

# Foreign currency risk management practices in Spanish companies: An empirical analysis

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## Abstract

We survey and analyse foreign currency risk management practices of Spanish companies. A questionnaire was answered by 134 companies belonging to a variety of sectors, of a range of sizes and with different exposure levels. We posed specific questions about the companies' sector, size and exposure to foreign exchange rates. The survey also included questions on foreign currency risk management, with respect to organization, challenges, objectives, exposure measurement, strategies, and accounting. Our aim is to gain a better understanding of Spanish companies' foreign currency risk management practices and examine whether differences in practices can be explained by a company's size and exposure level. We contribute to previous research by focusing our study only on Spanish companies and by analysing numerous risk management aspects at the same time. We find that Spanish companies have a significant exposure to foreign currency risk (mainly to USD, GBP and some Latin American currencies) and that Spanish companies have a high degree of concern about foreign currency risk. Differences in foreign currency risk management practices among companies can mainly be explained by a company's size (measured as gross operating income) and its level of exposure to foreign currency risk (measured as sales and purchases outside the Eurozone). We have also drawn additional conclusions by analysing companies' responses: the larger companies are not necessarily those that enter into complex derivatives, and the centralization or decentralization of foreign currency risk management (from a group perspective) is not explained by a company's exposure or size.

**Keywords:** foreign currency risk, risk management, derivatives.

**JEL classification:** F31, G32.

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# La gestión del riesgo de tipo de cambio en empresas españolas: un estudio empírico

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## Resumen

Este artículo se basa en una encuesta a empresas españolas con relación a la gestión del riesgo de tipo de cambio. El cuestionario enviado ha sido respondido por 134 empresas de diferentes sectores, con diferente tamaño y con diferente nivel de exposición al riesgo de tipo de cambio. La encuesta incluye preguntas relacionadas con la gestión de riesgo de tipo de cambio: organización, retos, objetivos, medición de la exposición, estrategias y aspectos contables. Nuestro objetivo ha sido conocer las prácticas de gestión de riesgo de tipo de cambio de las empresas españolas y si las diferencias en las políticas están explicadas por el tamaño y el nivel de exposición de la empresa. Nuestra contribución a la investigación anterior se centra en el hecho de utilizar una muestra exclusivamente española y en analizar numerosos aspectos de la gestión de riesgo a la vez. De las respuestas obtenidas se deduce que las empresas españolas tienen una alta exposición al riesgo de tipo de cambio (sobre todo al USD, GBP y monedas latinoamericanas), y que dichas empresas tienen una preocupación importante con relación al riesgo de tipo de cambio. Las diferencias en las políticas de gestión de riesgo de tipo de cambio que tienen las empresas se explican, en gran parte, por el tamaño de la entidad (medido a través de la facturación) y el nivel de exposición (medido como las ventas y compras fuera de la zona Euro). Del análisis de la información cuantitativa también se han derivado las siguientes conclusiones adicionales: las empresas de mayor tamaño no son necesariamente las que contratan derivados complejos, y la centralización o descentralización de la gestión del riesgo de tipo de cambio (desde una perspectiva de grupo de empresas) no viene explicada por el tamaño de la empresa o el nivel de exposición.

## Palabras clave:

Riesgo de tipo de cambio, gestión de riesgos, derivados.

## ■ 1. Introduction

In recent years, Spanish companies have faced great uncertainty in relation to foreign currency markets. On the one hand, there has been high volatility in exchange rates due to factors such as monetary policies implemented out by central banks (through QE<sup>1</sup> or direct intervention), commodity price movements, and political factors (Brexit, US elections), etc. For example, the EUR/ USD exchange rate dropped from around USD 1.38 per Euro in the first quarter of 2014 to around USD 1.04 per Euro in March 2015 (a depreciation of the Euro of almost 25% in one year). In contrast, EUR/GBP has climbed from GBP 0.70 per Euro in November 2015 to GBP 0.83 per Euro in December 2016 (an appreciation of the Euro of almost 20% in just over a year).

In addition, since the beginning of the last financial crisis, Spanish companies have started a new period of expansion in their exporting activities and foreign investments, which has led to a great increase in their exposure to foreign currency risk. Both the volume of exposure and the geographic areas (and exchange rates) to which companies are exposed have increased, as can be seen in several statistics and studies (see, for example, Banco de España (2015)).

According to the Spanish Ministry of Economy, total goods exports of Spanish companies grew from 159,889.6 million Euros in 2009 to 250,241.3 million Euros in 2015 (a 56.5% increase) (Ministerio de Economía, 2016). According to the INE<sup>2</sup>, there were 3,856 Spanish subsidiaries in foreign countries in 2010 and 4,999 in 2014 (a 30% increase).

In this context, many Spanish companies are in a situation where foreign currency risk (how it can affect a company's results and/or cash flows) is a major concern for both financial and general management. These companies have recently implemented new methodologies for managing this risk due to the increase in exposure level.

There is a lack of studies, in previous finance literature that analyse companies' foreign currency risk management practices and that specifically focus on Spanish companies or on a Spanish sample. We find several risk management practice surveys that focus on other geographical areas (mainly US and global studies) but very few specifically on Spanish companies. We also find papers attempting to explain diversity in foreign currency risk practices, but focused on just one factor (for example, the use of derivatives) and not in an exclusively Spanish setting.

<sup>1</sup> QE: Quantitative Easing. This is a measure currently applied by the European Central Bank and other central banks with the aim of increasing the money supply and reactivating the economy. Previously, this measure has also been applied by the US, UK and Japanese central banks.

<sup>2</sup> INE: Instituto Nacional de Estadística (Spanish National Statistics Institute). See [www.ine.es](http://www.ine.es). Statistics of subsidiaries of Spanish companies abroad. Year 2014.

This paper examines Spanish companies' (or companies with strong presence in Spain) foreign currency risk management practices, and examines whether diversity in practices can be explained by factors such as company size or the company's relative exposure to foreign currency risk. Practices are analysed from a global perspective and include a range of aspects, from the number of people involved in the foreign currency risk management activities to the company's strategic objectives.

The rest of the paper is organized as follows: in section two, we include a review of previous research on foreign currency risk management practices, and sections three to five are dedicated to our empirical research. Section three includes a description of the hypotheses and section four includes a summary of the research methodology and sample used. Main results are presented in section five. Finally, section six provides general conclusions.

It should be noted that the study analyses foreign currency risk management practices of groups of companies<sup>3</sup> rather than referring to individual companies. From here on, we use the terms "group" or "company" to refer to a group of companies and not to an individual company.

## ■ 2. Previous literature

Previous literature that explores foreign currency risk management practices can be divided into two types. On the one hand, we have research papers which mainly use financial information disclosed by companies in their financial statements in order to examine what explains the diversity in foreign currency risk management practices among companies, addressing issues such as why companies hedge this risk, why they use derivatives, the effect of hedging activities on a firm's value, etc. On the other hand, we have surveys of a sample of companies carried out by global banks and other organizations. These surveys are generally organized as a questionnaire that contains several questions in relation to foreign currency risk management (without offering further analysis in relation to the factors that could explain differences in risk management practices among companies).

Regarding research papers, the most recent ones are Muller and Verschoor (2005), Muller and Verschoor (2006), Al-Shboul (2007), Muff *et al.* (2008), Makar and Huffman (2011) and Ito *et al.* (2016).

Muller and Verschoor (2005) use a sample of 471 European non-financial firms in order to analyse why companies use foreign currency derivatives and the effect of these deriva-

<sup>3</sup> In fact, the questions included in the questionnaire that was sent to the companies relate to foreign currency risk management from a group perspective.

tives on their foreign currency exposure. The main determinants of the use of foreign currency derivatives are found to be the percentage of the firm's trading volume and size.

Authors also find that European companies use foreign currency derivatives not to speculate on the foreign exchange markets but rather to protect themselves against currency fluctuations. However, these hedging strategies are shown to have a statistically weak effect.

Muller and Verschoor (2006) examine whether there exists any relationship between individual European firms' stock returns and fluctuations in the currency values of the European Monetary Union (EMU) major trading partners, whether the explored exchange risk exposure patterns are industry-specific, and whether firms' exchange exposure is more evident across increasing time horizons.

They use a sample of 817 European firms, and they find that, for the period from January 1988 to December 2002, about 13% of the firms experienced economically significant exposure effects to the Japanese Yen, 14% to the US dollar and 22% to the UK pound. Results suggest a Euro depreciation (appreciation) has a net negative (positive) impact on European stock returns.

They also find that the extent to which European firms are exposed to foreign currency fluctuations varies with return horizons and that the extent to which a firm is exposed to changes in exchange rates is determined by the variables that are proxies for the firm's hedging policies.

The study by Al-Shboul (2007) can be included in the line of research that analyses whether operational and financial hedging activities are associated with the evolution of the company's foreign currency exposure. Operational hedging involves creating value by extending and expanding operations abroad, while financial hedging essentially entails the use of derivatives. The author applies Jorion's (1991) model to a sample of 181 multinational Australian corporations. He finds that the use of operational hedging is significantly associated with the reduction in exposure. Moreover, the combination of financial and operational hedging is more likely to be effective in reducing the exposure.

Muff *et al.* (2008), use a sample of 277 UK non-financial companies (taken from the UK actuaries all share index) in order to analyse which variables explain the use of derivatives as a hedging instrument for economic foreign currency exposures. They use data from 2000 and 2001 that the companies disclose in their financial statements.

They find that a firm's exposure through foreign sales and size is a very important factor that prompts the decision to hedge. They also find that those UK firms with

low profitability, high growth opportunities, and higher tax liabilities are more likely to use currency derivatives.

Makar and Huffman (2011) examine how foreign exchange derivatives are used by US multinationals. They focus on a sample of 64 large multinational companies for the period 1990-1994. They apply a statistical model and find that foreign exchange derivatives use is positively associated with foreign currency exposure. Moreover, the results are not sensitive to industry membership or other differences across firms or reporting years.

