible exchange rate regimes[13].

Empirical Estimation of the Economic Growth Model

- Fixed effects model (LSDV)

  For our economic growth model, we obtained the following equation:

$$PIB_{it} = a_{1i} + a_2 INF_{it} + a_3 FC_{it} + a_4 DP_{it} + a_5 RC_{it} + U_{it}$$
$$i= 1, 2\ldots\ldots ,29 ; \quad t= 1,2,\ldots..,17$$

PIB_{it} = Endogenous variable, annual growth rate for country *i* in period *t*,
INF_{it} = Annual inflation rate for country *i* in period *t*,
FC_{it} = Gross capital formation for country *i* in period *t*,
DP_{it}= Government expenditure for country *i* in period *t*
RC_{it}= Nature of exchange rate regime, dummy variable (1= Fixed exchange rate regime, 0= Flexible exchange rate regime), the reference variable here is (0= Flexible exchange rate regime).
U_{it} = Error term
a_2 , a_3 , a_4 , a_5= Coefficients of exogenous variables,

The (LSDV) estimator consists of applying the OLS method to the model with specific indicator variables for each of the N individuals. We therefore construct *N* indicator variables such that: D_i = 1 D_i = 1 for individual *i* and 0 for the others.

The model is then written as:

$$PIB_{it} = a_1 + a_2 D_{2i} + a_3 D_{3i} + a_4 D_{4i} + a_5 D_{5i} \ldots . a_{28} D_{28i} + a_{29} INF_{it} + a_{30} FC_{it} + a_{31} DP_{it} + a_{32} RC_{it} + U_{it}$$

where, D_{2i} =1 for Country 2, or 0 ; $D_{3i} = 1$ for Country 3, or 0, and so on.

It is important to note that we used 28 indicator variables to represent 29 countries so that we can avoid perfect multi-collinearity (*dummy trap*)

- Random effects models (GLS-Random effects)

  The random effects model assumes that the relationship between the dependent variable and the independent variables is no longer fixed but random, the individual effect is no longer a fixed parameter a_{0i} but a random variable $a_{0i} = a_1 + \varepsilon_i$ where ε_i is a random error term with zero expectation.

  In terms of our study (t=17 et i= 29), This axis describes the specification of our econometric model (Random Effects Model), and then deals with the expected signs of the coefficients of the explanatory variables.

  The general specification of our model is as follows:

$$PIB_{it} = a_1 + a_2 INF_{it} + a_3 FC_{it} + a_4 DP_{it} + a_5 RC_{it} + W_{it}$$

where,

$$W_{it} = \varepsilon_i + U_{it}$$

The error term W_{it} is composed of ε_i which represents the individual effects and U_{it} which is an error term of the individual and time effects, hence the name also given to this type of model: error components model

TABLE 1
ESTIMATION RESULTS

	Random effects model	**Fixed effects model**
	Coefficients	**Coefficients**
Inflation (INF)	-0.0322982 * (0.000)	-0.0339309* (0.000)
Gross capital formation (FC)	0.2328386* (0.000)	0.2717546* (0.000)
Government expenditure (DP)	0.0149293 (0.315)	0.000351 (0.987)
Exchange rate regime (RC)	0.3064795 (0.581)	0.3176704 (0.838)
Constant	-2.007965 (0.161)	-4.398616** (0.053)
F-statistic		6.95 (0.000)
Breusch and Pagan Lagrangian multiplier test (LM Test)	40.90 (0.000)	
***θ* (Theta)**	0.44645788	
Hausman test[14]	chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 2.95 Prob>chi2 = 0.5669	
N	493	493

Asterisks (*, **, ***) indicate statistical significance levels of 1%, 5% and 10% respectively

Thus, we estimated the effects of an exchange rate regime and a few variables on economic growth. The results show that the Hausman test rejects the null hypothesis in favor of the random effects model (GLS-random effects), which happens to be the most appropriate for our study. Indeed, we found that under a significance level of 1%, the level of inflation negatively impacted the economic growth, a 1% increase in inflation is likely to decrease economic growth by 0.03%, this result is theoretically accepted according to many econometric studies, the most prominent being that of Barro (1995) and which happens to share similar results.[15].

