Foreign exchange exposure and its reflection in corporate finances

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In some periods of history currency volatility has been avoided due to agreements made between countries. From 1973 to fluctuation of currency quotations generated a great deal of economic theories that countries could manage their currencies. Companies with revenues in foreign currencies had to adapt and understand how the exchange rate policy of the country affects the results of organizations. This article is part of the historical context and from the determinants of exchange rate policy, reviews the main models for the determination of prices and their empirical evidence. Are then discussed some emerging models. The article shows that the theories arising in forty years of free floating explain only part of the problem of exchange rate changes and that there are still many unanswered questions. Arising from these uncertainties, the volume of derivative trading has increased worldwide indicating a search for protective mechanisms that minimize the effects of exchange rate variation.

Key words: Cambio, floating, exchange theories, finance.

INTRODUCTION

Up to the year 1973 the Bretton woods agreement used to keep the price of currencies and avoid the oscillation of one currency in relation to the other ones. With the United States decision to abandon the agreement, the market became uncertain and unstable. Thus, the expression foreign exchange volatility assumed importance to the international financial vocabulary. Several studies show the effects on economical performance of countries. Exchange rate fluctuation affects the result of companies in various ways, directly in the case of importers and exporters or indirectly due to the effect of exchange rate on domestic prices. The subject called risk, so far restricted to the insurance industry or for some specific financial sectors, began to be part of the assessment of the organizations. In academia, several courses involve the discipline called as risk management and organizations begin to address this as necessary for administrative management. The subject is recent and is in extensive discussion, both in academia and corporations, creating more questions than answers.

This review will contemplate economical theories that determine the exchange rate and the empirical results of the main authors who have related the issue. The main research matter is how exchange rate volatility has been
been addressed and the evolution of its management in corporate environment. Besides this introduction, this review contains five more sections. The next one reports some aspects on historical volatility of the currency and the first studies on the subject. Section 2 presents the main economical theories and models for exchange rate determination. Section 3 describes the main empirical evidence of the models here studied. Section 4 presents the emerging models for exchange rate determination. Section 5 provides an analysis of recent results in the management of enterprises and the volatility, and section 6 summarizes the issues here studied and makes some considerations on issues which may be addressed in future research.

Historical context

The Bretton woods agreement signed in 1944 established a monetary system based on gold standard in which all countries would determine the value of their coins based on metal reserves. In fact, the value was established in relation to dollar which remained the conversion rate of $35 per ounce. Therefore, each country defined its rate in relation to dollar. The fact that the U.S. currency had been devalued from $20.67 to $35 an ounce ten years earlier was not considered as a loss of advantage by the involved ones and did not influence on the decision. According to Eiteman et al. (2002), the participating countries agreed to maintain the value of currencies in parity with 1%, later increased to 2.25% for purchase or sale of foreign currency or gold. Devaluation could not be used as an alternative for commercial competition, but if it were necessary, a devaluation of up to 10% should be authorized by the international monetary fund. (IFM)

This system lasted for 27 years. Arising from divergent monetary policies and internal problems regarding inflation resulted in its weakening. Gold reserves were replaced by the U.S. currency. The U.S. had increasing deficits which required an outflow of capital to finance them, resulting in ability distrust to maintain the commitment to convert dollars into gold.

On August, 1971, the U.S. government suspended the purchase of gold. The exchange rates of most countries fluctuated freely in relation to dollar and, therefore, in relation to gold. At the end of that year, most currencies had appreciated against the dollar. In 1973, the speculative flow of coins struck the fixed exchange rate again. In March, most of the world’s largest markets got closed for several weeks. When they were reopened, most currencies were able to fluctuate by forces determined by the markets. From that period on, the exchange rates became more volatile and less predictable. According to Chesnais (1999), the exchange rate variations had become permanent with these changes, making the conduction of an international transaction without getting exposed to risks almost impossible.