Ito *et al.* (2016) analyse the relationship between Japanese companies' foreign currency risk management practices (based on a survey of 227 companies in 2009) and the exchange rate risk exposures (which are estimated as the sensitivity of stock price movements to exchange rate movements).

They find that: 1) large Japanese manufacturing industries have a significant exposure to exchange rate risk; 2) companies with greater dependence on foreign sales have a larger foreign exchange exposure; 3) the higher the US dollar invoicing ratio the greater the foreign exchange exposure (but risk is reduced by financial and operational hedging); and 4) Yen invoicing reduces foreign exchange exposure. Therefore, those companies using currency hedges and choosing Yen invoicing are judged by the market to have reduced currency exposures.

In relation to surveys (not included in research papers), some of the most relevant recent ones have been conducted by Sungard (2010), Barclays (2012), Grant Thornton (2015), Deloitte (2016), EMPEA (2016) and Wells Fargo (2016). As explained above, all of them consist of a questionnaire that was sent to a number of companies in order to analyse their foreign currency management practices.

Sungard's (2010) study is based on responses from 275 participants across 16 primary industries, and more than 17 regional classifications, grouped as 66% Americas, 24% Europe/Middle East/Africa and 10% Asia Pacific. The Barclays (2012) survey received responses from over 100 multinational companies from several regions, sizes and industries. 79% of the companies were from the EMEA<sup>4</sup> region. Grant Thornton (2015), conducted its survey of 55 Food & Consumer Products of Canada (FCPC) member companies. Deloitte (2016) surveyed 133 corporations from all around the world, representing a wide array of size, geographies and industries (62% of the respondents were from the EMEA region, 23% from the Americas and 15% from Asia and Australia). The EMPEA (2016) survey is focused on private equity companies with investments in emerging countries, and its survey was responded to by 146 in-

<sup>4</sup> Europe, the Middle East and Africa.

dustry practitioners. Wells Fargo (2016) surveyed a number of companies of several sizes and from several industries. 87% of them were US companies.

The questions, in the majority of cases, address the following topics:

1) The concern of the companies in the sample in relation to foreign currency risk and the general impact of the foreign currency risk. In general, companies are very concerned and the concern has recently increased. In EMPEA's (2016) survey, 69% of the respondents have recently increased their exposure and the corresponding percentage in Wells Fargo's (2016) survey is 47%. Barclay's (2012) survey shows that foreign currency risk is one of the most important concerns of the companies. In Sungard's (2010) survey, 58% of the companies have experienced a material impact in relation to foreign currency risk in the last 12 months.

2) Foreign currency risk management objectives. The most typical objectives are protecting future cash flows and protecting the profit and loss account. In Deloitte's (2016) survey, the primary hedging objective of 49% of the respondents was to "reduce income volatility and protect subsidiary/local currency income statement/earnings" while for 47% it was to "protect cash flow in group's reporting currency".

In Barclay's (2012) survey, 92% of companies in the sample cite reducing earnings volatility as their first, second or third most important objective in foreign currency risk management.

In Wells Fargo's (2016) survey, the top objective for hedging forecasted transactions (67% of the respondents) is to "smooth the impact of changes in FX rates over time on our company's financial performance".

3) Foreign currency risk management practices. The majority of companies take a centralized approach to applying foreign currency risk management (for example, 93% in Deloitte's (2016) survey and 85% in Wells Fargo's (2016) survey).

Many companies do not use sensitivity analysis or other quantitative tools in order to analyse their exposure, they simply estimate their exposure with a figure that represents total exposure. In Wells Fargo's (2016) survey, only 17% of the companies in the sample "regularly quantify their exposure to foreign currency risk".

The majority of companies focus their foreign currency risk management policy on transaction risk (and, to a lesser extent, to conversion risk). In this sense, they systematically hedge a certain percentage of future transactions. In Barclays' (2012) survey, between 71% and 83% of the respondents hedge forecasted transactions. In

Deloitte's (2016) survey, 68% of the companies using foreign currency derivatives hedge forecasted transactions (and 54% committed transactions). In Wells Fargo's (2016) survey, out of the companies that hedge balance sheet positions, 75% of the respondents hedge trade-related operations and 66% finance-related operations.

In relation to the percentage of the foreign currency exposure hedged, in Sungard's (2010) survey, 71% of the respondents state that they hedge 80% or less of their exposure, while 34% report that they hedge less than half. In Wells Fargo's (2016) survey 36% of the respondents hedge a range from 50% to less than 75% of their exposure and 27% hedge 75% or more of their exposure.

- 4) Use of derivatives for foreign currency risk management. The foreign currency forward contract is the derivative most widely used to hedge foreign currency risk. Nevertheless, companies also use other technique such as "natural hedges".

In Barclays' (2012) survey, 82% of the respondents use foreign currency spot operations, forwards or NDF<sup>5</sup> (mainly in the most liquid currencies). In Grant Thornton's (2015) survey 78.26% of the respondents use foreign currency forwards (and 65.22% natural hedges).

In Deloitte's (2016) survey, 89% of the respondents hedge using derivatives (92% of which use forwards or NDFs), 58% hedge using "natural management through matching cost and revenue in the same currency as the same company" and 46% hedge using "natural management or netting exposures across companies".

In Wells Fargo's (2016) survey, 97% of the respondents use forward contracts for hedging purposes.

- 5) Foreign currency risk management challenges. In Sungard's (2010) survey, top challenges are: difficulties in quantifying the exposure, confidence in data and timely access to data. In Wells Fargo's (2016) survey, the top challenges are: market volatility, when to hedge, using a proper strategy and accuracy and timeliness of data.

### ■ 3. Hypotheses

As we have seen in previous sections, several studies analyse foreign currency risk management practices using information disclosed by the companies in their financial statements or by conducting a survey on a number of companies.

<sup>5</sup> Non-delivery forwards.



We analyse foreign currency risk management practices through a survey focused on Spanish companies and including a wide range of aspects that can be divided into seven topics (see section 4). Using the data obtained from the survey, we test the following hypotheses:

*H<sub>0,1</sub>: The foreign currency risk management practices are influenced by the company's size.*

*H<sub>0,2</sub>: The foreign currency risk management practices are influenced by the company's exposure to foreign currency risk.*

Previous literature and surveys show that foreign currency management practices are generally influenced by both the company's size and the company's exposure to foreign currency risk. When the firms are large and they have a sufficiently high volume of foreign activity to justify the costs, the implementation of such programmes is facilitated (Muller and Verschoor, 2005).

Nevertheless, previous literature is focused on limited aspects of risk management (for example, entering into derivatives), companies with a certain level of internationalization and specific sectors. We extend the analysis to cover numerous additional aspects of foreign currency risk management and any kind of company (located in Spain). We expect that the new risk management aspects included in our study can also be explained by the two factors (the company's size and its exposure to foreign currency risk).

In our survey, questions 2, 3 and 4 (see section 4) relate to information about the company's size and exposure to foreign currency risk. Specifically, the questions address consolidated group operating income (question 2), sales volume outside the Eurozone (question 3) and purchase volume outside the Eurozone (question 4). We statistically analyse the relationship between the answers to these three questions and the answers to the questions that relate to foreign currency risk management practices. We also analyse companies' responses to obtain other possible relevant conclusions.

## ■ 4. Research design and sample selection

We have used data obtained through a survey jointly conducted by IEB University (Spain) and EY Spain (Corporate Treasury department). A detailed questionnaire was prepared including 35 questions relating to companies' foreign currency risk management practices and company characteristics. These questions are divided into the following main topics:

- 1) Information about the companies that compose the sample.
- 2) General internal organization of foreign currency risk management activities.
- 3) Challenges and objectives of foreign currency risk management activities.

- 4) Measurement of foreign currency risk exposure.
- 5) Foreign currency risk management strategy.
- 6) Foreign currency risk management accounting.
- 7) Systems used for foreign currency risk management.

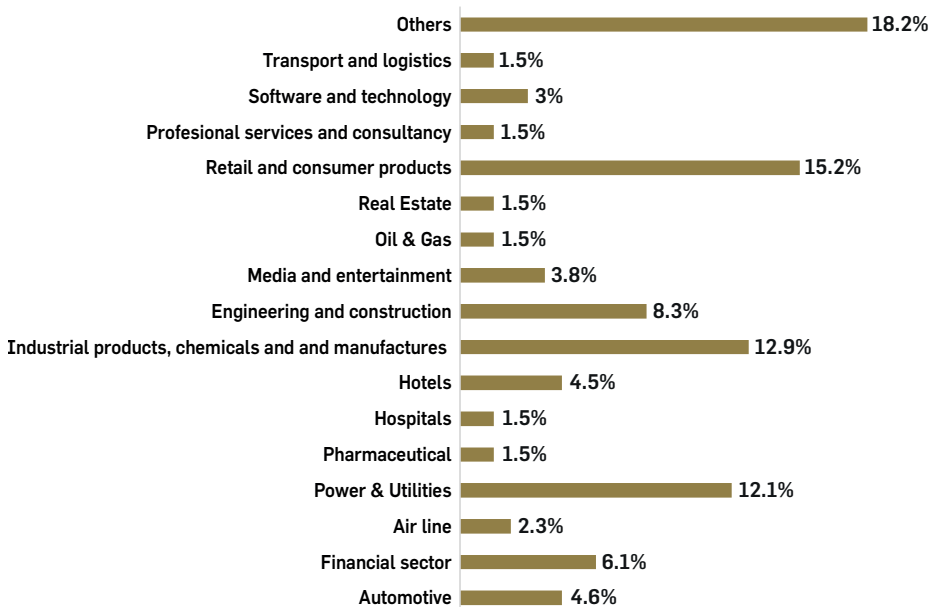
The questionnaire was sent to the finance, treasury or risk management department of each company via a web-based survey tool. Companies had to choose one out of several possible answers to each question. In some of the questions, more than one answer could be selected, and in some questions, text could be added to explain the company's answer if it was not among the available options.

