Facultad de Ciencias Económicas y Empresariales

TRABAJO FIN DE GRADO

GRADO EN ADMINISTRACIÓN Y DIRECCIÓN DE EMPRESAS

FOREIGN EXCHANGE RISK MANAGEMENT: ISSUES, ANALYSIS AND EMPIRICAL APPLICATIONS

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6 de Junio de 2014

ABSTRACT

This paper aims to give an insight into the topic of Foreign Exchange Risk and the management of this risk. In an increasingly globalized economy, currency rates are essential for international trade and finances. And while other aspects of financial activity are well-known, foreign exchange risk management is still developing. Especially in a country as Spain, where financial markets are still being built in many aspects. The objective of this paper is to give an overview of the antecedents and foundations of this exposure, of the arguments in favor and against hedging the exposure, of the different types of exposures and of the instruments and strategies available. Finally, the paper aims to give an insight into the situation of small and medium companies in Navarre regarding foreign exchange risk management.

KEY TERMS

- Foreign exchange risk
- International Monetary System
- Floating currency
- Volatility
- Foreign exchange risk management

ACKNOWLEDGMENTS

I have to thank Javier Marcilla and Leire Huarte from Irumold for welcoming me in the company and be willing to explain the working and the finances of the enterprise and to anwswer all my questions.

Also I have to thank the 4 companies that answered me, because although they do not implement foreign exchange risk managements, their answers were very useful for my paper. So my acknowledgments to Triman SA, INPRE, Bodegas Irache and Industrias Navarras de Precisión.

Finally, thanks to Mar Rubio, who directed this paper and helped me with every issue I faced.

CONTENTS

1. INTRODUCTION

In an increasingly globalized economy, international trade and international finance have become key issues for countries and for companies. International financial markets have an increasing influence in the world economy, and the consequence is the rising importance of currency markets. International trade needs currency exchange in order to work. And the floatability of currencies is the origin of foreign exchange risk.

The objective of this paper is to give an overview of this subject and its application to the business world. In the first section after this introduction the paper will introduce the origins of the current monetary system and the floatability, the concept of volatility (key of foreign exchange risk), the working of the international currency market, and the different types of foreign exchange risk that exist. In summary, it gives an insight into foreign exchange risk and its foundations.

Afterwards, the paper summarizes some key aspects of the management of foreign exchange risk: the fact that many companies decide to do nothing about it and what justifications are the most common for this behavior, whether there are real economic reasons for not hedging the risk, and an overview of basic strategies and instruments to manage this risk. The last include concepts as natural hedging, and different derivative financial instruments: currency forwards, currency swaps, currency futures and currency options.

Finally, the empirical part of the paper aims to give a closer look to the reality of this topic in the daily activities of Navarrese enterprises. A group of companies were contacted in order to find out if there exists concern about this risk, and what do companies do for hedging exposure. After the information capture and analysis, the main conclusions will be exposed. These include impediments for hedging, false and true beliefs of enterprises and trends regarding foreign exchange management.

The paper aims to give an overview of a subject that is not a common topic for research in Spain, while in other countries it is way more developed. But foreign exchange risk management is becoming more important due to the increasing international trade and the tendency that companies have to expand themselves abroad.

2. FOREIGN EXCHANGE RISK

A suitable definition for Foreign Exchange Risk could be the following:

> "The risk of a change in currency exchange rates that could affect the value of an agent's position in a market" [1]

The foreign exchange exposure is a relatively recent phenomenon. Since the fall of the Bretton Woods system in the first years of the 1970 decade, many currencies are freely floating and the exchange rates oscillate continuously. The International Monetary System implies very volatile currency markets where meteoric and drastic movements in the currency rates often occur. This reality, when applied to economic activity, origins the Foreign Exchange Risk.

2.1 Origin and background

The Bretton Woods System (1944-1971) established a scheme of fixed exchange rates. The currencies that made part of the system had to maintain a stable exchange rate against the dollar, which was the reference currency at a global level, with a fluctuation range of 1%. Dollars were supported by the gold of the Federal Reserve in the US, and the US Dollar was the only currency directly convertible to gold. The objective of this system was to maintain the stability of currencies in order to develop international commerce and finances. (Bordo, 1993)

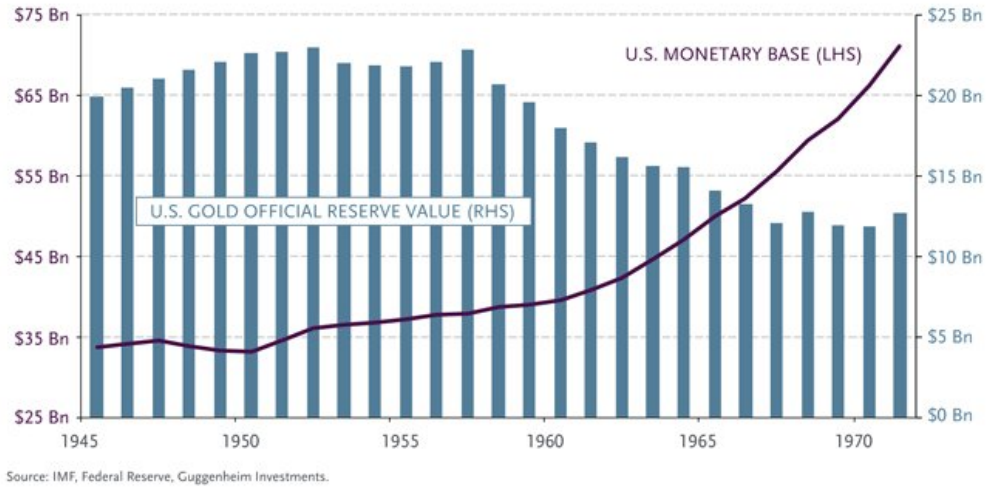
There are many reasons and circumstances that explain the fall of the Bretton Woods System, but the next is a simple explanation. At the beginning of Bretton Woods, the trade surplus of the United States allowed the dollar to be the reference currency and be supported by the gold reserves. But in the decade of 1960 the growth of public spending caused by wars and new welfare policies, together with the end of the trade surplus (the United States began to import more that they exported) obliged the monetary authority to create more dollars and increase the monetary base. As doing so, the Dollar began to be decreasingly supported by its gold reserves, and after some years other countries started to wonder whether the situation was sustainable or not, and whether the United States could face the promise of convertibility of the Dollar into gold at the promised fixed rate. European countries began to change their dollars to gold and to German marks. In 1971, Great Britain and France required the United States to convert their dollar reserves into gold. That would have destabilized the Federal Reserve (in fact it would have implied the

[1] (Cascante Rodrigo, 2014)

FED running out of gold almost entirely), so President Richard Nixon ended the convertibility of the Dollar and devaluated it. (Time Inc., 2008) (Gowa, 1983).

Figure 1 shows the disequilibrium between the value of the gold reserves and the monetary base at the end of the Bretton Woods period.

Figure 1: US gold reserves vs monetary base 1945-1971

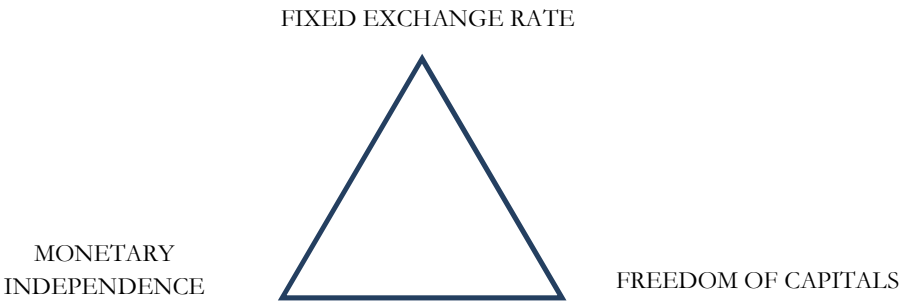


Source: (Guggenheim Partners, 2012)

After the fall of the Bretton Woods System, the current International Monetary System aroused: currencies were no longer tied to the US Dollar and they floated depending on the international movements of the currency market. Since then and until today, the exchange rate of a currency depends on the global belief about its strength: what define its rate are the level of supply and the level of demand. When a currency is highly demanded the price goes up, and vice versa. Countries can influence exchange rates: if they want the currency to depreciate, they can print money and sell it in the market; in the opposite case, they can use the reserves in foreign currencies to buy their own currency and push it up. Although printing and selling money is rather easy, the opposite action requires a level of foreign reserves. If reserves are finished, the possibility to strengthen the currency vanishes.