The exchange rate fluctuation of currencies as a risk factor to companies began to worry investors. Hung (2006) calculated that, during the 80s, due to changes in the value of the dollar, U.S. companies had losses estimated at $23 billion per year, which is equivalent to 10% of total industrial profits. Westerfield (1977) was the first one to recognize that the fluctuating rate exchange market poses more risks than the fixed rate exchange ones. His studies involved weekly exchange rates from five countries: Canada, England, Germany, Switzerland and the Netherlands, during the period of fixed rates of the 60s and covered the period of fluctuating rates of the 70s. With several statistical formulas to measure the variation of the market price of the present and of the future, he concluded that the symmetrical stable distribution provided the best description of the exchange rates.

In 1978, Rogalski and Vinso resumed Westerfield’s studies and with the same samples the authors concluded that the “student t-distribution” better explains the symmetry of currency prices. They concluded that a stochastic process explains the rates in a fixed conversion regime, while the new model is better suited to systems involving fluctuating exchange rates. Calderon-Rossell and Ben-Horin (1982) analyzed only the free-fluctuation period, from 1974 to 1977, and extended the study sample for 17 major currencies. The reason for this extension was due to the fragmentation of the international monetary system after the end of the Bretton woods agreement and of the different exchange rate policies adopted in each country. The studies that assume that changes in exchange rates form a normal distribution are in serious doubts. The authors concluded that there is not a single distribution that represents the behavior of currencies versus the theories found in literature.

EXCHANGE RATE DETERMINATION

According to Eiteman et al., (2002), there is not a general theory about exchange rate determination. In economics, there are theories about currency parity conditions which attempt to explain exchange rates and their determinants. The main theories start from interest rate parity and purchasing power parity. According to Brealey and Meyers (2005), theories explain the behavior of currencies under certain conditions, but they are not an accurate description of reality. The theories are based on efficient market hypothesis, which, according to Taylor (1995), has the following characteristics: the participants
are gifted with rational expectations; all information is available to all participants and reflects in prices and the investors are neutral to risk. The risk issue can be adjusted to a risk award. According to Garcia and Olivares (2000), however, in currency market the presence of this award in negotiation currency has no consensus in literature and finds no conclusive answers in empirical research.

According to Taylor (1995), foreign exchange market efficiency is a controversial issue. A way of testing market efficiency is through interest rate discovery condition, which is present in most models of exchange rate determination. According to this condition, if markets are efficient and risk-neutral, then the return of a bond must be equal to that of another country, when measured in the same currency. Differences in nominal yields are due to changes in exchange rate.

According to Taylor (1995), foreign exchange market efficiency tests have been applied considering the trajectory of currency markets as a random way. Another test is done in order to apply a filter rule, which involves intervention in the market by buying or selling currency every time the price exceeds the values determined by the filter. Another method is through regression analysis based on spot and forward prices, in which difference in prices reflects in the interest rate and should be equal to the future award. The various tests and the creation of more sophisticated econometrical models generated strong evidence against the efficiency hypothesis without speculative risk award.

Once unconfirmed the simple hypothesis of market efficiency rates, researchers began to search for new alternatives. If market participants are risk-averse, the parity condition interest rates can be distorted by the risk award, confusing research results. Another reason could be a change in expectations. According to Taylor (1995), this can be due to rational bubbles, market learning against changes, inefficient information or "weight problem", which is the market expectation for rate realignment during the sample period. Another investigated possibility was the research data, in which the applied models assumed one of the hypotheses as true. In general, the conclusions of the finding results are that risk aversion and abandonment of rational expectations theory are responsible for the rejection of the efficient market hypothesis.

Other conditions were used to test the foreign exchange market efficiency. The parity covered interest rate and purchasing power parity. The parity covered interest rate states that the interests will be equal to similar assets. If it does not happen, the coin exchange will fit, balancing interest rates and eliminating arbitrage opportunities. The purchasing power parity implies that the exchange rate equals the ratio of the two relevant national price levels, or that the prices of the products are equal when measured in common currency. Horne (2004) identifies three distinct phases to the condition of purchasing power parity. The first phase is optimistic and ranged from the 20s to the 70s, along with the strong presence of monetarist theories, which made it a much respected approach. The second phase, pessimistic, lasted up to the 80s, when it was abandoned due to the large variability in real exchange rate. More recently there is a re-evaluation, considering it as a consistent long-term anchor. Recent studies have tested the co-integration between exchange rates and relative prices, and the results are insignificant regarding the purchasing power parity. Some authors have questioned the results, arguing that the analyzed period is too short. Other studies have used integration techniques involving data from the nineteenth century and found evidence on purchasing power parity for the long term.