There were 35 questions in total; nevertheless, in this paper we have only analysed those that we consider most relevant in order to test our hypotheses. The questionnaire was sent to 250 companies and was answered by 134 (53.6%). The questions were written on the basis of previous literature (see section 2) and Papaioannou (2006).

Unlike other studies that focus only on companies with extensive international transactions, we have included companies in the sample irrespective of their size or their exposure to foreign currency risk.

The companies belong to a variety of sectors, as can be seen in Figure 1.

**Figure 1. Sector to which the company belongs**



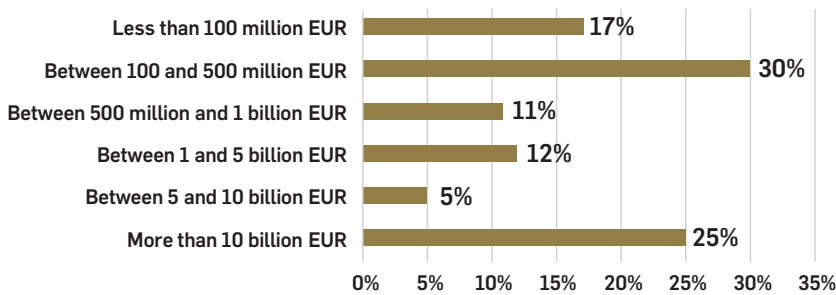
SOURCE: COMPILED BY AUTHORS

Among the sectors in the sample, the most represented are: retail (15.2% of the sample), industrial products (12.9%) and energy (power & utilities) (12.1%); and, though to a lesser extent, engineering and construction (8.3%), financial (6.1%), automotive (4.6%) and hotels (4.5%).

The “other” sector (18.2%) includes companies that do not fit into any of the displayed sectors (for example, mining, aeronautical or packaging) or even companies whose activity falls into several sectors.

The sample is highly diversified (none of the sectors represents more than 15.2% of companies), so the overall results will be representative of the practices of Spanish companies overall. Most of the companies in the sample are non-financial companies (the financial sector represents only 6% of the total sample).

**Figure 2. Consolidated group gross operating income**

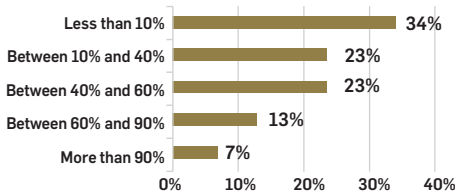


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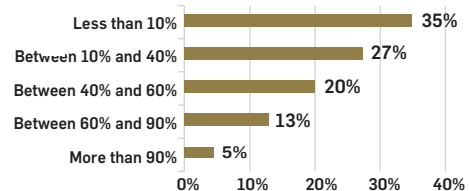
In general, the groups represented in the sample are relatively large in terms of size. 83% have a gross operating income of more than 100 million Euros, 42% (less than half of the total sample) greater than 1 billion Euros, and 30% greater than 5 billion Euros. Only 17% of the companies in the sample have a gross operating income of less than 100 million Euros.

**Figures 3 and 4. Consolidated group sales and purchase volume outside the Eurozone**

Sales volume outside the Eurozone



Purchase volume outside the Eurozone



SOURCE: COMPILED BY AUTHORS

Only 7% of the companies have more than 90% of their sales denominated in foreign currency and 5% have more than 90% of their purchases denominated in foreign currency (assuming that, in the companies included the sample, the reference currency is the Euro).

The most typical situation among the companies in the sample is to have sales in foreign currency representing between 10% and 60% of the total sales (46% of the sample) and purchases in foreign currency representing between 10% and 60% of the total purchases (47% of the sample). This indicates that the companies generally have a high level of exposure to fluctuations in exchange rates.

It should be noted that purchases and sales in foreign currency can be carried out directly from a company located in Spain (or in the Eurozone) or from a subsidiary located in another geographical region.

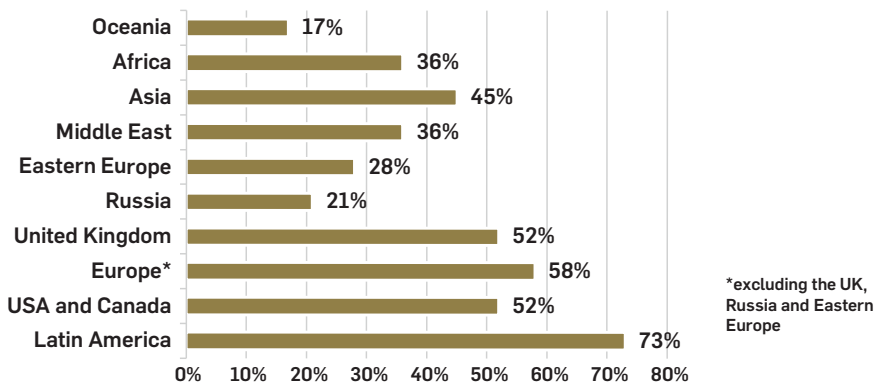
These percentages have been increasing in recent years, according to previous studies on the internalization of Spanish companies (see section 1). Since 2008 (that is, since the beginning of the last financial crisis), Spanish companies have increased their exports and their investment activities abroad.

On the other hand, in relation to the companies included in the sample, two other important data should be noted:

- 1) 78% of the companies in the sample are the group parent company.
- 2) 37% of the groups to which the companies belong have issued shares or bonds that are quoted on active markets.

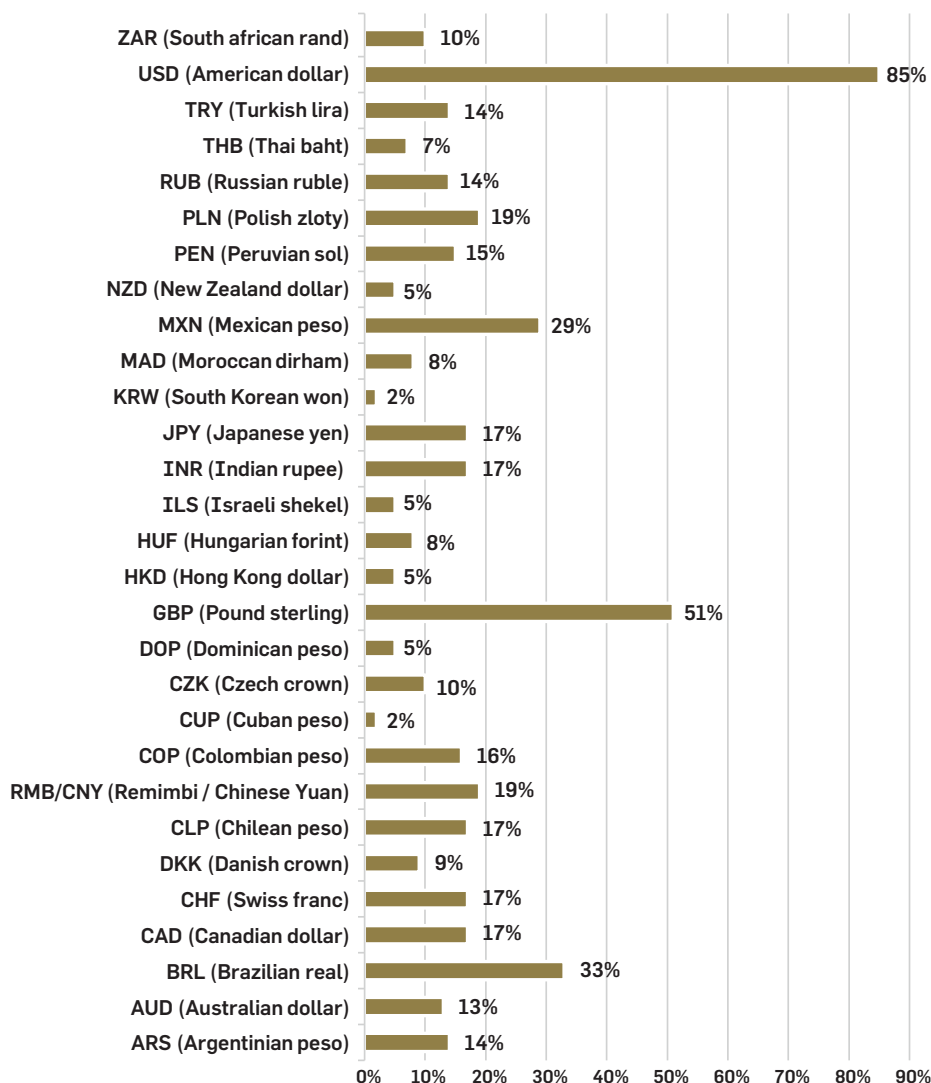
**Figures 5 and 6. Geographical areas and currency exposure**

Geographical areas in which the group operates outside the Euro zone (more than one answer is possible)



SOURCE: COMPILED BY AUTHORS

Currencies other than the Euro to which the group is exposed to  
(more than one answer is possible)



SOURCE: COMPILED BY AUTHORS

The geographical area the companies are most exposed to is Latin America (73% of companies have some type of exposure to this area), which is to be expected in a survey of Spanish companies.

However, the currency to which the companies have the highest exposure is the US Dollar (85% of the sample has some exposure to this currency). This is due to the fact that the US Dollar is used as the reference currency in many non-US regions (including Latin America). In addition, the United States (together with the UK) is second in terms of the geographic areas where the companies have the highest presence.

52% of the companies in the sample responded that they are operating in the UK and 51% that they have exposure to the British Pound (GBP) (which is consistent).