However, not every currency is floating in the market. Some of them have exchange rates fixed by their monetary authority or are tied to another currency (mostly the US Dollar). But in that case they should sacrifice something, just as floating currencies sacrifice the right to establish the exchange rate. Figure 2 shows the three monetary characteristics that a country can have. But in practice a country only have two out of the three; it should sacrifice one in order to obtain the others:

Figure 2: The monetary dilemma



Source: Own elaboration

For example a country with monetary independence and freedom of capitals cannot fix the exchange rate; its currency must be floating. Most Western countries, as the United States, Great Britain or Switzerland have this monetary model. Other countries, with monetary independence, decide to fix the exchange rate scarifying the freedom of capitals in the country. A clear example is China. Finally there are countries with freedom of capitals, which fix their exchange rate to another currency, losing this way their monetary independence. An example is the situation of the European Monetary Union. Even when the Euro is a floating currency, all countries in the system scarify their monetary independence and central banks to share a unique currency.

The main characteristic that defines floating currencies and the International Monetary System is Volatility.

2.2 Volatility

Volatility is the key issue for Foreign Exchange Risk. A suitable definition could be the following:

"Volatility is the relative rate at which the price of a security moves up and down. If the price moves up and down rapidly over short time periods, there is high volatility. If the price almost never changes, it has low volatility[2]*. Volatility is a measure of the risk or uncertainty faced by participants in financial markets*[3]*."*

In order to measure volatility several points of view can be taken. One is the absolute change in the currency rates. Also the variation can be measured in relative terms, using percentages. Finally, the most used method in the financial world is to use the "Price Interest Point", most commonly known as PIP. A PIP is the smallest possible variation in the price of a currency pair. As currencies are expressed to four decimal places, one PIP

[2] Definition from the website www.investorwords.com
[3] Definition from the statistical portal of the OECD http://stats.oecd.org/glossary

equals 0.0001 units of the counter currency (except when this last is the Japanese Yen, which smallest variation is 0.01).

Figure 3 is built with the closing prices of the USD/EUR crossing for May 2014. As illustrated, just a few weeks can involve a change of 3 pennies. This may not sound like much, but when applied to transactions of thousands of euros or dollars, these variations may result critical. As can be seen, in the three last weeks the exchange rate has gone down from 1.39 to 1,36 (the Dollar has appreciated), which means that the same amount of dollars equals more euros than three weeks ago.

Figure 3: USD/EUR Exchange rate May 2014

Source: (Inversión & finanzas.com, 2014)

In the long term, volatility is even more critical (as this variable is deeply affected by the time factor. The following graph shows the variation of the USD/EUR exchange rate in the last five years. The range of variations goes from 1.20 to 1.50, and this can have great impact on long-term activities such as investments, mergers, acquisitions…

Figure 4: USD/EUR Exchange rate June 2009- May 2014

Source: (Inversión & finanzas.com, 2014)

The average daily volatility for the USD/EUR in the last year has been 80.4 PIPs a day or 0.59% a day (computed with the volatility tool in www.forexticket.com). Compared to the rest of currency pairs in FOREX, this volatility is medium-ranked.

Volatility between the Euro and the Dollar is so important because the European Union and the United States have very large economic and commercial relations. And the exchange rate between the two currencies affects all these transactions. The pair Euro-Dollar is the most traded currency pair in the global currency market (FOREX, 2014). That is why volatility between the Euro and the Dollar and its consequence, the foreign exchange risk, is so important nowadays. But in the last decades, although transactions between the United States and Europe continue to be very important, relations with other regions (especially Asia and emergent countries) have developed deeply and so, other currencies have become important in the international scenario. Figure 5 this decrease in the percentage of transactions between the US and Europe with respect to their total trade.

Figure 5: EU-US bilateral trade 2000-2010

Source: (The Wall Street Journal, 2013)

For this reason, some foreign currencies have become more and more important and are now even take as reference. Some examples are the Japanese Yen, the Chinese Yuan or the Hong Kong Dollar.

Table 1 provides some figures to illustrate this:

Table 1: International transactions of the EU with its main partners in 2012 (billions of euros)

	Goods and Services	Foreign Direct Investment
USA	811.2	3191.4
CHINA	484.7	144.9
JAPAN	160.5	260.3

Source: (European Commission, 2014)

Table 2[4] collects the volatility of some significant currency pairs in the last year (from May 2013 to May 2014, 52 weeks included). Every pair includes the Euro or the US Dollar, the two most used currencies in FOREX. Other important currencies that are included are the Pound (GBP), the Australian Dollar (AUD), the Swiss Franc (CHF), the Japanese Yen (JPY), the Canadian Dollar (CAD), the New Zealander Dollar (NZD)… And also the most and least volatile pairs are included:

Table 2: Volatility in pips, dollars and relative change (intraday average for 10 years: May 2003 - May 2014)

Pair	pips	$	%
USD/MXN	1277.7	9371.6	0.99
EUR/NOK	626.4	1049.3	0.77
USD/NOK	571.8	957.8	0.96
EUR/TRY	330.9	1580.0	1.16
EUR/NZD	163.4	1388.1	1.02
EUR/AUD	139.4	1297.4	0.95
EUR/JPY	116.7	1147.3	0.84
EUR/CAD	104.2	960.7	0.71
GBP/USD	99.4	993.6	0.59
AUD/USD	88.9	889.3	0.96

[4] The complete table with more currency pairs can be found in the annex data to this paper.

Pair	pips	$	%
USD/JPY	86.2	847.4	0.85
NZD/USD	84.3	842.7	0.99
EUR/USD	80.4	804.2	0.59
USD/CHF	67.8	758.1	0.76
USD/CAD	63.7	587.7	0.59
EUR/GBP	47.7	798.4	0.59
EUR/CHF	40.5	453.4	0.33
USD/CNY	36.9	59.9	0.06
USD/HKD	16.4	21.1	0.02

Note: most investment pages, institutions, traders… use direct quotation (where the base currency goes first), but in this paper indirect quotation is used as it is simpler for calculations and explanations. So, if the table shows EUR/USD, the paper will show USD/EUR.

Source: (Forex Ticket, 2014)

The volatility between the Euro and the Dollar is highly important because a significant percentage of global trade implies these two currencies. But as it was said before this pair is not the most volatile. The most volatile currency pair during this last year has been the Mexican Peso against the Dollar MXN/USD, followed by the Norwegian Crown both against the Euro and the Dollar (NOK/EUR, NOK/USD) and by the Turkish Lira against the Euro TRY/EUR. If instead, the last ten years are considered, still the MXN/USD remains the most volatile pair.

When compared to the volatility of the USD/EUR, which has an average of 80.4 PIPs a day, the 1277.7 PIPs a day of the MXN/USD is far more shocking.

At the far end we found some currencies with such a low volatility that their exchange rates stay pretty stable in the long run. There are two possible explanations for this phenomenon: on one hand we found strong currencies with good reputation which trend to be stable, for example the British Pound or the Swiss Franc, and on the other hand those currencies whose rates are controlled by the monetary authority. At the bottom of the table we found two special cases: the Chinese Yuan (CNY), whose exchange rates are tightly controlled by the Chinese Central Bank in order to maintain the level of exports, and the Hong Kong Dollar (HKD), which is supported by US dollars at an almost fixed

exchange rate (that is why the exchange rate HKD/USD has a variation of only 16PIPs a day, or a 0.06%).