According to Horne (2004), the market efficiency has weak evidence. Even in long-term, the connection between the reflections of interest and purchasing power are not clear enough to say that the currency markets are efficient.

**Models of exchange rate determination**

The monetary approach to the change of rates emerges from dominant models of exchange rate fluctuations, which began close to the 70s. They started from the beginning of the definition of exchange rate as the relative price of two currencies and attempts to model the relative price in terms of demand and supply for those coins. They are based on the following hypotheses: the prices are flexible, the purchasing power parity exists, internal and external assets are perfectly substitutable and capital mobility is allowed. In this review we will describe the main models of exchange rate determination. Mathematical formulas were not used to explain the methods and the choice of describing the models is in order to make the text more fluent and less bulky. Taylor (1995) provides the following models:

**Monetary model with flexible prices**

The monetary model with flexible prices is implicitly a clear market and generally balanced model, in which the continuous purchasing power parity among national levels is assumed. The domestic currency stock determines price levels and, hence, the exchange rate is determined by the relative supply of currency. The high volatility during the 70s was gradually disproving the continuous purchasing power parity, leading to the development of two classes of models: monetary model with adherence to the prices and equilibrium model.
Monetary model with adherence to the prices and overcoming (overtake)

In this model, increases in long-term rates over the levels of long-term equilibrium (the overtake effect) are allowed. The results such as "variables jumps" in the system – changes in exchange and interest rates – are offset by adherence on other variables – notably in product prices. In short-term, equilibrium is reached when the expected depreciation rate is balanced with the differential interest rate (discovery interest rate parity). In medium-term, however, domestic prices begin to fall in response to the reduction in money supply. This relieves the pressure on financial markets and interest rates begin to retreat. Then, the exchange rate depreciates slowly for purchasing power parity in long-term.

Equilibrium and liquidity models

These types of models are also called as temporary and began to be developed by Lucas (1982). They analyzed the overall balance of two countries, maximizing the expectation of the present value to the representative utility of an agent which has been subject to budget constraints and restrictions for fund advances. Somehow these models are an extension or a generalization of the monetary model of flexible price, which allows multiple trading products and real shocks among countries. A positive monetary shock in the currency starts to generate a decline in nominal interest rates, the appreciation of domestic currency against foreign currency, in real and nominal terms, raises the outputs (in response to lower real interest rate) up to the moment that the prices and portfolio are in balance again.

The portfolio equilibrium model

The key feature that distinguishes the portfolio equilibrium model is that it assumes imperfect substitution between domestic and foreign assets. The model considers that the net financial wealth of the private sector is divided into three components: cash, domestically issued bonds and foreign bonds denominated in foreign currency and owned by domestic residents. According to Taylor (1995), the model also considers a free market for domestic bond purchase by authorities. To induce agents to hold more cash and fewer bonds, domestic interest rates fall (the price of domestic bonds rises). The agents try to compensate the reduction of profit in their domestic rate portfolios, keeping assets in bonds purchased abroad, the exchange rate depreciates, leading the value of foreign bonds in domestic currency to a greater amount. The effect of net impact is a lower domestic interest rate and currency depreciation.

FACTORS AFFECTING THE MODELS OF EXCHANGE RATE DETERMINATION

The determination of exchange rate policy is a task of monetary authorities of each country, the adoption of a flexible exchange rate regime is not synonymous with unstable exchange rates. According to Pires (2005), monetary authorities should have appropriate mechanisms to alleviate the necessary adjustments in economic fundamentals. These economic measures may affect the analysis of the results of exchange rate policies and are explained below in the items titled as official intervention and target zones for exchange rates.