The Latin American currency to which companies have the highest exposure is the Brazilian Real (33%), followed by the Mexican Peso (29%) and the Chilean Peso (17%).

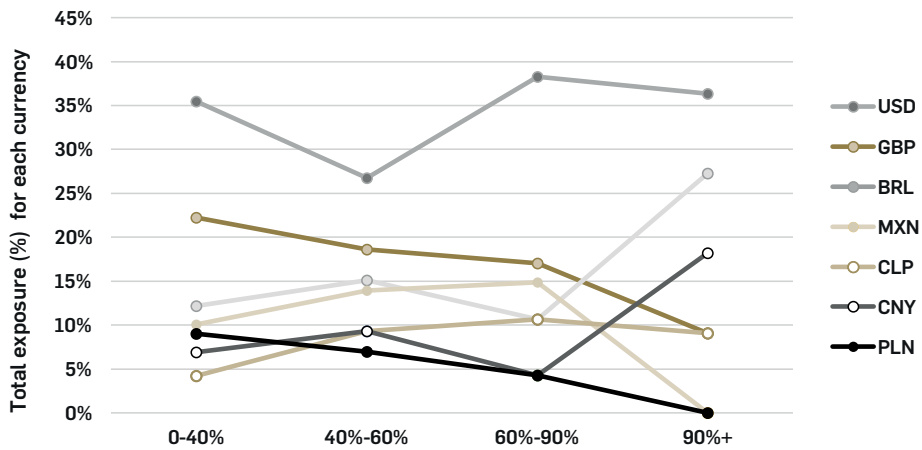
The Asian currency to which the companies have the highest exposure is the Chinese Remimbi (19%), and the Eastern European currency to which companies have the highest exposure is the Polish Zloty (PLN) (19%).

In general, it can be seen that companies have exposure to a variety of currencies. In fact, there are only two currencies in the list of 29 currencies to which less than 5% of the companies have exposure: the Cuban Peso and the South Korean Won.

We have also analysed whether the exposure to the different currencies is mainly explained in terms of sales outside Eurozone. To that end, we have linked the main currencies to which the companies have exposure with the percentage of sales outside the Eurozone.

The results are shown below:

**Figure 7. Percentage of sales outside Eurozone for main currencies**



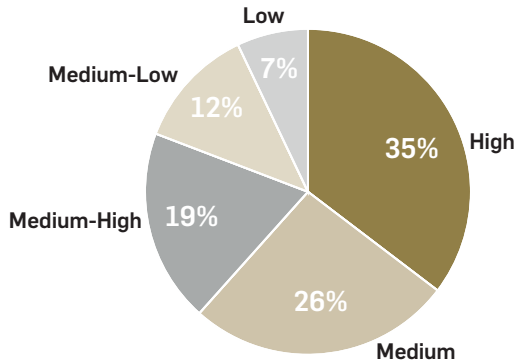
SOURCE: COMPILED BY AUTHORS

As can be seen in Figure 7, the USD is the main currency to which the companies are exposed regardless of the percentage of sales outside the Eurozone, followed by GBP and BRL for exposures between 0% and 60% of sales outside the Eurozone. It is interesting to note how BRL, CNY and CLP play a more important role in the currency exposure when the percentage of sales outside the Eurozone increases (between 60% and 100%).

## ■ 5. Main results

### 5.1 Foreign currency risk management internal organization

■ Figure 8. Concern about foreign currency risk



SOURCE: COMPILED BY AUTHORS

The responses received in the survey confirm that companies are very concerned about foreign currency risk and about the effects that movements in the exchange rates may have on the company's results, equity or future cash flows. This is consistent with the high percentage of their purchases and sales denominated in foreign currency (see Figures 3 and 4).

61% of the companies included in the sample report high or medium-high concern regarding exchange rate risk. Only 7% report low concern.

In relation to the companies that report low concern, 62.5% have a gross operating profit below 500 million Euros (companies of this size represent 47% of the total sample). 62.5% have less than 40% of their sales outside the Eurozone (companies with this level of exposure represent 57% if the total sample), and 87.5% have less than 40% of their purchases outside the Eurozone (companies with this level of exposure represent 62% of the total sample).

That is, the degree of concern is largely explained by the company's size and exposure to foreign currency risk. The variables that best explain the degree of concern are the percentage of sales and the percentage of purchases outside the Eurozone.

We have carried out an analysis of the correlation between the concern about foreign currency risk and the percentage of sales and purchases outside the Eurozone. As the percentages of sales and purchases and sales are given in ranges and the data on concern about foreign currency risk is a qualitative measure, the first step in the analysis

was to homogenize the data series to make them comparable. We have categorized both data series as shown below:

% of sales outside Eurozone	Category
0%-10%	1
10%-40%	2
40%-60%	3
60%-90%	4
90% +	5

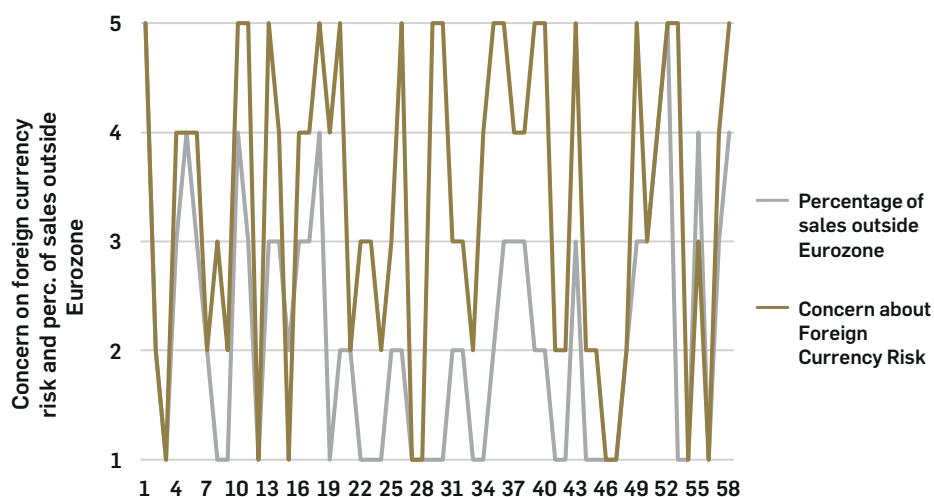
Concern about foreign currency risk	Category
Low	1
Medium-Low	2
Medium	3
Medium-High	4
High	5

% of purchases outside Eurozone	Category
0%-10%	1
10%-40%	2
40%-60%	3
60%-90%	4
90% +	5

Concern about foreign currency risk	Category
Low	1
Medium-Low	2
Medium	3
Medium-High	4
High	5

Our goal is to analyse the extent to which the percentages of sales and purchases outside the Eurozone are related to the concern about foreign currency risk. In other words, we have analysed how the percentages of sales and purchases outside the Eurozone explains the concern about foreign exchange risk. The following chart shows the correlation between the risk concern and the percentage of sales outside the Eurozone:

**Figure 9. Correlation between concern and percentage of sales outside the Eurozone**



SOURCE: COMPILED BY AUTHORS



Since both data sets are split into categories, the correlation calculation has been done using Spearman's rank correlation coefficient formula:

$$r_s = 1 - \left( \frac{6 \sum_{i=1}^n d_i^2}{n(n^2-1)} \right) \quad (1)$$

where:

$r_s$  = Spearman's correlation coefficient.

$d_i = \text{rank}(X_i) - \text{rank}(Y_i)$  = the difference between the rank of each category of variable  $X$  and the rank of each category of variable  $Y$  with respect to their ranges of categories.

$n$  is the number of observations (134); in this case, the number of responses on the concern about foreign currency and the corresponding response on level of sales/purchases outside the Eurozone.

Due to the existence of repeated categories for each variable in the same range, there are repeated ranks in each category observation range. Consequently, the Spearman's correlation coefficient should be computed as the Pearson's correlation coefficient between the ranked variables:

$$r_s = \rho_{\text{rank}_X, \text{rank}_Y} = \frac{\text{cov}(\text{rank}_X, \text{rank}_Y)}{\sigma_{\text{rank}_X} \sigma_{\text{rank}_Y}} \quad (2)$$

where

$\text{cov}(\text{rank}_X, \text{rank}_Y)$  = covariance of the ranks arrays.

$\sigma_{\text{rank}_X}$  and  $\sigma_{\text{rank}_Y}$  are the standard deviations for each variable rank.

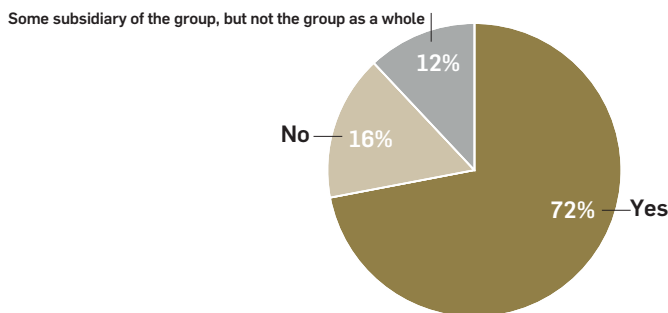
The correlation for the entire range of data taken from the survey is 60%. Considering the fact that we are relating two different qualitative types of data, it can be concluded some elements of the companies' concern are not completely explained by the sales in non-Euro currency. Moreover, it should be highlighted that the concern about foreign currency risk is, in many cases, at least one point above its correlative level of percentage of sales outside the Eurozone, providing us with useful information about the risk acceptance.

If we take purchases instead of sales, the results are similar.