Very volatile currencies can be useful for those agents who seek benefit when operating in this market, as their oscillations offer more opportunities for profit. But regarding international commercial activity or investments, a very volatile currency represents a higher risk, as it is very likely that the position of the agent will be affected by a variation in the exchange rate.

In summary, volatility is critical when it comes to foreign exchange risk. In the next section the reason behind the high volatility of currencies will be explained. When operating with very volatile currencies, the risk of a change in the position of the agent is very high, although is necessary to remember that the risk does not only imply potential losses, but also potential gains. If the market moves to the advantage of the agent, this last will have a profit, but as uncertainty hinders economic activity, many actors in the market decide to protect themselves. When the uncertainty banishes, potential gain or losses are eliminated (or in some cases, limited) but as always, risk avoidance comes at a cost.

2.3 Global currency market: FOREX

The international currency market is called FOREX (Foreign Exchange Currencies Market) and provides exchange rates, the prices of currencies, as any other market does: based on the prices accepted by agents on transactions, supply and demand. This market allows individuals, companies and institutions to exchange purchasing power, enabling global trade and investment. It is the larger financial market in the world, with a higher transaction volume than the rest of financial markets together, and it is possible to operate in it 24 hours a day. This condition of continuous market, added to its high liquidity, provokes the enormous volatility of the currencies, which was explained previously in this paper. The main centers for currency negotiation are the New York Stock Exchange, the London Stock Exchange and the Tokyo Stock Exchange.

In FOREX we find two types of exchange rates trading: spot rates and forward rates. Spot rates are exchange rates agreed for an operation that closes within two days from the date of negotiation. Forward rates are those for a period longer than two days. Thus, foreign exchange risk only appears in forward transactions, as the spot rate that would be in the future date is unknown. In order to calculate forward rates, the theory of Interest Rate Parity is used. The formula applied to obtain the forward price is the following:

Spot rate= Foreign currency/Domestic currency

i_f= interest rate for the foreign currency

i_d= interest rate for the domestic currency

T= time

$$\text{Forward Rate} = \text{Spot rate} * \frac{1+i_f * T}{1+i_d * T}$$

When there is a deviation in the currencies market and the effective forward rate does not meet the theoretical rate, there is a possibility for arbitrage. Arbitrage consists in exploiting market deviations in order to obtain a non-risk profit.

The Interest Rate Parity formula has the following consequence: in a pair of currencies, the one with a higher interest rate will depreciate, and vice versa. These natural movements of exchange rate are not perfect, but have critical implications for international economic activity. For instance, an agent decides to take a loan in a foreign currency which has a much lower interest rate than his domestic currency. When the agent borrows the money in a foreign currency, he exchanges it for its domestic currency at the current spot rate. Then there are two options, he can wait to the moment of repayment and exchange at the spot rate, which is unknown at that moment, or he can assure the exchange rate with a forward operation. In the last case, differences between interest rates are compensated with a strengthening of the foreign currency, so at the end the agent will have to pay more money in domestic currency to repay the loan in foreign currency and its interests. In this way, forward rates prevent agents from arbitraging. And in the case that the agent decides to risk its position and wait to the spot rate of the repayment date, he may or not obtain a beneficial exchange rate. But as Interest Rate Parity is usually fulfilled, borrowing in a currency with lower interest rates (or investing with higher rates) will usually have the same effect than doing it in the domestic currency.

But besides theoretical calculations, there are real factors that affect exchange rates. Those factors can be summarized in two groups: those which depend on international trade (exports and imports) and those which depend on capital movements (transferences and foreign investments). And at the same time, a number of variables have influence in international trade and capital movements. Some of these variables are local interest rates and the spread between them, real and expected inflation rates and their spreads between countries, the balance of the current account of countries, economic conditions, government policies, juridical safety, sovereign risk, natural disasters and even rumors. All these variables determine the level of supply and demand and establish prices for currencies.

Agents who make money exchanges in order to operate their businesses are deeply affected by the behavior of FOREX rates, as the rates that they will obtain depend directly on them. And as currencies do not always meet the theory, foreign exchange risk shows up.

2.4 Types of foreign exchange risk[5]

This risk that comes from the variation of currency rates in the market can show up in several economic scenarios, and so it is divided into different categories.

There are three types of foreign exchange risk:

2.4.1 Transaction exposure

This risk occurs when exchange rates vary and the company has already engaged into financial obligations.

This risk can affect all operations in international markets in three moments:

- The closure of a buy-sell operation

  Example: A Spanish producer imports raw goods from a supplier in the United States. There is an agreement between the two agents to trade in American s. When the operation is set, the price fixed is 10000$. In order to pay, the importer needs to obtain dollars by selling euros in the currency market. At that moment of time, the exchange rate is 1.3804USD/EUR, so the price in euros for the importer is 7244.28€ (10000$ ÷ 1.3804USD/EUR). But it is very unlikely that the goods will be sent and the payment made at that same moment, when the price is agreed. In the case that the payment will take place in 15 days, for example, it is probable that the exchange rate between the Euro and the Dollar will fluctuate. If the rate is at the moment of payment 1.3509USD/EUR, the quantity in euros that the importer will have to pay to obtain 10000$ and compensate the supplier will be 7402.47€ (10000$ ÷ 1.3509USD/EUR). In other words, the price in dollars remains the same, but the buyer will pay more for the same goods due to the exchange rate variation.

  Of course, if the exchange rate had gone the other way, the Spanish producer would have paid fewer euros for the same goods. But this insecurity is a risk.

  If instead of imports the case was about an exporter who is paid in a foreign currency, the change in the currency rate that would harm him would be a

[5] This section is an own elaboration based on the knowledge acquired and the class notes from the subject "Finanzas Internacionales", taught by Cascante Rodrigo, R. during the spring semester of the course 2013-2014 in the Public University of Navarre. Numerical examples in the section are original.

depreciation of the foreign currency. Because once the money is changed to domestic currency

- The valuation of an asset or a liability

  Example: A Spanish investor buys stock of a Japanese company worth 1 million Yen when the exchange rate is 142.96JPY/EUR. So the value of his investment in euros will be 1000000JPY ÷ 142.96JPY/EUR = 6994.96EUR. But one month later, the exchange rate is 149.36JPY/EUR. So (and supposing that the market value of the stock remains 1million yen), the value of his investment in euros will no longer be 6994.96, but 6695.23EUR (1000000JPY ÷ 149.36JPY/EUR). The investor would lose money even when the stock value remains the same.

  As in the previous case, the situation could be the opposite and the investor could have won money from the variation in the exchange rate.

  In the case of a loan (borrowed or lent), the company will also need to take into account the possible changes in interest rates of the currency in which the loan is nominated (in addition to changes in the exchange rate).

  Example: a German company decides to take a loan from a Mexican bank (in pesos) because the interest rates are more favorable, and then change the pesos to euros. But when the date of repayment arrives, it is possible (and likely because of the interest rate parity, which states that the currency with lower interest rates will appreciate, and vice versa, in order to stay in equilibrium) that the exchange rate MXN/EUR has lowered. In such a case, the company would face a repayment where, while the amount in pesos would stay the same, the quantity in euros would be higher than expected at the beginning.

  But there is also the possibility that the exchange rates moves the other way round and the company would benefit from it. But if the parity held, the cash flow of the company would be affected negatively.

- The borrowing or lending to subsidiaries

  When a parent company decides to receive or give a loan to a foreign subsidiary, it incurs in the same risk mentioned in the previous paragraph.