Official Intervention

According to Taylor (1995), official intervention in foreign exchange happens when authorities buy or sell currencies, usually against their own currency and in order to affect the exchange rate. Sterilized intervention happens when authorities – simultaneously or with a very short delay – swing into action in order to compensate or "sterilize" the effects of the results of rate changes in the domestic monetary basis assets. The exchange of rate intervention effects – in particular sterilized intervention – has been an issue debated in literature. In the early fluctuation of the 70s, both "clean" and "dirty" administration fluctuation was favored. During this period, the U.S. were criticized for not intervening in the value of the dollar. Around the 80s, the consensus among economists, authorities and participants of foreign trade was that the intervention would have little and transient effects on exchanging the rates. However, in 1985, after the meeting with economic leaders of the G-5, official's sights were that intervening in markets would be useful. From that date on, large and regular interventions in the markets of exchange rates have been happening. According to Taylor (1995), official intervention can influence the exchange rate through two ways: by changing the relative supply of assets and by signaling with policy change intentions.

Target zones for exchange rates

A "target zone" is an extension within which the authorities are committed to maintaining the nominal exchange rate. According to Pires (2005), mechanism of exchange rates of the European monetary system, during the 80s, is an example of a multilateral target zone. This model works on the assumption of rational expectations. The money
supply is a variable policy under the control of the authorities. A fluctuation in the variable trading of currencies is allowed, the authorities do not alter the money supply to compensate for these movements, so that the end result will be the same currency fluctuation. In this model, authorities intervene when the exchange values are near the upper or lower extremities, which alter the level of fundamentals so as to keep the exchange rate within the target zone. This model implies that the relationship between exchange rate and fundamentals have the same curve of behavior. The models for determining the exchange rates used up to this moment and described in this chapter show the difficulties in determining the correct value of one currency in relation to the others, in addition to the price conditions which require perfect replacement of assets and capital mobility. These conditions, in turn, depend on external interference, whether they are economical policies of countries or their economical conditions in relation to international trade. Factors of interference may involve from official intervention to even hidden intervention of public authorities. Thus, it is possible to observe that the model to determine the rate depends equally on both economical conditions and political and economical aims of authorities, subject that will be developed in the next topic.

THE EMPIRICAL EVIDENCE IN EXCHANGE RATE MODELS

The determination of exchange rates depends on political and economical factors within a historical context that includes country needs and their relations with the rest of the world. Some models are sustained for some time, being supplanted by others as financial and economic environment changes occur.

Classic monetary models

Until the 70s, monetary models of price flexibility could support the monetary currency control thesis. From that date on, the model cannot provide good explanations for changes in exchange rates: the estimating equations begin to fail, providing bad suitable data, exhibiting incorrect coefficient signs and failing in general diagnostics equations. Some authors have sought to explain these failures in bad description of econometrics, while others argued that great changes in deficits or surpluses during the analyzed periods generate important effects which are not adequately captured in simple monetary models.

Eiteman et al. (2002) argued that the principle of purchasing power parity is too fragile for the model, since the goods do not move between countries with zero cost. Likewise, the quality issue reflects the likes and the consumption conditions of the countries. The evidence for the monetary model with adherence to the prices also fails when data analysis are extended beyond the 70s.

According to Taylor (1995), more recently the application of a multivariate co-integration analysis and dynamic models for a number of exchange rates, there is some evidence that supports the monetary model of long-term equilibrium, toward which long-term exchange rates converge. Since all monetary models fail for a long-term monetary equilibrium condition, these tests are unable to discriminate among the various alternatives. The utility suggested by this approach still remains to be demonstrated. The results suggest that there are speculative forces working in the foreign exchange market, which do not reflect in the usual definitions of macroeconomic fundamentals.

Equilibrium and liquidity model

According to Eiteman et al. (2002), models that address the exchange as a market asset suggest the mobility of national and international investments. This model is able to explain the changes in nominal exchange rate and their excesses in relative price changes. Consequently, it explains the variation in real exchange rates, similarly to the model with adherence to the prices. However, there are arguments that the rejection of the non-stationary hypothesis is an evidence against the model with adherence to the prices and in favor for the equilibrium model. On the other hand, this model remains the same when persistent movements of real and nominal rate exchanges occur.