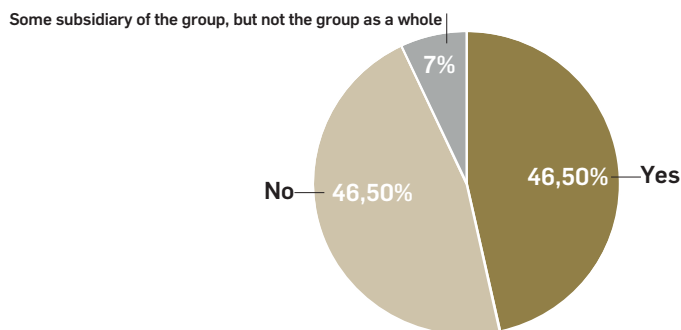
The sectors with the highest level of concern about foreign currency risk are energy, industrial, construction and retail. Sectors with a lower level of concern are real estate and professional services (which are, generally, the ones with less exposure to foreign currency risk).

## Figures 10 and 11. Foreign currency risk strategy definition

Does the group have a defined foreign currency risk management strategy that it currently applies?



Does the group have an exchange rate risk management policy documented and approved by the Management / Board of Directors?



SOURCE: COMPILED BY AUTHORS

84% of the companies surveyed do have a defined foreign currency risk management policy; either a global group policy (72%) or a policy established for some of the group companies (12%).

Lack of a policy is not explained by the level of exposure to foreign currency risk. Out of the 16% of companies that do not have a defined policy, 61% have less than 40% of their sales outside the Eurozone (companies with this level of exposure represent 57% of the total sample, only 4% less). However, it is explained by the size of the company: 72% of the companies that do not have a defined policy have a gross operating income of less than 500 million Euros (companies of this size represent 47% of the total sample).

Although 84% of the companies in the sample have a defined risk management policy, only 53.5% of the sample have documented this policy in an internal manual approved by the company's management. 7% of the sample only documented the specific policy of one or a number of companies in the group.

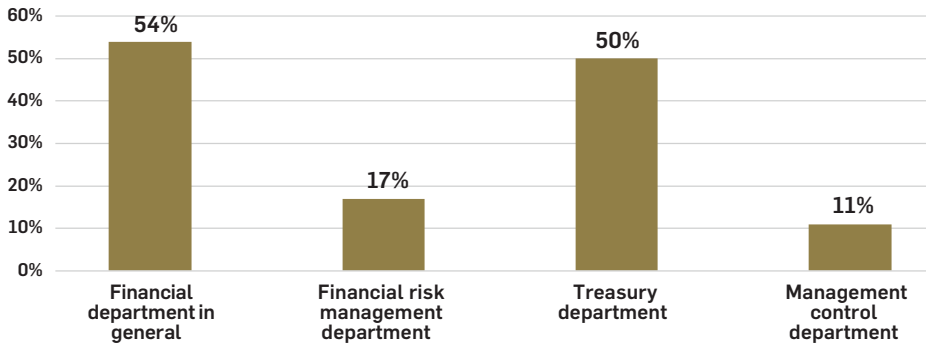
Out of the 46.5% of companies that do not have a documented policy, 70% are companies with a gross operating income of less than 500 million Euros (these companies represent 47% of the total sample).

Among listed companies, the percentage of companies that do not have a documented policy drops to 27.2%.

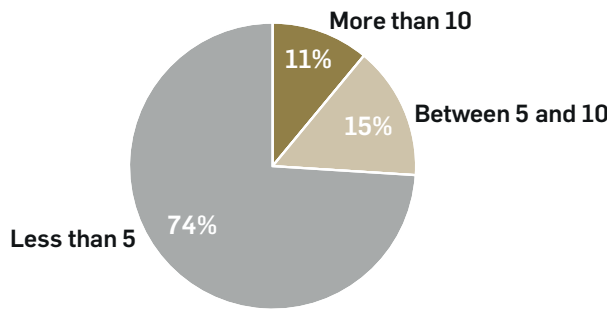
Therefore, having a documented internal policy is explained by the company size and by whether or not the company is quoted.

■ **Figures 12 and 13. Foreign currency risk organization**

Which department is responsible for the implementation of the foreign currency risk management policy? (more than one answer is possible)



How many people are directly involved in foreign currency risk management within the group? (Defined as a person that dedicates at least 10% of their time to foreign currency risk management)



SOURCE: COMPILED BY AUTHORS

Foreign currency risk management is usually carried out by the finance department (54%), or by the treasury department (50%). Only 17% of the respondents have a specific risk management department.

Out of the 17% of companies that have a specific risk management department, 63% have a gross operating income of more than 5 billion Euros (these companies represent only 30% of the total of the sample).

In most companies (74%), fewer than five people are directly involved in foreign currency risk management. It follows that people who execute the foreign currency rate risk management policy are also involved in other tasks within the finance or treasury department.

According to the data obtained, the number of people involved in foreign currency risk management seems to be much more correlated to the size of the company than to the company's exposure.

Only 11% of the companies in the sample have more than 10 people involved in foreign currency risk management. 50% of these companies have less than 40% of their sales outside the Eurozone. Nevertheless, 92% of these companies have a gross operating profit of more than 10 billion Euros and 100% greater than 5 billion Euros.

Of the companies with more than 10 people involved in foreign currency risk management, the energy sector represents 42%.

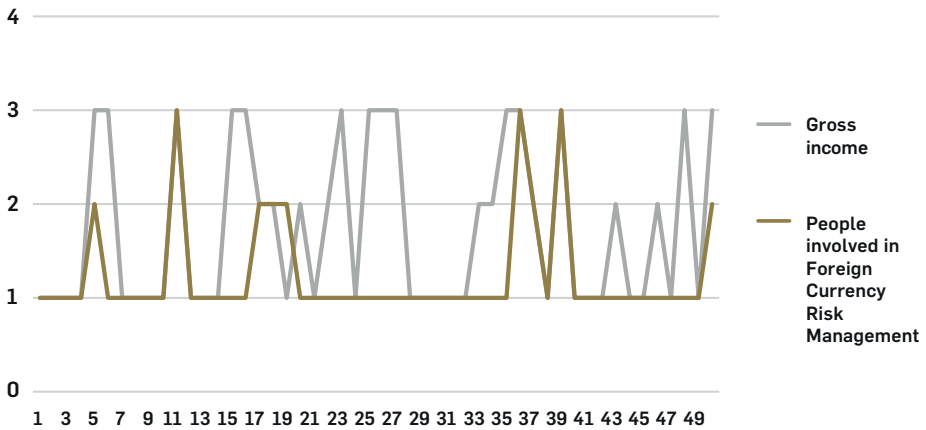
We have statistically analysed the relationship between the number of people directly involved in the firm's foreign currency risk management and two variables: the total gross income and the percentage of sales outside the Eurozone.

On the one hand, we have carried out a correlation analysis between the gross sales of each company and the number of people engaged in foreign currency risk management, assigning a number to each variable to homogenize the series, as we did in the above analysis on the concern about foreign currency risk and sales outside Eurozone:

Gross income (Euros)	Category	People involved in foreign currency risk management	Category
Up to 500 million	1	Less than 5	1
From 500 million to 5 billion	2	Between 5 and 10	2
From 5 billion to 10 billion	3	More than 10	3

The Spearman's correlation as in (2) is 51%. Higher correlation might be expected; nevertheless, it should also be noted that the centralization issue means that the people involved in foreign currency risk management could also be involved in other issues at the same time or distributed differently among the company departments. That is, there are other combinations of determining factors inherent to each company that affect the assignation of people to foreign currency.

**Figure 14. Correlation between gross operating income and people involved in foreign currency risk management**



SOURCE: COMPILED BY AUTHORS

It is clear that, even though the gross income partly explains the number of people assigned to foreign currency risk management, there are other relevant explanatory factors that are specific to each company and different from those collected in the survey.

We do not find that the foreign currency exposure (percentage of sales outside the Eurozone) explains the number of people involved in foreign currency risk management. There is a positive correlation of only 5% between the percentage of currency exposure and the number of people involved in the foreign currency risk management.

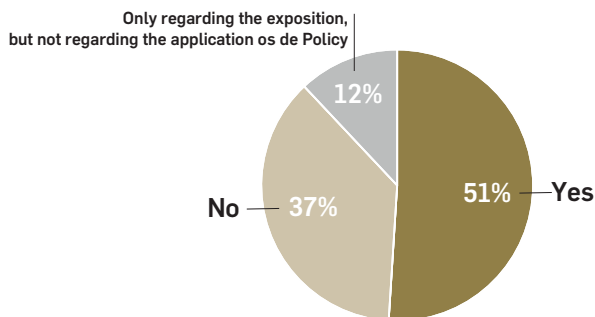
Out of the total number of companies in the sample, 63% have some type of periodic senior management reporting in relation to foreign currency risk. 37% do not have any type of reporting in this regard.

The lack of reporting is explained, in part by the size of the company and in part by the company's exposure. Out of the 37% of companies that do not have reporting:

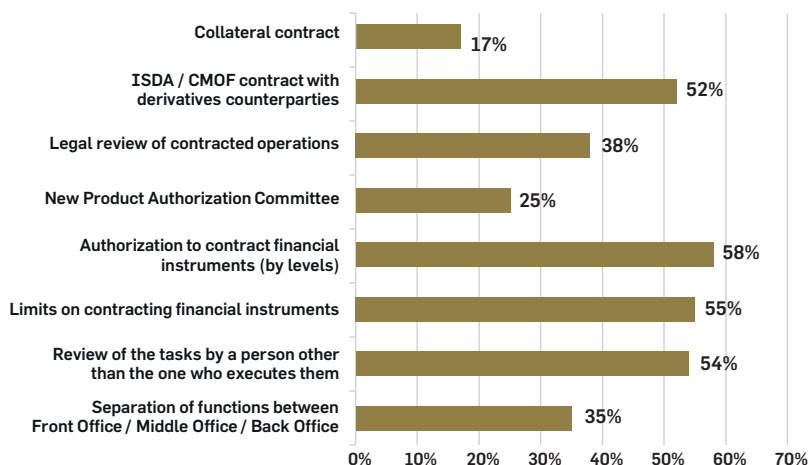
- 73% have a gross operating income of less than 1 billion Euros (these companies represent 58% of the total of the sample).
- 68% have less than 40% of their sales outside the Eurozone (these companies represent 57% of the total sample).
- 80% have less than 40% of their purchases outside the Eurozone (these companies represent 62% of the total sample).