The second independent variable that affects economic growth is Capital Formation (Gross Domestic Investment) with a positive impact under a threshold of 1%, it is also found that a 1% increase in Capital Formation increases economic growth by 0.2%, which is theoretically and practically proven.

Public spending seems to have no impact on economic growth, this result may seem confusing, and the economic literature is not yet clear-cut on the issue[16]; however, according to our perspective, we can theoretically argue that public spending between 2000 and 2016 follow a downward trend in all countries

depending on the index adopted. Thus, the economic ideology of privatization that has been in place since the late 1980s in developing countries explains the decline in public spending observed in these economies.

Moreover, the last dummy variable, which represents exchange rate regimes, and which is the important element of our study, shows no direct effect on economic growth as shown by the insignificant coefficient. This result explicitly rules out any preference of one exchange rate regime over another in terms of economic growth, yet in what follows we will have the possibility to study the link between exchange rate regimes and inflation and thus try to implicitly study the link between economic growth and exchange rate regimes.

EXCHANGE RATE REGIMES AND INFLATION

Friedman and Schwartz's famous assertion regarding the sole source of inflation[17], argues that the role of exchange rate regimes in determining inflation should have no effect on inflation beyond the direct discipline it imposes on monetary policy. However, the theory on the credibility of monetary policy provides an additional way in which the choice of exchange rate regime can affect inflation performance. This theory suggests that the perceived policy preferences of the central bank affect inflation performance. This credibility effect operates independently of actual monetary policy, although there ultimately exist a consistency between perceptions and reality. Empirical analysis supports this theory, showing that central bank credibility affects inflation[18]. Thus, we can expect a fixed exchange rate regime to help reduce inflation beyond its effect on monetary policy discipline to the extent that it enhances a central bank's anti-inflationary reputation.

The credibility effects of the exchange rate regime on inflation are likely to differ across time horizons. We would expect to find a stronger credibility effect of a fixed exchange rate regime, beyond its disciplining effect, at shorter time horizons than at longer time horizons. Over a long horizon, perceptions reflect actions. A central bank can maintain a good reputation over time only if it pursues an anti-inflationary policy.

In this section, we study the links between exchange rate regimes and inflation performance. We begin with a discussion that frames the analysis via an empirical literature review on this issue. We then turn to our empirical study of the link between exchange rate regimes and inflation.

The Empirical Literature Review

A typical argument for the link between fixed exchange rates and inflation is the disciplinary effect they have on monetary policy, as well as indirectly through inflationary expectations. This is based on the concept of nominal anchoring, whereby the pegging to the currency of a low-inflation country is seen as a pre-commitment mechanism to anchor inflationary expectations. However, just as the main advantage of flexible exchange rates is that they give the authorities some leeway to use monetary policy to cope with shocks, flexibility gives monetary policy too much freedom and thus does not provide a sufficient nominal anchor (Calvo and Mendoza 2000; Calvo 2001). This is probably why it is logical to argue that the link between inflation and the exchange rate regime is not so clear. Moreover, (Calvo and Mishkin 2003) argued that a central bank can only work to reduce inflation if it is supported by the public, as well as by the statemen.

From another point of view, flexible exchange rates are generally thought to be inflationary because, on the one hand, they weaken the discipline to fight inflation, and on the other hand, they engage economically weak (low competitiveness) countries in a vicious circle of inflation and currency depreciation, thus exacerbating inflation differentials between countries.

(Caramazza and Aziz 1998) argued that in terms of macroeconomic implications, neither regime (fixed or flexible) ranks above the other. Prior to the 1990s, inflation always appeared to be lower and less volatile in countries with fixed exchange rate regimes, but the difference has narrowed considerably since the 1990s. But a study published by the IMF (October 1997) shows that inflation in countries with fixed exchange rates has always been lower and less volatile than in countries with flexible rates.