According to Taylor (1995), there is evidence which rejects the simplest equilibrium model. It is probably due to endogenous variables. In other words, the exchange rate regime where countries suffering major disorders are more likely to choose flexible exchange systems. Since it is unlikely that all the conditions are known in practice, there are theories which support the abandonment of these simpler models and that others should be developed with the flexibility of some assumptions. Studies prove that countries with fixed exchange rates tend to introduce trade and capital flow controls to control international reserves. Although empirical evidence rejects the simplest equilibrium models, it is not possible to invalidate all models that use this approach. Financial leverage and its effects on exchange rate fluctuation were analyzed by Tille (2008). The results showed that financial integration can lead to large differences in the results between countries after an economic shock. The effect between countries is related to heritage issues, profit sensitivity and the possibility of substitution.
between goods from different countries.

**Portfolio equilibrium model**

Few empirical studies have been performed with a portfolio equilibrium model approach to the market of exchange rate. According to Taylor (2005), the probable cause is the difficulty of data processing. Reduced versions of the model were applied with poor results: the calculated coefficients are generally insignificant and there are residual autocorrelation problems. The imperfect substitution of domestic and foreign assets, which are assumed in this model, is equivalent to assuming that there is a risk award which separates the expected depreciation of the currency and the interest rate difference between domestic and foreign markets. A few studies are consistent with recent literature on market exchange rate efficiency, which suggests the existence of a significant risk award and of non-rational expectations. But as stated by Garcia and Olivares (2000), the existence of this award is not fully proven.

Bartram et al. (2010) consider that companies can manage their foreign exchange exposure through pricing policies, operational hedge and financial strategy hedge. Using a sample of 1,150 non-financial companies belonging to 16 countries, they showed that the possibility of transfer pricing and operational hedge is important to reduce exposure level. Each one of the used ways can minimize the foreign exchange exposure of companies and the use of the three alternatives can reduce their gross exposure to around 70%.

The foreign exchange exposure can affect companies that operate only in the domestic market. Aggarwal’s and Harper’s (2010) studies showed that the effects on domestic companies are not significantly different from companies with international operations. They proved that effects of foreign exchange exposure increase with the time used for their measurement and are inversely related to company size, positively related to research and development expenditures and leverage.

**Intervention effectiveness**

Recent literature has been going through some difficulties to reject the hypothesis that exchange rate intervention has very little effect and is short-lived. Obstfeld (1998) argues that the intervention does not have significant effect results, and that the rate realignments are consequences of macroeconomic coordination. Tests involving the influence of ads produced conflicting results. Due to great uncertainty about the relationship between rate changes and fundamentals, some authors agree that intervention signs can help agents coordinate their expectations, converging at an exchange rate according to authority expectations. Despite some studies suggest a significant connection between intervention and rate adjustments, their effectiveness is not yet clearly proven.

**Target zones effectiveness**

The results of the application of this model in various systems, even with the Bretton Woods regime and the gold standard, were rejected. According to Kempa and Nelles (1999), a large number of studies has "explicitly or implicitly rejected the implications of the model with respect to exchange rate" (p. 179). Even graphically the behavior of the exchange rate in relation to fundamentals did not generate an "S" curve, as predicted by the model. Because of this empirical rejection of the model, several authors attempted its rehabilitation by changing some assumptions, such as intra- marginal intervention, adherence to the prices, credibility of authorities, among others. According to Taylor (1995), this could explain why the research found little non-linearity evidence or the characteristics of the S-shaped curve. Even with these changes the results are contradictory. Deriving from the own formulation that implicitly brings the market efficiency model, but supports contrary evidence.

**News effect on exchange rate movements**

There are some approaches regarding news effect on economic fundamentals that turn into unexpected exchange rate movements. The basic premise is that if the market is efficient, unexpected exchange rate changes may only be due to the news. Thus, there would be a change correlation between the arrival of the news and its effects. Many studies indicate a significant news effect, however these effects are reflected with a certain delay.