## Figures 15 and 16. Controls over the foreign currency risk

Is there periodic reporting to the Board of Directors in relation to the exposure to foreign currency risk and the result of the application of the risk management policy?



Does the group have the following controls in place in relation to foreign currency risk? (more than one answer is possible)



SOURCE: COMPILED BY AUTHORS

In relation to controls on foreign currency risk management, the most widely implemented controls among companies in the sample are the authorization level (per nominal amount of the transaction) required to enter into derivative financial instruments and the existence of limits for operation (58% and 55%, respectively, of companies impose these controls).

54% of the sample has a division by tasks in the foreign currency risk management functions. 34% have a separation between front, middle and back office tasks, which is more common in larger companies: 51% have a gross operating income of more than 5 billion Euros (companies of this size represent 30% of the total sample).

52% of the sample companies enter into derivatives under the ISDA/CMOF<sup>6</sup> framework.

<sup>6</sup> ISDA: International Swaps and Derivatives Association. CMOF: Contrato Marco de Operaciones Financieras.

## 5.2 Challenges and objectives of the foreign currency risk management

■ **Figure 17. Challenges in relation to foreign currency risk**

What is the main challenge that the group currency have in relation to foreign currency risk?  
(more than on answer is possible)



SOURCE: COMPILED BY AUTHORS

This question can give us very useful information because it relates to the areas in which companies recognize that they currently have internal aspects to improve.

In this regard, for 47% of the companies in the sample, one of the challenges is to establish a defined and clear objective for foreign currency risk management. This was the most common answer given by companies in the sample, and represents a very significant challenge. If the company does not have a clear objective in relation to its foreign currency risk management strategy, it makes it more difficult to propose an adequate management policy and to determine whether this policy has been successful.

The second most commonly reported challenge is related to the improvement of financial information for decision making (41%), i.e. improvement of the information about the exposure, its sensitivity, how it affects accounting figures, etc. This is also a very significant challenge because one of the basic requirements of foreign currency risk man-

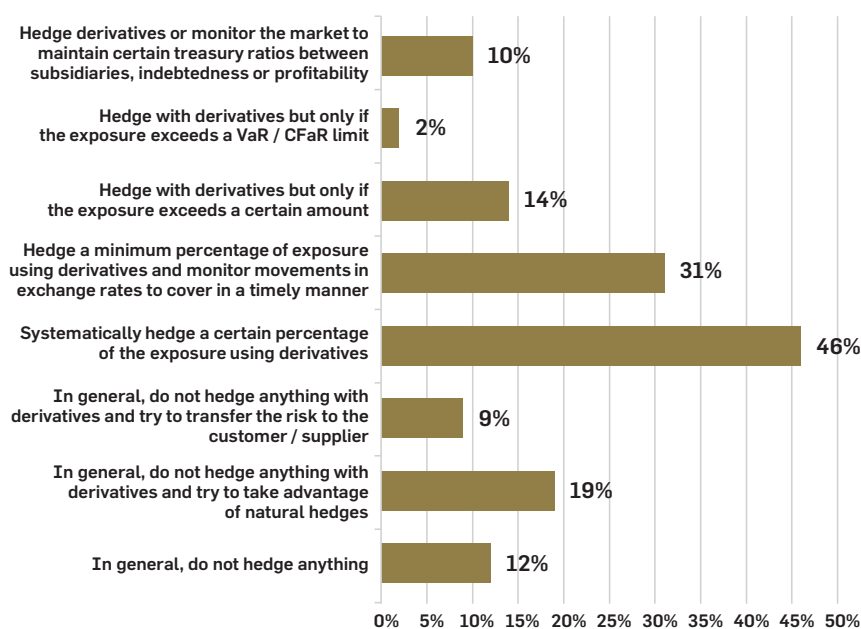
agement is having the most complete, up-to-date and clear information to enable decision-making. This challenge is also related to the understanding of the real exposure to the foreign rate risk of the group (selected by 36% of the companies).

Improvement of management systems and tools was reported by 36% of the companies, the application of hedge accounting by 36% of the companies and the management awareness of foreign currency risk exposure by 24% of the companies.

It is worth noting that only 1% of the companies in the sample reported the ability to recruit the right professionals as a challenge to their foreign currency risk management.

**Figure 18. Main objective of foreign currency risk management**

Type of strategy (more than one answer is possible)



SOURCE: COMPILED BY AUTHORS

The companies' main objective in relation to foreign currency risk management is to protect the results of the consolidated financial statements (70% of the sample). This is by far the most common goal of the companies in the sample.

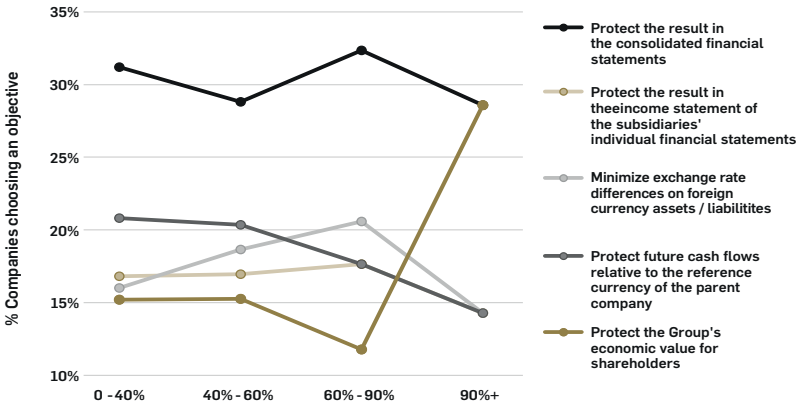
It can be deduced, from the answers to this question, that foreign currency risk management is more focused on protecting the income statement than protecting future cash flows (46% of the sample). In certain cases, protecting the treasury and protecting the income statement can be two incompatible objectives. Companies seem to opt for the income statement, which is related to the image they project.



It is worth noting that securing future dividends is the objective least often reported by the sample companies (only 9%), though it might be expected to be more common. Out of the companies that have selected this target, 78% have a gross operating income of more than 1 billion Euros (these companies represent 42% of the total sample).

In Figure 19, we have analysed the relationship between main objectives and percentage of sales outside the Eurozone.

**Figure 19. Main objectives per percentage of sales outside the Eurozone**

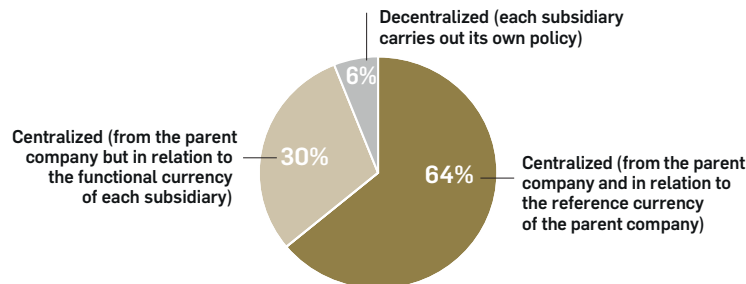


SOURCE: COMPILED BY AUTHORS

It can be seen that the objective of protecting the group's economic value for shareholders is more important for companies whose sales outside the Eurozone represent more than 90% of total sales.

**Figure 20. Centralization of foreign currency risk management**

In general, is the group's foreign currency risk management policy centralized or decentralized?



SOURCE: COMPILED BY AUTHORS

The exchange rate risk is usually managed centrally from the group parent company (94% of the sample). 64% of the companies in the sample carry out centralized risk management in relation to the reference currency of the parent company (i.e. the objective is to

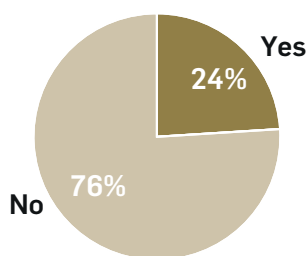
hedge transactions in relation to the Euro, regardless of the subsidiary in question) and 30% carry out such management in relation to the functional currency of each subsidiary.

In only 6% of the groups does each subsidiary independently manage its own foreign currency risk. This factor is explained by a combination of size and exposure level. 50% of these companies have a gross operating income of less than 500 million Euros and, out of the remaining 50%, 66% have less than 40% of sales and 10% of purchases outside the Eurozone. Nevertheless, considering the whole sample of companies responding to the survey, we do not find a clear relationship between risk policy centralization and either sales outside the Eurozone or gross sales of the group. The correlation between policy centralization and sales outside the Eurozone yields a negative Spearman’s correlation of -4%, as does the correlation with gross sales.

### 5.3 Measurement of foreign currency exposure

■ **Figure 21. Measurement of economic exposure**

Does the Group measure the economic exposure?



SOURCE: COMPILED BY AUTHORS

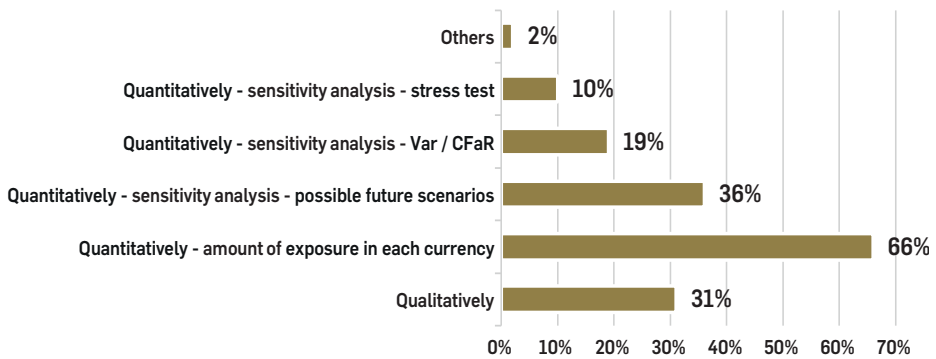
Most companies in the sample (76%) do not measure, or at least not directly, the “economic” exposure to foreign currency risk. The economic exposure is an indirect exposure: the risk that the appreciation or depreciation of a currency to which the company is not directly exposed could alter the cash flows or the value of the company.