  As the borrowing position has already been explained, the following is an example of a lending position.

  Example: the mother company in the United States gives a loan to the new subsidiary in Australia. The loan is nominated in Australian dollars because the

mother company has an easier access to currency markets and can obtain better prices than its subsidiary. The initial exchange rate is 1.07AUD/US and the total amount of the loan is 100,000AUD, so for the mother company that means a loan of 93,458USD. The first payment of interests has to be made 6 months later and amounts 2000AUD, so the mother company calculates that it will obtain at the current exchange rate 1869USD. But when the moment arrives the exchange rate has moved to 1.16AUD/USD, so when exchanging the 2000AUD the company will only obtain 1724USD. And this uncertainty will remain a problem throughout the life of the loan.

As explained, transaction exposure includes situations that every company with any international presence faces on a daily basis: trading, borrowing or lending, investing… At this moment it may still seem that this risk deeply affects only big and internationalized companies, but that is not true. Any enterprise, despite its size, which is involved in foreign trade (both exporting as importing) will have to face this uncertainty at some moment. And when this risk is recognized, there are only two paths: to take it and jeopardize the results of the company, or to do something about it.

But there exist two more types of foreign exchange risk, which may not be as obvious as the transaction exposure.

2.4.2 Operating Exposure

It is the extent to which exchange rate variations, combined with changes in prices, will alter the future operating cash flows of a company. This exposure includes all the circumstances where the activity of a company is affected by variations in the price of its domestic currency against any foreign currency without any specific transaction going on. In some cases, the company does not even need to operate with the foreign currencies whose exchange rate is varying.

Example: There is a Spanish company who uses the Euro for all transactions, both paying its suppliers and charging its suppliers. As doing so, it avoids the transaction exposure explained above. An important fraction of its sales is abroad, to the United States, but as their clients agree to pay in euros, the financial department of the company does not perceive any risk. But at one moment, the company starts to notice that the orders from its American customers are smaller than they were in a first stage. When someone finally decides to look at the exchange rate between the Euro and the Dollar, it turns out that the Euro has strengthened. The prices in

euros remained identical, but for the American clients they were more expensive than before, because a larger amount of dollars was needed to obtain the same amount of euros.

This situation is a reality nowadays in many European countries, including Spain. The Euro has a very strong position in financial markets; it is more expensive than most foreign currencies and so European products seem overpriced in other countries.

For companies, this implies an important operating exposure, as future cash flows of the company, even when all transactions are made in the domestic currency, can vary for reasons beyond the control of the company. Although the example illustrated the situation of a company that operates only in one currency, this risk evidently affects those who function in more than one. The more foreign currencies a company use, the more situations prone to foreign exchange exposure it would have.

As with transaction exposure companies can decide whether to take action on the matter or not.

2.4.3 Translation Exposure

This risk occurs during the consolidation of financial statements between a mother company and its subsidiaries. It is due to the accounting practices applied and the variations in exchange rates.

For example, when a Spanish company wants to consolidate the accounts of its subsidiary in Argentina, it will have to translate all the items from pesos to euros. But depending on the accounting method used, some items will need to be translated using the current exchange rate of the market, and others with the historical exchange rate. This will usually imply differences between the two halves of the balance sheet, which will need to be compensated with a particular record. Furthermore, the income statement will also be affected by the translation. If, for example, the Argentinean peso depreciates, the Spanish company will show in its accounts in euros a lower income from its subsidiary than if the exchange rate had remained stable. In order to compensate these dissimilarities that make appearance, an account called "translation differences" is used.

The main difference with the transaction exposure and the operating exposure is that this risk affects only the Balance Sheet and the Income Statement. As it has no effect on cash flows, this paper will not focus on it, but on the other two.

As explained, variations in the exchange rates affect international economic activity very deeply. Exposure can have critical effects on future income both in large and small enterprises, as well as in the positions of individual or institutional investors. The actual value of foreign costs and revenues would vary, and this can benefit or harm the agent. But this influence can be controlled and the risk can be avoided. The handling of this exposure by enterprises and institutions is called foreign exchange risk management.

It is important to take into account that in some countries, as the US, research has shown that the impact of exchange rate variations in firm value is statistically small (Griffin & Stulz, 2001). This is usually explained by the higher use of derivatives and other instruments in this country. So, it seems correct to assert that the solution for exposure is foreign exchange risk management.

3. FOREIGN EXCHANGE RISK MANAGEMENT

3.1 Whether to manage the risk or not

Foreign exchange risk management is often disregarded by most enterprises (small and medium-sized, mainly) that are willing to enter the international markets. And many mature and secured enterprises pay little or no attention to this activity. This situation is common worldwide, and the implications for business can be extremely critical.

To avoid exchange risk, many companies decide to operate only in their local currency. This can be brought to reality by limiting their activities to national markets (or to same-currency markets, in the case of the European Union) or by imposing their currency to foreign traders. But obviously this implies losing market opportunities, better conditions and potential customers or suppliers. And the second option, to operate in a single currency, can make the company still incur in operating exposure, as justified in the previous section.

3.1.1 Common justifications for not managing risk

Among companies who do operate in foreign currencies but avoid risk management in this issue, there may be some that do not know about the effect that foreign exchange exposure can have, but most of them know it and still do nothing about it. And there are various

reasons which explain this behavior. The most common reasons[6] (Giddy & Dufey, 1993) are the following:

1. The lack of understanding of the person responsible for this task. This can lead to the mistaken belief that exchange risk management tools always have a speculative nature. This superstition often reflects in something similar to the following statement: "we are in the X sector and what we want is to make profit from our main activity, not from currency gaming". It is correct to try to stay away from abuses of hedging techniques, but an excess can signify jeopardizing the position of the company.

2. The measurement of the exposure. A common reasoning is the difficulty to accurately measure the amount of exchange risk. It is true that this exposure is tangled and usually difficult to measure in a precise way. However, there are many business scenarios where precise measurement is a complex task, so this may not be a valid justification.

3. The belief that the firm is effectively hedged. Sometimes, when the risk from transactions is already covered, a firm considers that exposure has been eliminated, without taking into account that there are more exchange risks. Transactions not yet completed also affect the value of the company. So, focusing only in transaction exposure can result incomplete.

4. The belief that the firm is not exposed because it does all its activity in the domestic currency. As explained before, operating exposure affects the revenues every company with any international presence, regardless of whether it operates with foreign currencies or no.

These four are biased beliefs, but the point is whether there is any economic justification for not covering the foreign exchange risk. Two main points of view can be found against foreign exchange risk management.

3.1.2 Economic reasoning both for and against exchange risk management

In the theory of finance (Fama & Miller, 1971) argue that foreign exchange exposure may not be a critical issue for companies. This idea is based in the Modigliani-Miller Theorem (Miller & Modigilani, 1958) which states that the shareholder value of a firm cannot be

[6] In the last section of this paper, an overview on exchange risk management in Navarrese exporting enterprise show that the third and specially the four justifications are commonly found in the daily working of these companies.

improved by financial manipulation. Applied to the foreign exchange risk, it signifies that investors can hedge exposure by using financial instruments themselves, and that it is their task and not the responsibility of the manager. There are two counter-arguments to this statement. The first and simpler is that transaction costs regarding financial tools are usually greater for an individual investor than for a firm, and that many instruments are only available when hedging relatively large amounts of money. The second counter-argument goes deeper: as explained above, assessing foreign exchange exposure is complex and requires detailed information about the effect of currency rates variations in the cash flows of the company (Dufey & Srinivasulu, 1983). Usually managers have a better access than investors to these estimations and have more precise data. Moreover, as markets are not perfect, companies have an easier access to the financial markets than individuals.