**Performance prediction through "out-of-sample" analysis**

Another way to examine the empirical content of exchange rate theories is to examine the "out-of-sample" data used to predict their performance. The conclusion that emerges from these studies is that no model which uses market resources exceeds the simple random walk. Empirical evidence suggests the existence of market forces in foreign currencies that interfere with macroeconomic fundamentals. Models that seek to establish a currency balance end up finding reflections in trade and capital flow policies. It demonstrates that the currency is just reflex from other policies of a country.
Thus, government intervention has short-term effects. The establishment of goals for quotation of exchange did not find significant results for its efficiency. It directed the studies for the news effects and the verification of "out of sample" purposes. The conclusions are that the news effects make it difficult to establish which period of adjustment between the dissemination of the news and the effects on the currency price is. The results of several studies suggest a relationship of forces between economic agents and exchange policies. As the authorities establish standards, officers will be adjusting themselves. Thus, the effects will end up diluting themselves and the price of the currencies will look more like a random walk.

EMERGING MODELS FOR EXCHANGE RATE DETERMINATION

As stated by Taylor (1995), it has been extensively demonstrated by literature that there are large and persistent movements in exchange rates which apparently are not explained by macroeconomic fundamentals, but by the expectations of the market, a sort of self-fulfilling prophecy. Studies by Allen and Taylor (1990) and Ito (1993) suggest that the expectations of agents may explain the short-term movements. There is an emerging literature on market microstructure which seeks to understand this divergence of fundamentals. Its focus is the behavior of agents and the characteristics of the market instead of the influence of macro fundamentals.

More recent studies seek to evaluate currency behavior by using classical statistical methods, mainly the use of auto regressive vectors (ARV) which address the economic variables as endogenous variables. Despite some satisfactory results, the models are complex and difficult to understand. Another method recently used is the fuzzy model which demonstrates the ability to describe systems similar to human's thought. The application of this modeling shows satisfactory results. However, the variables used for short-term do not present the same performance when used in longer periods. Similarly, variables with good long-term predictions do not repeat the results when used in short-term.

A speculative movement, unrelated to economic fundamentals, can start when agents change their expectations regarding the currency and start buying, rushing to its appreciation, in a movement known as "herd effect" other approaches. Other used by Frankel and Froot (1990) and Allen and Taylor (1990) suggest that the anomalous movements of foreign exchange rates are a result of analysts who do not base their predictions on fundamentals or economic theories, but on the occurrence of periodic movements.

Taylor (1995) revealed that some studies show a high proportion of use of this type of analysis, known as "technical" or "chartist", mainly for shorter periods. Eiteman et al. (2002) stated that the long-term technical analysis has become more popular due to recent research findings which indicate the possible existence of long-term "waves" in currency movements under fluctuating foreign exchange rates. Chiarella et al. (2002) emphasized that "traders" utilize technical indicators (oscillators) that point out when the market is over-bought or over-sold, tending to give non-linear movements when small movements in the foreign exchange rate occur, which do not activate the oscillator. The questions for microstructure analysis are often quite different from those applied in macroeconomic studies.

Thus, the researchers' attention begins to turn to microstructure topics, such as buying and selling "spread" determinants, trading and volatility volume, heterogeneity of expectations and processing and use of information. According to Eiteman et al. (2002), predictions can be based on several techniques: econometrics, trend analysis and graphical analysis or on the blend of them because in prediction it is important to approach as much as possible to reality.

Emerging models can be placed into two main lines of thought: the ones who consider the agents' expectations and the ones who reinforce mathematical models. The complexity of the models only partially explains the behavior of the currencies, in addition to understanding difficulties and modeling complexity. Some models include various economic factors in addition to financial aspects. Tsen (2011) elaborated a study having a set of factors to determine the exchange rate. He shows that productivity differences, the price of petroleum and the differences in foreign exchange reserves are important in setting the long-term exchange rate. His study involving several Asian countries shows that the impacts of these factors are different in each country.

Evaluating the economic expectations involves greater understanding of human behavior and all related variables. This requires unlinking the "homo economicus" of classical economics. The challenge is to find a mathematical model that includes behavioral aspects.

REFLECTIONS IN ORGANIZATIONS

Currency exposure may affect companies that operate only in the domestic market. Aggarwal and Harper's (2010) studies show that exchange rate effects on domestic companies are not significantly different from those with international operations. They prove that the effects of foreign exchange exposure increase with the time horizon used for its measurement and which is inversely
related to the company size, positively related to the cost of research and development and to the leverage.