Among the companies that do measure the economic exposure, we can find companies belonging to the following sectors: retail (26%) and industrial (26%). These percentages are higher than the respective shares of those sectors in the total sample of companies.

On the other hand, 47% of the companies that do measure the economic exposure are companies with a gross operating income of more than 10 billion Euros (and 52% more than 5 billion). This percentage is significantly higher than the percentage that these companies represent in the total sample, thus indicating that measuring the economic exposure is more common in larger companies.

## Figure 22. Exposure measurement

How does the Group measure its exposure to foreign currency risk?  
(more than one answer is possible)



SOURCE: COMPILED BY AUTHORS

The most common practice of the companies in the sample (66% of the total) is to measure the foreign currency risk in a quantitative way i.e. by analysing the monetary amount of future flows or investments in foreign currency.

Nevertheless, 65% of the companies carry out some kind of sensitivity analysis, either possible future scenarios (36%), VaR/CFaR (19%) or stress test (10%).

It should be noted that with this question (as with others in the questionnaire) companies can choose more than one answer. As such, although 30% of the companies in the sample measure the exposure in a qualitative way, some of them also measure it quantitatively.

Only 19%<sup>7</sup> of the companies in the sample do not measure exposure in a quantitative way (they either measure it in a qualitative way or they do not measure it at all). This is explained by both company size and level of exposure. Out of this 19%:

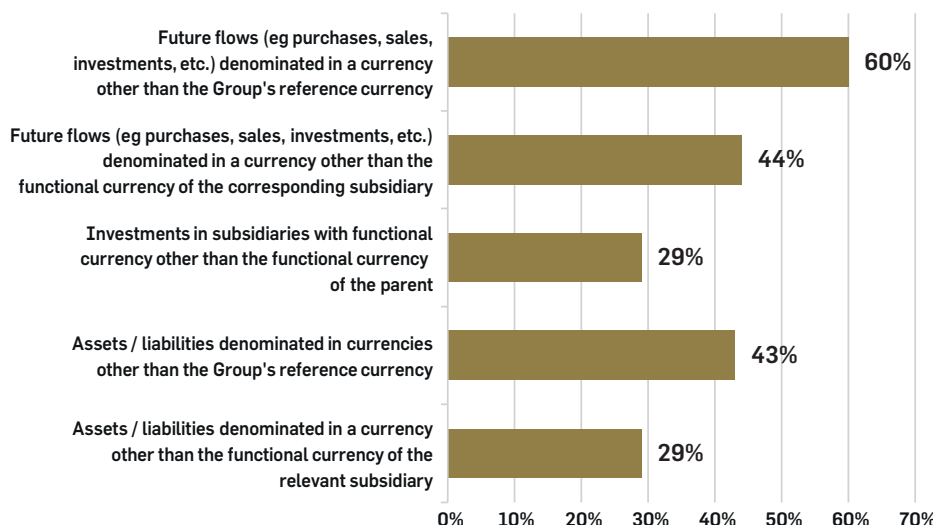
- 88% have a gross operating income of less than 500 million Euro (companies of this size represent 47% of the total sample).
- 66% have less than 40% of their sales outside the Eurozone (companies with this exposure represent 57% of the total sample).
- 83% have less than 40% of their purchases outside the Eurozone (companies with this exposure represent 62% of the total sample).

<sup>7</sup> This percentage cannot be seen in Figure 22 as companies can choose more than one answer.

## 5.4 Risk management strategies

**Figure 23. Exposure on which the strategy is focused**

What type of exposure does the hedging strategy focus on? (more than one answer is possible)



SOURCE: COMPILED BY AUTHORS

If we divide exposures to foreign currency risk into three groups—future flows in foreign currency, foreign currency assets/liabilities and net investments in subsidiaries—the most commonly employed strategy is to focus on future flows, followed by assets/liabilities and finally net investments.

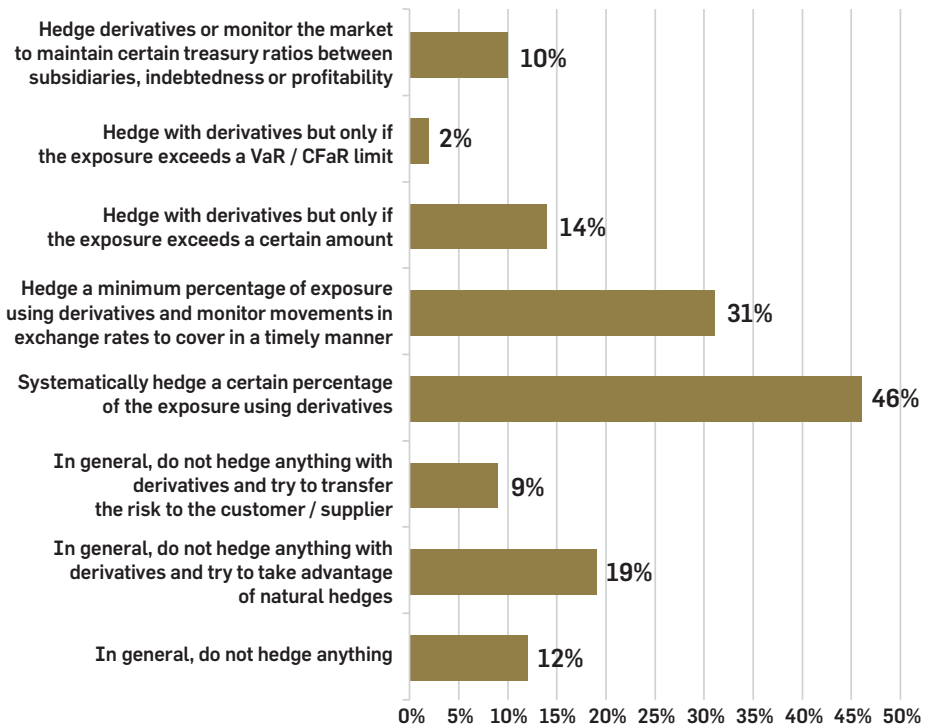
In relation to investments in subsidiaries, only 29% of the companies in the sample focus their management strategy on this type of exposure. Out of these companies, 46% have a gross operating income of more than 5 billion Euros (though companies of this size only make up 30% of the total sample). Therefore, it is more common in the largest companies to focus the strategy on the hedge of net investments in subsidiaries.

This is one of the most important questions of our study and one of the questions that can shed most light on foreign currency risk management practices in Spanish companies.

The most common strategy (46% of the sample) is to systematically hedge a certain percentage of the exposure using derivatives. The second most common strategy (31% of the sample) is to initially hedge a minimum percentage of the exposure and subsequently, depending on the movements in the exchange rates, to adjust the hedge level.

**Figure 24. Risk management strategy**

Type of strategy (more than one answer is possible)



SOURCE: COMPILED BY AUTHORS

It should be noted that 19% of companies do not hedge any exposure and just use natural hedges, and 9% do not hedge any exposure and try to transfer the risk to the client/provider.

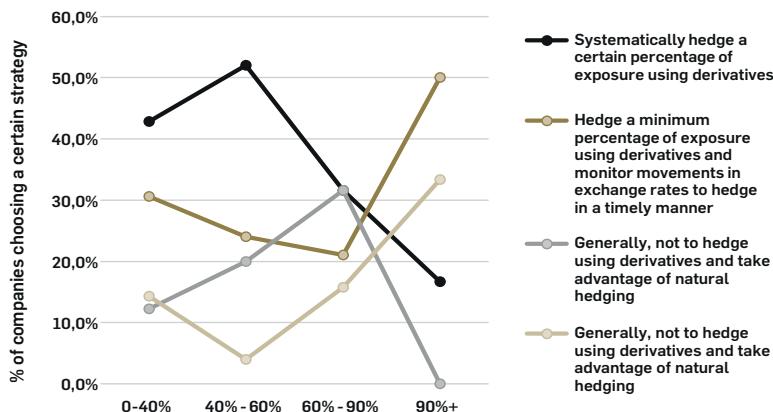
This latter option has, in some cases, been chosen along with other strategies (in 50% of the cases), which means that companies that use this strategy cannot mitigate the whole risk with it.

12% of the companies have chosen the option “in general, do not hedge anything”. In addition, all of those companies have chosen only this option (without additionally choosing any other options, as is logical). Unsurprisingly, these are companies with less exposure to foreign currency risk; 90% have less than 40% of sales outside the Eurozone and 100% have less than 40% of purchases outside the Eurozone.

Only 2% of the companies in the sample employ a hedging strategy based on VaR/CFaR measurement. All of them have a gross operating income of more than 5 billion Euros, and 50% belong to the retail sector.

It is useful to analyse the relationship between the main strategies used and the percentage of sales outside the Eurozone. Generally, the higher the percentage of sales in a non-Euro currency, the more common it is for the companies to use derivatives in order to hedge the exposure.