The second point of view is the one who states that foreign exchange risk management is not critical because there is a relative equilibrium in the conditions of international markets. This equilibrium consists essentially in the relationship between prices in different markets, the Purchasing Power Parity (PPP), and between interest rates and exchange rates, the International Fisher Effect (IFE). Although both principles are generally met under normal conditions, deviations occur. And these disparities are the counter-argument to this point of view. Deviations normally self-correct in a short period of time, but sometimes they persevere during a longer interval. For instance the PPP and the IFE work almost perfectly at a macroeconomic level, where small deviations are rapidly rectified, but when talking about specific business, this is not always the case. The consequence of these disparities is, once again, foreign exchange risk.

But it is obvious that there also exist many arguments in favor of hedging foreign exchange exposure. The following paragraph summarizes those which have major relevance.

As the immediate consequence of foreign exchange risk is future variability of cash flows, exposure can mean for the firm higher costs due to financial trouble. Research (Giddy & Dufey, 1993) supports that income variation, in this case due to exchange rate fluctuations, which endanger the solvency of the firm have many negative economic consequences. As an illustration of these consequences: excessive occupation of managers and lenders' time, outflows of money, underinvestment in key activities, operating problems due to a lack of treasury, etc. Another reason is, as previously elucidated in this paper, the information asymmetry of markets. This provokes that companies should hedge not only systematic risks, but also unsystematic ones, foreign exchange risk for instance. If not, investors should have to hedge the risk by themselves, and as discussed previously, their

opportunities, means and information in markets is more limited than at a corporate level. The last main defense for foreign exchange risk management is very pragmatic: the effect of foreign exchange risk on taxes. This effect is not very apparent, but a simplified explanation can be easily made. As is well known, financing with debt instead of with capital has a beneficial outcome on taxes. Tax level decreases, because interests are deductible while dividends are not. But the question is what does this have to do with foreign exchange risk. For a firm, the level of external debt it can obtain to finance its activity depends directly on its risk position. A company with high possibilities of bankruptcy will have more trouble to find a lender and increase its leverage. And foreign exchange risk, as a financial exposure, makes a company that does not hedge a riskier investment for lenders, who may not be willing to provide funding. As anything that decreases risk and probability of default gives the company the opportunity to take on larger leverage, the consequent reasoning is that foreign exchange risk management has as its ultimate effect the decrease of tax levels. And fewer taxes eventually mean a higher value for shareholders, this being the final objective of a company (Allen, 2013).

Finally, and besides opinions for and against exchange exposure hedging, it is useful to illustrate the limits of this risk management. Corporate hedging on currency rates variations is only capable of assuring expected nominal incomes in the reference currency, the one used by the company. If shareholders find themselves in a situation where, despite corporate risk management, their position is affected by currency rates oscillations as a result of their portfolio structure or their reference currency, they should hedge this individual risk by their own means. In summary, it would have nothing to do with corporate exchange risk management (Eaker, 1981).

3.2 Instruments and Strategies for Hedging Exchange Risk

Individual agents, including enterprises, who go to the international financial markets in order to protect themselves against unfavorable movements in the exchange rates, are called Hedgers.

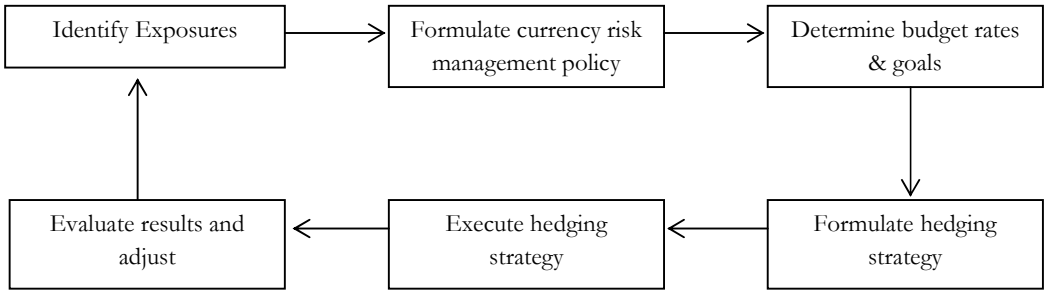
There are other agents, such as speculators or arbitrageurs, and also institutional agents (funds, central banks, investment banks, central banks…). But as this paper discusses exchange risk management, it will focus mainly on hedgers.

In order to make a hedging operation, agents have many strategies and financial instruments at their disposal. These instruments can be traded either in organized markets or non-organized markets, which are also known as Over-The-Counter (OTC) markets.

Differences between both options are rather simple: organized markets do not have counterparty risk, because there is an intermediary institution who assures transactions, but products are standardized and more limited than in OTC markets. Besides these differences, all instruments share two risks. The first is market risk, or the movement of the market against the taken position of the agent. The second is the disagreement risk, the possibility of misunderstandings when the conditions of the agreement are not clear and the two parties disagree. The last risk is less likely to happen in organized markets, as instruments are more standardized, but the possibility is still there.

Figure 6 on summarizes the steps of the hedging cycle (Western Union):

Figure 6: Steps in the hedging cycle



Source: Own elaboration based on the steps proposed by Western Union in its webpage.

There are five ways of hedging foreign exchange risk[7]:

3.2.1 Natural hedging

Hedging that uses the own positions of the company or transmits the exchange risk to another agent. For example: collections and payments in the same currency. As the money received in a foreign currency is used directly to make payments, transaction exposure is hedged. Another version is to borrow money in the currency you are being paid. And in order to hedge operating exposure, the review of prices depending on variations in the exchange rate can be helpful, but this should be done in agreement with suppliers and clients. For example, a Spanish company can agree with its supplier in the United Kingdom

[7] This section is an own elaboration based on the knowledge acquired and the class notes from the subject "Finanzas Internacionales", taught by Cascante Rodrigo, R. during the spring semester of the course 2013-2014 in the Public University of Navarre. Examples in the section are original

a price in pounds for a range of exchange rates, and if the exchange rate moves outside this range then apply a different price. A numerical illustration: the price of the supply is 10 pound per unit and the two companies agree to maintain it as long as the exchange rate stays between 0.80GBP/EUR and 0.84GBP/EUR. For the Spanish company, this will mean an oscillation of the price in euros from 11.90 to 12.5 per unit. In this case the Spanish Company will take some risk. But if the exchange rate goes down and the pound strengthens, the two companies may have agreed to revise prices and establish a price in pounds lower. Some variations are to divide risk between the two companies and cope with possible losses equally. This risk-sharing may represent a certain level of losses, but revising prices with suppliers and clients may protect the company from operating risk. The reason for this is that revising prices depending on exchange rates may, for instance, prevent clients from diminishing their orders (when the payment currency strengthens and costs in their domestic currency increase) and suppliers from increasing prices (when they charge in a foreign currency which has weaken, as this makes their income in domestic currency decrease).

A main advantage of natural hedging is the low or inexistent cost of these policies. Furthermore, the strategy of revising prices with business partners can have a positive effect on trade relations. Sharing risk can help the companies build stronger relationships and increase trust between the companies. It is important to take into account that relations with business partners are a key part of any corporate strategy.

But there are also disadvantages to natural hedging. Price negotiation and revision are not an easy task for some enterprises, especially for small ones with little power and influence on the market. These can limit the possibility for natural hedging. Moreover, to borrow in a foreign currency or to compensate receipts and payments using the same currency may not be possible in every situation. There are companies which sell to foreign countries and collect in a foreign currency but do not have the possibility to purchase and pay in that currency, and vice versa.

Natural hedging is a simple method that does not need financial instruments or complex strategies, but unfortunately it suits neither every company nor every situation.

3.2.2 Exchange insurance (currency forward)

A currency forward is the simplest instrument for hedging foreign exchange risk. It can be defined as a forward buy-sell operation that creates obligations for the contracting parties. As it is a forward operation, the settlement occurs at a later date than the engagement. The

price or exchange rate is built using the formula explained in section 2.3 of this paper, from the Interest Rate Parity theory. The basic parties of a currency forward are the buyer and the seller. The buyer assures a price for purchasing a specific amount of the currency he needs in exchange for a currency he owns or will own at the moment of the settlement and incurs in the obligation to make that purchase. The seller, obviously, has the opposite position and the obligation to sell.