According to Bartram et al. (2010) there is little empirical evidence of the effects of foreign exchange exposure in companies. One of the reasons may be in managing this exposure. With a sample of 1,150 companies from 16 countries, the accounting information and the currency exposure declaration were analyzed. The study investigated that the managers can use pricing policies, operational hedge and financial hedge in order to mitigate the effects of currency fluctuations.

The conclusions are that the companies can reduce exposure to exchange rates to around 70%, and the transfer prices can be reduced by 10 to 15%, the operational hedge accounts for the same percentage and the financial hedge is responsible for the reduction of 37 to 43%.

Their analyzes suggest that the companies surveyed are aware of the exposure and adjust their activities. Company behavior in relation to foreign exchange exposure in the euro zone was studied by Hutson and O’Driscoll (2010).

With a sample of 1,154 companies from 11 European countries, being seven of them from the euro zone and four of them from outer countries, they show that the companies belonging to the euro zone are as exposed as those of other countries.

Furthermore, they reveal that the direct currency exposure management is routine for most companies. In turn, operations such as loans and foreign currencies and direct investments in order to eliminate the economic exposure are rarely used. They conclude that managers are well-qualified to assess the extent of movements in exchange rates, emphasizing the need for foreign exchange management to have to be accomplished in all levels of the companies.

Chue and Cook (2008) studied the effect of currency depreciation in emerging-country companies. They show that the impact on the stock value of companies varies according to the analyzed period. In a sample of 14 countries it is possible to verify negative impact in the period from 1999 to 2002 and this trend practically disappears in the period from 2002 to 2006. They conclude that the reduction of the negative impact is related to changes in the structure of the government market in those countries, rising inflation-linked debt and reducing foreign exchange.

Therefore, the companies have hedge mechanisms in order to manage foreign exchange exposure.

**FINAL CONSIDERATIONS**

Foreign exchange exposure of companies is due to currency volatility. Understanding these changes in conversion rates and how to manage these changes have been a challenge for organizations. This paper reviews exchange rate determination models, their main determinants and empirical evidence of their effects on business performance. As it is shown in this paper, finding a mathematical model to explain currency behavior is a complex task and is still under construction. The challenge involves market participants, policy makers, financial and non-financial institutions and international relation policies. The empirical evidence shows the effects on organizations and how they change over time. The use of financial mechanisms and organizational policies can have their effects changed as a result of environmental changes, whether they are political or economical. The human factor may have to be included in the exchange rate determination models because econometric models have shown to be insufficient in precisely determining the oscillation.

Derivatives are responsible for some major financial problems faced by large financial institutions with reflections in the global economy. Among them we can mention the Orange County bankruptcy, the Barings bank bankruptcy and more recently the problems of sub-prime mortgages. On the other hand, there is evidence that their use as risk transfer mechanisms is important for managers.

The increase in the number of derivative trading may be the indicator that companies are broadening and managing their foreign exchange exposure. The latest report of the BIS - bank for international settlements (2014) indicates a daily turnover with derivatives of 5,345 billion dollars in April/2013, an increase of 250% compared to April/1998 when 1,527 billion dollars were traded daily.

The exchange rate policy of a country directly affects the decisions of the company. In turn, studies show a relationship between the structures of countries and exchange rate policy. As demonstrated by Chue and Cook (2008), the provision of financial instruments allows companies to more safely manage their currency exposure. Decisions about the currency risk exposure of companies involve the knowledge of managers about exposure size and how it can affect the various levels of companies, as posted by Hutson and O’Driscoll (2010).

The importance of this study is to gather economical policies with managerial decisions, showing the relationships between political and managerial decisions if there are many determinants for the exchange rate, as Eltman et al. (2002) show, there are also many mechanisms that can be used to manage this exposure, as stated by Chue and Cook (2008). The managers’ understanding and the establishment of risk policies are required. Consciously, the article questions many things rather than giving answers, since the aim is to think about theory matter rather than point solutions.
Market expectations should be attached to macro economy influences, which, on the other hand, are related to structural factors which may be influenced by the performance of financial institutions. The future holds the challenge of how to measure so many aspects in a single model in order to assist managers in more efficient management of foreign exchange exposure of organizations.

Conflict of interest

The author has not declared any conflict of interest.

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