In the same research field, (Bordo 2003) examined the historical macroeconomic performance of 14 countries through the period of 1880-1995, focusing on three key variables: exchange rate volatility

(measured by the logarithm of the exchange rate), the consumer price index (CPI), and per capita income growth. This period encompasses the standard gold standard period (1880-1914); World War I, the interwar period, and World War II (1914-1945); the Bretton Woods period (1946-1971); and the current system. The Bretton Woods period is divided into a pre-convertible period (1946-1959) and a convertible period (1969-1971). The results conclude that in the standard gold standard period and in the Bretton-Woods system, exchange rates were extremely stable. The wars, the interwar period and the early Bretton Woods period were the most unstable period, with moderate volatility. For inflation, it was at its lowest during the gold standard and during the Bretton Woods system and at its highest during the wars. The 1970s and early 1980s were characterized by relatively high inflation. Since the mid-1980s, inflation has declined to levels reminiscent of the two convertible regime periods. Other empirical studies such as (Ghosh *et al.* 1997) used data covering the period 1960-1990 and found that inflation was both lower and more stable under fixed exchange rate regimes.

Econometric Study on the Link Between Inflation and Exchange Rate Regimes

Convinced by the robustness of the random-effects model for its adaptability to the characteristics of our sample (individual and temporal effects), its adoption also seems appropriate in studying the link between the nature of the exchange rate regimes and the level of inflation in the selected countries.

The variables used here are those likely to explain inflation, namely: the nature of the exchange rate regime, economic growth represented by the evolution of GDP and the growth of the money supply.

Our model is written as follows:

$$INF_{it} = a_1 + a_2 PIB_{it} + a_3 MM_{it} + a_4 RC_{it} + W_{it}$$

INF_{it} = Endogenous variable, annual inflation rate for country *i* in period *t*,
PIB_{it} = Annual economic growth rate for country *i* in period *t*,
MM_{it} = Annual money supply growth[19] for country *i* in period *t*,
RC_{it}= Nature of exchange rate regime, dummy variable (1= Fixed exchange rate regime, 0= Flexible exchange rate regime), the reference variable here is (0= Flexible exchange rate regime).
W_{it} = Compound error term (of ε_i which represents individual effects and U_{it} which is an error term of individual and time effects) where $a_{0i} = a_1 + \varepsilon_i$
a_2 , a_3 , a_4 = Coefficients of the 3 exogenous variables,

TABLE 2
RESULTS OF THE ESTIMATION OF THE RANDOM EFFECTS MODEL

N	GDP	MM	Fixed exchange rate regime	Constant	Wald Test	R^2
	-1.0894*	1.1612*	-3.5108*	-4.5845	1898.92	
493	(0.000)	(0.000)	(0.008)	(0.000)	(0.0000)	0.7952

Asterisks (*, **, ***) indicate statistical significance levels of 1%, 5% and 10% respectively

The results on the table perfectly validate the model from the R^2 and Wald Test and show us the results we expected, from the theory; the explanatory variables are all significant, the negative coefficient of economic growth affirms the results obtained in the previous econometric study regarding the link between economic growth and inflation. Thus, money supply positively affects inflation (a 1% increase in the money supply can cause an inflation of 1.16%), this is convergent with the dominant theory on the main source of inflation (Milton Friedman). However, it does not stop there, since the level of inflation is also determined by the nature of the exchange rate regime adopted, the table shows that the coefficient of the nature of the exchange rate regime is significant and implies that the fixed exchange rate regime is 3.5% less inflationary

than the flexible exchange rate regime (reference variable). We can therefore conclude that the exchange rate regime has a significant impact on the level of inflation in developing countries. It is therefore very important to note that we can implicitly deduce the answer to the question of the link between economic growth and exchange rate regimes on the basis of the results found here. Thus, a fixed exchange rate regime is favorable to economic growth because it is less inflationary than a flexible exchange rate regime. This supports the arguments that there are at least two possible reasons for this; one related to the discipline imposed on monetary policy by a fixed exchange rate regime and the other corresponding to the way in which an anchor/peg affects expectations beyond its direct influence on monetary policy. There is evidence that both channels are important, at least in annual data as argued here.