If the two agents in the operation are an importer and an exporter respectively, that have the same domestic currency but operate with foreign currencies, the positions will be the following. The importer will have the role of the buyer, as he needs to obtain a foreign currency to pay their suppliers. The exporter will then be the seller, because he needs to exchange the foreign currency he obtains from sales for domestic currency he can use for other activities of the company.

The forward rate, as explained previously in the paper, depends on interest rates, time and the current spot rate. And as the spot rate is continuously varying, so is the forward rate.

Most commercial banks offer exchange insurances, and recommend it to companies with foreign exchange risk, so it is probably the most used hedging instrument in Spain, where markets for other derivative instruments are not so developed.

There are many variations in the way of using currency forwards. First, a company can decide to use exchange insurance for a specific transaction or in a general way. General insurances are engaged for all or a fraction of transactions during a period of time. Second, an agent can decide to settle the currency forward before or at the expiration date. When forwards are settled in advance, a recalculation of the price must be done because it is affected by time, which is being changed.

Forwards are OTC instruments, the market in non-organized: they are contracts between an agent and a bank, or between two banks, or in few occasions between two companies or institutions. This means there is a low-liquidity in the market of forwards: once you incur in an obligation, it is not easy to release it, it needs the approval of both parties to change the characteristics of the forward (private instrument). Moreover, as OTC instruments, forwards have a counterparty risk.

3.2.3 Currency swap (long term currency forward)

A currency swap is a forward operation with a difference between the settlement date and the maturity date longer than one year. Moreover a swap is an operation of financial barter

between two parties by which both of them exchange future cash flows, during a specific period of time. Those cash flows are nominated in two different currencies, and they are exchange in agreement with some conditions arranged in advance. These conditions include the notional amount, the payment schedule and the method to calculate these payments.

Currency swaps can be used not only for hedging, but also for speculation or arbitrage. But as the objective of this paper is to illustrate foreign exchange risk management, the only appropriate use of swaps in this matter is hedging.

As currency forwards, swaps are OTC instruments. This means that the counterparty risk is also present in swap operations. And as currency forwards, they are usually contracts between an individual or a company and a financial intermediary (ordinarily an investment bank). This prominence of banks in OTC markets is due to the counterparty risk: banks should fulfill their obligations to maintain their credibility, so agents prefer to make contracts with them than with other individuals or companies.

There are three types of currency swaps:

- Cross Currency fixed to fixed Swap: the interest rate for the cash flows of both parties is fixed.
- Cross Currency fixed to floating Swap: one party has a fixed interest rate for the cash flows it should deliver and the other has a variable interest rate.
- Basis Currency Swaps: both parties have variable interest rates to calculate the cash flows they have to exchange.

In a typical swap, an agent that is going to collect an amount of foreign currency in a future date, borrows money in the foreign currency and exchanges it for a quantity of domestic currency at the agreed exchange rate, and exchanges cash flows during the life of the swap. The quantity received can be invested, and at the time of the settlement, the agent repays the debt with the money collected and keeps the domestic currency.

Swaps have many advantages: they allow agents to hedge positions more economically and for a long term, which is not possible with other derivative instruments. As they are OTC instruments, there is a high flexibility when determining the conditions of the contract. Moreover, using Swaps instead of traditional borrowing and investing provides better financial costs and conditions.

But there are two main disadvantages: the counterparty risk that has been already explained and the fact that the swap market is a "wholesaler" market where the amounts of money traded in swaps are very large. This keeps off small investors and limits this instrument.

3.2.4 Currency futures

Futures can be defined as forwards traded in organized markets. Their operation is very similar to forwards: there are to parties who engaged an obligation, one of them to sell and the other to buy an amount of currency at a specific date. But differences between futures and forwards come from the fact that the first are traded in organized markets. The first difference is that futures do not have counterparty risk, as there is an intermediary institution that assures payments. The existence of this institution, the clearinghouse, implies the second difference: the presence of guarantees to assure payments. The third difference is the possibility to enter this market even when the quantities hedged are not very large, because in some cases standardize products begin with rather small amounts of currency. The fourth difference is the existence of general regulations that affect equally all agents in organized markets. The last difference is the high-liquidity of standardized products. They can be settled before the agreed date using the "cash settlement": if the agent got benefits from the instrument, he collects them; if there are losses, he has to pay them. For this reason most contracts are closed before the official date of settlement. Moreover, the clearinghouse provides a daily settlement of the agent's position, depending on the behavior of markets.

Currency futures also use the Interest Rate Parity to establish the prices in the contracts. As in forwards, importers take buying or long positions and exporters take selling or short positions. The objective when using currency futures to hedge transaction exchange risk is to assure an exchange rate at the date when a transaction is paid or collected. When hedging operating risk, futures can be used to compensate the losses on cash flows. For instance, an exporter who thinks that the exchange rate is going to go down, and its domestic currency will fortify. This will lower his level of exports, as the products will be more expensive for foreign clients. By buying a future over the domestic currency, the agent hedges this risk: if the domestic currency becomes stronger, the benefit from the future will cover the export decrease.

As futures can be used to hedge lower amounts of money, they can be an interesting option, but unfortunately is Spain the market of futures is not very developed yet, so investors need more financial intermediaries in order to access these products. In Spain we

can find futures over financial products and indexes (stock, Ibex 35, bonds…), over energy and over olive oil, but the access to FOREX is underdeveloped yet, and financial intermediaries are needed.

3.2.5 Currency options

Options are similar to futures in many ways, as they are organized-markets instruments too. So they have the advantages and disadvantages of trading in those markets.

But options are contracts that give rights to one party and obligations to the other one. The buyer of an option buys the right to exercise an operation of purchase or an operation of sale. On the other hand, the seller of an option incurs the obligation to execute the operation if the buyer decides to exercise his rights. For this reason there are two types of options: buying options (CALL) and selling options (PUT). The reasoning is the following:

- The buyer of a CALL owns the right to buy an amount of currency at an agreed exchange rate at a specific date.
- The seller of a CALL has the obligation to sell the amount of currency to the buyer of the option if he decides to exercises its right.
- The buyer of a PUT owns the right to sell an amount of currency at an agreed exchange rate at a specific date
- The seller of a PUT has the obligation to buy the amount of currency to the buyer if he exercises the option.

In order to acquire the right, the buyer of an option must pay the seller a premium. So, if the market does not favor the buyer and he decides not executing the option, the seller wins the premium. But in the opposite case, the buyer will exercise the option and have a benefit, while the seller will have losses but still win the premium.

As in futures, an agent who is afraid of a currency becoming more expensive should buy the currency. With options, there is a choice between buying a CALL and selling a PUT. If the currency finally strengthens, the agent will exercise the CALL and buy the currency at a cheaper rate, or will win the premium if he sold a PUT and that will compensate the higher price of the currency in the market. In the case of a possible depreciation of the currency, the agent should sell CALL or buy PUT and the result would be the same.

Currency options in Spain have the same problem as futures: the access to them is limited and a financial intermediary with access to international financial markets is needed.

In order to hedge transaction exposure we can use all type of instruments as well as natural hedging. Operating exposure is a more complicated issue, as it is a long term risk, but some strategies to hedge it are natural hedging and the use of swaps.

4. NAVARRESE ENTERPRISES AND EXCHANGE RISK MANAGEMENT

The following section discusses the situation of Navarrese enterprises regarding exchange risk management. Particularly, the case of small and medium enterprises that have commercial relations outside the Euro Zone. Bigger companies were not so interesting because there is already research about them in this matter (Otero, Vivel, Fernández, & Rodríguez, 2008) (Martínez & Berges, 2000). This section aims to look empirically at foreign exchange risk management in the daily activity of companies, after the theoretical development of this issue in previous sections. In other words, how do companies in the region deal with the problem of foreign exchange exposure.