CONCLUSION

The assessment of macroeconomic performance initially involves economic growth and its determinants, which are based on standard models that comprise of real variables such as investment, population growth and consumption, though these models have evolved to include other nominal variables, such as the one that studies the potential impact of an exchange rate regime on economic growth. Indeed, the literature in this area, as we have just described, shows mixed results, and often places the flexible exchange rate regime above the fixed regime for so-called economic reasons. However, all the results obtained from the different regressions on panel data and relating to our sample of 29 developing countries for the period from 2000 to 2016 show us that exchange rate regimes (fixed and flexible) in emerging and pre-emerging countries have no direct effect on economic growth. However, it appeared that fixed exchange rate regimes are less inflationary than flexible exchange rate regimes, this is linked on the one hand to the monetary discipline imposed on fixed exchange rate regimes and on the other hand to the credibility of the monetary policy. Indeed, it is appropriate here to emphasize the inverse relationship between economic growth and inflation that appears in the literature and, which is clearly demonstrated in our study. This result implies that fixed exchange rate regimes are more conducive to economic growth through the inflation channel in developing countries (emerging markets and frontier markets). Moreover, although the channel detected here leads to the conclusion that economic growth is favored by low inflation in fixed exchange rate regimes, there may be other channels, such as international trade, macroeconomic stability, financial development, and the frequency and severity of financial crises, which must also be taken into consideration when assessing the performance of exchange rate regimes. Thus, we would like to point out that the result obtained in our study calls into question the relevance of the exchange rate policy decisions that some developping countries advocate as being optimal and appropriate for improving macroeconomic performance.

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ENDNOTES

1. Countries concerned: Brazil, Turkey, Indonesia, India, Peru, Philippines, Thailand, Uruguay, South Africa, Colombia, Senegal, Kuwait, Cote d'Ivoire, Congo Democratic Republic, Hungary, Jordan, Ghana, Qatar, Saudi Arabia, Tunisia, Venezuela, Bahrain, Egypt, Singapore, Togo, Mexico, Kenya, Malaysia, Morocco.
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7. (Damodar Gujarati 2012), Econometrics by Example, Palgrave Macmillan p 303
8. (Régis Bourbonnais 2015) chapter 13, 9th edition Dunod, p: 356
9. Least square dummy variable
10. The notion of "emerging markets", "pre-emerging markets" or "emerging markets of the future", which some financiers call frontier markets under the influence of English, is a term that refers to a set of emerging countries with an established financial market but whose market capitalization and liquidity remain low.
11. http://www.heritage.org/index/government-spending , accessed on 06/16/2018
12. According to the world bank: gross capital formation (formerly called gross domestic investment) consists of spendings for additions to the tangible fixed assets of the economy plus net changes in inventories. Tangible capital assets include land improvements (fences, ditches, drains, etc.), factories, machinery and equipment purchases, construction of roads, railroads, etc. including schools, offices, hospitals, private residential units, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet unexpected fluctuations in production or sales as well as unfinished work. According to the 1993 System of National Accounts, net acquisitions of high-value goods are also part of capital formation.
13. N.B.: The study excludes developed countries and analyzes the dichotomy between fixity and flexibility only in developing countries (emerging and frontier markets), so flexibility here represents the "Floating" regime of the de facto category in the IMF's "Annual Report On Exchange Arrangements and Exchange Restrictions.
14. The H statistic is distributed according to a chi-square with k degrees of freedom. If $H > \chi 2(k)$ for a threshold is α% fixed, we reject the H0 hypothesis, , we therefore reject the random effects specification and choose a fixed effects model.
15. "An average increase in inflation of 10% per year reduces economic growth by 0.2% to 0.3% per year"
16. Many studies have sought to estimate the effects of government spending on economic growth. Empirical studies have yielded conflicting results: some support the hypothesis that an increase in the share of government spending is associated with lower economic growth (Landau 1986) and (Scully 1989); others have found that government spending is positively associated with economic growth (Ram 1986); and yet other studies have found no significant relationship (Kormendi and Meguire 1985) and (Diamond (1989). Public spending was found in one study to have no impact on growth in developed countries, but a positive impact in developing countries (Sattar 1993)). In general, studies of the relationship between government spending and economic growth have not yielded robust results, as the results of many are sensitive to small changes in model specification (Levine and Renelt 1992).
17. "Inflation is always and everywhere a monetary phenomenon"
18. See: (Alesina and Summers 1993) and (Cukierman 1992).
19. According to the World Bank, the money supply is the sum of currency in circulation outside banks, demand deposits other than those of the central government, time savings deposits and foreign currency deposits of resident sectors other than the central government's, bank and traveler's checks, and other securities such as certificates of deposit and commercial paper.

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