For simplification, I only considered exporting companies, as their data is much more available than for importing companies. Between the more than 600 exporting companies in Navarre, there are almost 300 that export outside the Euro Zone (Club de Marketing de Navarra, 2011), but among these, I did contact 48[8] which had a significant percentage (more than 15%) of exports outside the Euro Zone, which were medium or small companies and whose contact information was available. The research while waiting for answers gave the sensation that hedging foreign exchange risk was not a very developed practice, neither in Navarre nor in Spain as a whole. National research in this matter is scarce, compared to other financial practices. And compared to research in other countries, especially the United States, where this subject is much more known and implemented in companies. Particularly, I was unable to find any article about foreign exchange risk management in small or medium companies. There are some that treat the issue from a general point of view, and a few that take data from bigger companies, particularly listed companies[9].

[8] The complete list of 48 companies can be found in the appendix.

[9] Two examples of articles found are the following:

- Otero, L., Vivel, M., Fernández, S., & Rodríguez, F. (2008). Determinantes de la cobertura del riesgo de cambio con productos derivados: evidencia para el mercado español. *Revista Española de Financiación y Contabilidad vol. 37*, 723-763.
- Martínez, P., & Berges, A. (2000). El riesgo de cambio en la empresa española. *Revista de Economía Aplicada vol. 8*, 81-104.

From these 48 companies, a total of 5 answered my request. As expected, most tell me that they operate completely or almost completely in euros, so they did not have to manage this risk. As previously explained in this paper, operating in the domestic currency does not eliminate completely the risk, as operating risk remains. But this was the decision that those companies have took. The following list includes the four companies which implement this policy and a summary of the answers I received together with some data about the destination of their exports:

- Triman S.A.: It is a company that designs, manufactures and assembles turn-key plants for quarries, mining, public work and construction. This company exports more than the 95% of its production, but they charge sales in euros, using letters of credit between foreign and Spanish banks, which guarantee payments. The company exports its products to many countries outside the Euro Zone as Morocco, Romania, Algeria, Bulgaria or Venezuela (Club de Marketing de Navarra, 2011).
- Bodegas Irache: this company produces bottled wine, pacharan, olive oil and canned vegetables, being its main market the wine. Its products are exported to 58 countries, many outside the Euro Area, as Switzerland, Denmark, United Kingdom, Sweden, United States… (Club de Marketing de Navarra, 2011). The company charges sales in euros in order to avoid operating exposure, and affirms that they do not need any further risk management yet.
- Industrias Navarras de Precisión S.L.: this company designs and manufactures machining systems, control systems and assembly systems. The enterprise addresses virtually all its exports to Mexico, representing a 33% of the total production. For the moment they affirm to have no financial trouble regarding currency volatility, as all their transactions are made in euros.
- INPRE (Group INPRE Composites): this enterprise manufactures Fiberglass Reinforced Polyester (FRP). The case of this company is slightly different. Although its products are exported, the company sells them to intermediaries in Spain who afterwards sell them abroad. So the company only operates in euros and considers having no foreign exchange risk.

However, one of the answers received was from company that has a more complex handling of foreign exchange risk. This company is IRUMOLD. They are specialized in the design, development, production, and tuning of multi-cavity high-precision molds. The sector they are focusing their products on right now is the pharmaceutical industry. An

important fraction of their exports are headed to the United States[10], and as not all transactions are made in euros, but some are made in dollars, exchange risk arises. This company pays attention to this matter, and develops simple policies to deal with it. I had the opportunity to visit the company, interview the Financial Officer[11] and learn about their management of exchange exposure.

They consider three possible scenarios when regarding foreign exchange risk management.

The first consists in hedging a specific transaction to assure the exchange rate in the date of collection. The instrument used would be an exchange insurance, which is a simple way of fixing the exchange rate for a defined quantity of money for a specific date. Virtually all banks provide this instrument, and in the case of this company there is practically a zero cost for using it.

The second scenario is a bit less conventional. As a part of assuring the good working of their finances, the company intends that its foreign currency receipts are outside the cash requirements for maintaining the normal activity of the enterprise. This allows the company to keep the dollars received without changing them to euros until they consider the exchange rate they obtain is appropriate.

In the third scenario, the reason to keep a part of the receipts in dollars is to provide the company with cash in a currency accepted worldwide in case the necessity to use it emerges. For example, if there is any kind of trouble with the euro, or if they need to make any transaction with a country that only accepts dollars. In that situation, the exchange rate may be favorable or not, so keeping a quantity of dollars will eliminate the need to change euros in the rush and probably with worse conditions.

The reason why IRUMOLD pays more attention to foreign exchange risk is, besides the importance of having American customers, is that they want to have completely cleared-up finances.

After this process, I realized that exchange risk management is an activity often disregarded in small enterprises. Many prefer to maintain their activity in euros, wrongly thinking that this will protect them from risks. But as I explained, this strategy limits the activity of the company and may slow the growing and internationalization of a company. In addition,

[10] 70% of molds imported by the US from Spain are made by Irumold

[11] The Financial Officer of Irumold, Javier Marcilla, received me at the offices of the company in the industrial park of Landaben in Pamplona on June 2nd 2014.

operating in a single currency abroad hedges transaction risk, but operating risk remains a problem.

The limits to access derivative instruments may also be a reason for this underdeveloped hedging. When companies that want to manage exposure go to their bank, the product that is immediately offered is a currency forward. These forwards are OTC products, a private contract between the enterprise and the bank. And banking products obviously benefit the bank that commercializes them. I also think that using other products as swaps, futures or options makes many people (and managers) think of their speculative use. And this prejudice is an important impediment. All this matches the common justifications about hedging explained previously in the paper (See section 3.1.1) and adds the fact that banking may not ease the choice of hedging or not. When there are limited options, conditions trend to be worse than when multiple products are available.

The situation in Spain as a whole is probably similar to the situation in Navarre. A proof is the little research that can be found in this subject. There is a clear need to improve financial knowledge in the small and medium enterprise world. Because large enterprises do hedge. Obviously, it is easier for them, as they have more power, more access to financial markets and large quantities are more easily hedged. But foreign exchange risk is an important issue, no matter the size of the company.

5. CONCLUSIONS

There are many things I have learned from the whole process of elaborating this paper that I consider overriding.

First, that foreign exchange risk is an important issue in international business activity but that in Spain and in Navarre it does not receive all the attention it should. There are wrong justifications, false beliefs and even some degree of passivity regarding hedging.

Second, currency volatility and the current International Monetary System are the foundations for foreign exchange risk. All floating currencies are affected and so all international transactions that include them (there is always a party that buys or sells in a foreign currency).

Third, being part of the Euro Zone means that a large portion of imports and exports are made in euros, with no foreign exchange risk. But having the Euro as currency means that for foreign countries Spanish products are expensive. This is the price for having a strong currency.

Fourth, there are many companies that consider only transaction exposure, and that is a big mistake. A company that operates with countries that have a different currency incur in foreign exchange risk even when transactions are made in the domestic currency. Sure, transaction exposure is transmitted to the other party, but operating risk remains. If the domestic currency increases its value, exporters will be damaged because products will be more expensive for their clients than before. If the domestic currency weakens, importers may face an increase in the prices of those of their suppliers which collect in that currency, as for them maintaining prices means to collect less in their own currency.

Fifth, financial markets in Spain do not ease hedging for companies. Banks offer limited options and access to more complex markets in difficult for small and medium enterprises. So even for those who want to hedge, it is complicated to achieve it. This is probably due to the little knowledge (or interest) about the subject that exists in this country, which reflects in the almost inexistent research on the subject.

And finally, I learned that it is not so easy to obtain firsthand information from enterprises. Only a 10% of the companies I contacted answered me in any way.

LITERATURE AND REFERENCES

Allayannis, G., & Ofek, E. (2001). Exchange rate exposure, hedging, and the use of foreign currency derivatives. *Journal of International Money and Finance vol. 20*, 273-296.

Allen, S. L. (2013). *Financial Risk Management: A Practitioner's Guide to Managing Market and Credit Risk, 2nd Edition.* Wiley.

Bartram, S. M. (2008). What lies beneath: Foreign exchange rate exposure, hedging and cash flows. *Journal of Banking & Finance vol.32*, 1508-1521.

Bordo, M. (1993). : The Bretton Woods International Monetary System: A Historical Overview. In M. Bordo, & B. (. Eichengreen, *Volume Title: A Retrospective on the Bretton Woods System: Lessons for International Monetary Reform* (pp. 3-108). University of Chicago Press.

Brown, G. W. (2001). Managing foreign exchange risk with derivatives. *Journal of Financial Economics vol.60*, 401-448.

Cascante Rodrigo, R. (2014). Asignatura Finanzas Internacionales. Pamplona: Universidad Pública de Navarra.

Club de Marketing de Navarra. (2011). *Catálogo de exportadores de Navarra*. Retrieved 2014, from http://www.export.navarra.net/paghtml/

Dufey, G., & Srinivasulu, S. L. (1983). The case for corporate management of foreign exchange risk . *Financial management. Vol. 12*, 54-62.

Eaker, M. R. (1981). The Numeraire Problem and Foreign Exchange Risk. *The Journal of Finance Vol. 36*, 419-426.

European Commission. (2014, May 29). *European Comission Trade Statistics.* Retrieved June 2, 2014, from http://ec.europa.eu/trade/policy/countries-and-regions/

Fama, E. F., & Miller, M. H. (1971). *Theory of Finance.* Hinsdale, Illinois: Dryden Press.

FOREX. (2014). *FOREX.com.* Retrieved 05 18, 2014, from http://www.forex.com/uk/index.html

Forex Ticket. (2014). *Forex ticket*. Retrieved May 2014, from http://www.forexticket.com/en/tools/02-01-volatility

Giddy, I. H., & Dufey, G. (1993). *Handbook of International Accounting.* Wiley.

Gowa, J. (1983). *Closing the Gold Window: Domestic Politics and the End of Bretton Woods.* Ithaca, NY: Cornell University Press.

Griffin, J., & Stulz, R. (2001). International competition and exchange rate shocks: A cross-country industry analysis of stock returns. *Review of Financial Studies 14*, 215-241.

Guay, W., & Kothari, S. (2003). How much do firms hedge with derivatives? *Journal of Financial Economics vol.70*, 423-461.

Guggenheim Partners. (2012, October). *Guggenheim*. Retrieved May 2014, from http://guggenheimpartners.com/perspectives/media/return-to-bretton-woods

International Trade Administration (U.S. Department of Commerce). (2007). Chapter 12: Foreign Exchange Risk Management. In *Trade Finance Guide* (pp. 25-26). Washington DC: Manufacturing and Services Office of Finance.

Inversión & finanzas.com. (2014, May). *Inversión & finanzas.com*. Retrieved May 2014, from http://www.finanzas.com/divisas/eur-usd/

Martínez, P., & Berges, A. (2000). El riesgo de cambio en la empresa española. *Revista de Economía Aplicada vol. 8*, 81-104.

Miller, M., & Modigilani, F. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *American Economic Review*.

Organisation for Economic Cooperation and Development (OECD). (n.d.). *OECD Statistical Portal*. Retrieved Mayo 18, 2014, from http://stats.oecd.org/glossary

Otero, L., Vivel, M., Fernández, S., & Rodríguez, F. (2008). Determinantes de la cobertura del riesgo de cambio con productos derivados: evidencia para el mercado español. *Revista Española de Financiación y Contabilidad vol. 37*, 723-763.

The Wall Street Journal. (2013, Febrero 13). *The Wall Street Journal Online.* Retrieved Mayo 21, 2014, from http://online.wsj.com/news/articles/SB10001424127887324162304578301662368145012

Time Inc. (2008, October). *Time online*. Retrieved May 2014, from http://content.time.com/time/business/article/0,8599,1852254,00.html

Web Finance Inc. (2014). *Investor Words*. Retrieved May 2014, from http://www.investorwords.com/

Western Union. (n.d.). *Western Union Business Solutions*. Retrieved Mayo 2014, from http://business.westernunion.com/resource-center/fx-101/hedging/

APPENDIX 1: Volatility of currencies

Pair	pips	$	%
USD/MXN	1277.7	9371.6	0.99
EUR/NOK	626.4	1049.3	0.77
USD/NOK	571.8	957.8	0.96
EUR/TRY	330.9	1580.0	1.16
USD/PLN	277.0	912.7	0.91
USD/BRL	263.1	1173.9	1.17
USD/TRY	240.2	1146.5	1.15
USD/HUF	233.1	1053.0	1.05
GBP/AUD	167.8	1561.4	0.93
EUR/NZD	163.4	1388.1	1.02
GBP/JPY	146.4	1440.0	0.86
EUR/AUD	139.4	1297.4	0.95
GBP/CAD	130.5	1203.3	0.72
EUR/JPY	116.7	1147.3	0.84
EUR/CAD	104.2	960.7	0.71
GBP/USD	99.4	993.6	0.59
GBP/CHF	98.1	1096.8	0.65
AUD/USD	88.9	889.3	0.96
CAD/JPY	87.4	859.8	0.93
USD/JPY	86.2	847.4	0.85
NZD/USD	84.3	842.7	0.99
AUD/CAD	84.2	776.4	0.84
NZD/CAD	82.7	762.7	0.90
EUR/USD	80.4	804.2	0.59
CAD/CHF	71.6	800.4	0.87
USD/CHF	67.8	758.1	0.76
USD/CAD	63.7	587.7	0.59
USD/INR	53.1	870.0	0.87
EUR/GBP	47.7	798.4	0.59
EUR/CHF	40.5	453.4	0.33
USD/CNY	36.9	59.9	0.06
USD/HKD	16.4	21.1	0.02

Source: from the webpage of Forex Ticket using the volatility calculation tool for the last 10 years

APPENDIX 2: List of contacted companies

1. Bodegas Irache
2. Bodegas Principe de Viana
3. Embutidos Goikoa
4. Hijos de Pablo Esparza
5. Baines
6. Navarra de Componentes Electrónicos
7. Industrias Lotu
8. INECO, Industria Navarra de Equipos y Comercio
9. Industrias San Cristóbal
10. Asientos Esteban
11. Frenos Iruña
12. Garaje Iruña
13. Gráficas Estella
14. Papelera de Navarra
15. Rotativas de Estella
16. Alambres Pamplona
17. Ascensores Navarra
18. Alsasua de Maquinaria
19. Industrias Navarras de Precisión
20. Irumold
21. Jofemar
22. Kayola
23. Lantec 2000 Sistemas
24. Liebherr Industrias Metálicas
25. M.Torres Diseños Industriales
26. Triman Maquinaria
27. MTS TOBACCO
28. O.M. Vending
29. Talleres Clemente
30. Talleres Ezma
31. Talleres Zeleieta
32. Talleres Iruña
33. USCAL
34. Ziraba
35. Forjas de Viana
36. Alabastros Aljuna
37. Alabastros Alvero
38. Escayolas de Lodosa
39. Magnesitas Navarras
40. Maquinaria del Baztán
41. INPRE
42. ATP Iluminación
43. Propitex
44. Superfos Pamplona
45. Unicesa
46. Avicola Navarra
47. Bacalaos Eguillor
48. Conservas Viter