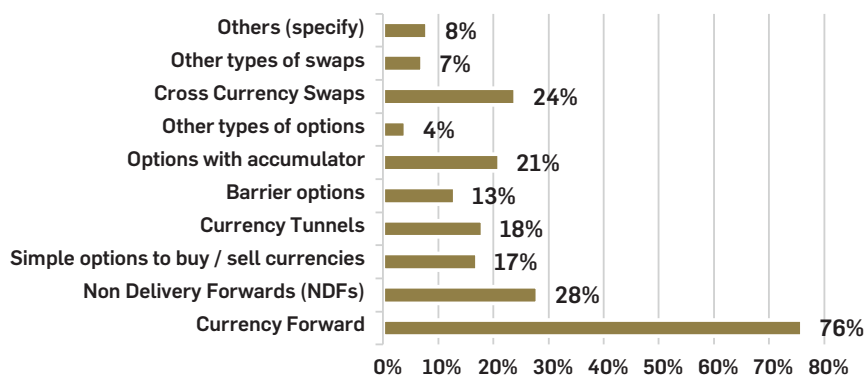
**Figure 25. Strategy and percentage of sales outside Eurozone**



SOURCE: COMPILED BY AUTHORS

**Figure 26. Derivatives used**

What types of derivatives are commonly used in foreign currency risk management? (more than one answer is possible)



SOURCE: COMPILED BY AUTHORS

The derivatives most widely used in order to hedge foreign currency risk are currency forwards (76% of the companies in the sample use them), followed by NDFs (28%), which are forward contracts without physical delivery.

The third most widely-used derivatives are CCS (24%). 36% of the companies that use CCS have a gross operating income of more than 5 billion Euros (slightly higher than the share of these companies in the total sample).

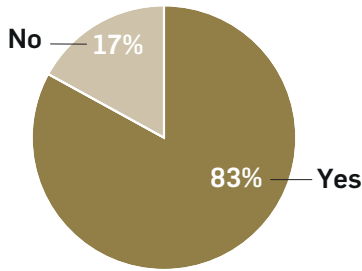
The fourth most widely-used derivatives are options with accumulator (21%). It should be noted that the larger companies are not necessary those that enter into the more complex derivatives. 58% of the companies that use option with accumulators are companies with gross operating income of less than 500 million Euros (which represent a 47% share of the total sample).

Something similar happens with the barrier options, used by 13% of the companies in the sample. 50% of the companies that use these options have gross operating income of less than 500 million Euros.

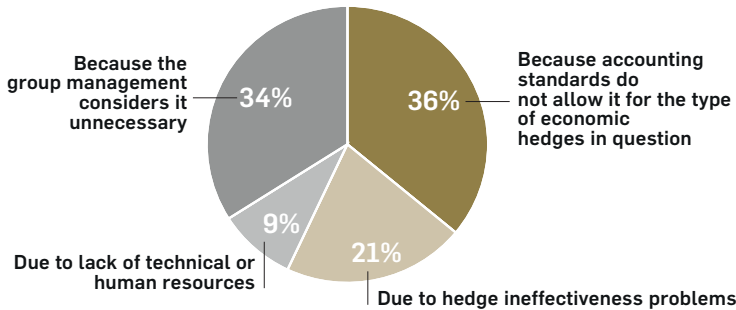
### 5.5 Accounting issues

#### ■ Figures 27 and 28. Application of hedge accounting

If the group enters into derivatives or other financial instruments, does the group generally apply the hedge accounting rules?



In case the group does not apply hedge accounting, what are the main reasons?



SOURCE: COMPILED BY AUTHORS

The vast majority of companies that enter into derivatives in order to hedge exposures apply special hedge accounting rules (83% of the total sample). It should be noted these rules are voluntary (both under Spanish GAAP<sup>8</sup> and under IFRS<sup>9</sup>).

<sup>8</sup> Generally Accepted Accounting Principles.

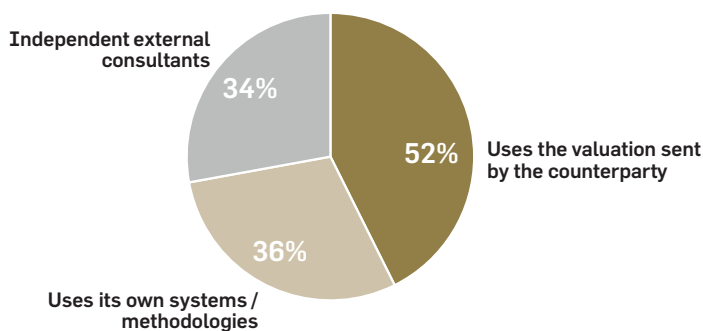
<sup>9</sup> International Financial Reporting Standards.

In relation to companies that do not usually apply hedge accounting, the industrial and engineering sectors make up a significant share (31% and 19%, respectively). In addition, they are usually smaller companies: 56% have a gross operating income of less than 500 million Euros (companies of this size represent 47% of the total sample). This is consistent with the fact that smaller companies tend to use more complex derivatives to which hedge accounting cannot be applied under Spanish GAAP and IFRS (see section 5.4 and Figure 26).

The two main reasons why companies do not apply hedge accounting are: because the accounting standard does not allow to apply hedge accounting for the economic hedging relationship (36%), and because the group management considers it unnecessary (34%).

**Figure 29. Derivatives valuation for accounting purposes**

If the group enters into derivatives for foreign currency risk management, how does it carry out the fair value estimation for accounting purposes?



SOURCE: COMPILED BY AUTHORS

Only 36% of companies estimate the fair value of at least part of the derivative portfolio using their own resources. This percentage is related to the size of the company. Out of these companies, 44% have a gross operating income of more than 5 billion Euros (companies of this size represent 30% of the total sample).

It should be noted that, with this question, as with other questions in the questionnaire, more than one option can be chosen. As such, many companies that use their own resources, or external consultants, also use the valuation prepared by the counterparty (we assume that they do so to compare the results or for certain types of derivatives).

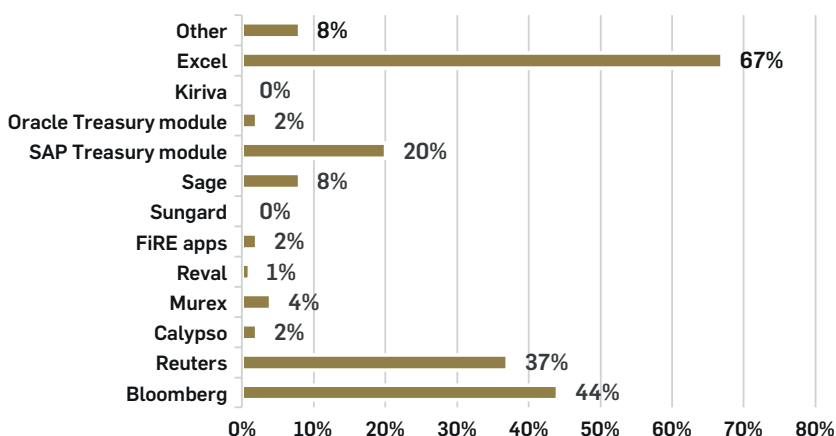
Out of the total number of companies in the sample, 30% uses only the valuation prepared by the counterparty for estimating derivatives' fair value. This percentage is closely related to the size of the company. 78% have a gross operating income of less than 1 billion Euros (these companies represent 53% of the total of the sample).



## 5.6 Systems used

■ **Figure 30. Systems and tools used for foreign currency risk management**

Tool used (more than one answer is possible)



The survey shows how Excel continues to be the most widely-used tool for managing foreign currency risk (67% of the sample use it for this purpose).

Bloomberg and Reuters are also widely used (44% and 37% of the sample respectively). These tools can be used for various purposes: market information, derivative valuation, sensitivity analysis, etc.

The most widely-used treasury module is SAP (20%), followed by Sage (8%). In general, it is the larger companies with greater exposure that use SAP, unlike SAGE:

- Out of the companies that use SAP, 50% have a gross operating income of more than 1 billion Euros (these companies represent 42% of the total sample) and 55% have more than 40% of their sales outside the Eurozone (43% in the total sample).
- Out of the companies that use SAGE, 29% have a gross operating income of more than 1 billion Euros (these companies represent 42% of the total sample) and 29% have more than 40% of their sales outside the Eurozone (43% in the total sample).

## ■ 6. Conclusions

We have conducted a survey on foreign currency risk management practices in Spanish companies. The respondents comprised 134 companies from a variety of sectors, of dif-

ferent sizes and with different levels of exposure. We have carried out an overall analysis of current foreign currency risk management practices that companies apply as well as focusing on the relationship between company practices and their size and exposure level.

Analysing the answers received in the questionnaire, we can conclude that the policy of the companies is influenced by company size (measured as gross operating income) and exposure level (measured as percentage of sales and purchases outside the Eurozone) (see Appendix 1). This conclusion is in line with previous studies (although our study covers more risk management aspects). Other variables explaining some factors in relation to risk management practices are sector and whether the company is listed.

Further conclusions that can be drawn from the data analysis are:











- 1) Spanish companies have a high level of exposure to foreign currency risk, typically with between 10% and 60% of their purchases and sales outside the Eurozone. This result is in line with the increase in exporting activities since 2008 (see section 1 for official figures).
- 2) Spanish companies are concerned about foreign currency risk (only 7% of companies in the sample report a low level of concern).
- 3) The most widespread risk management policy in Spanish companies is systematically hedging a certain percentage of the exposure using derivatives (46%). The type of derivative most commonly used in foreign currency risk management is the foreign exchange forward (76%), which, from an accounting point of view, is usually included in a hedge relationship (83%). The most widely-used tool for foreign currency risk management is Excel (67%), followed by Bloomberg (44%), Reuters (37%), SAP's treasury module (20%) and Sage (8%).
- 4) The major challenges for companies in relation to foreign currency risk management are: to establish a defined and clear objective for foreign currency risk management (47%), to improve financial information for management decision-making (41%), to understand the group's real exposure to foreign currency risk (36%) and improve management systems and tools (36%).
- 5) In general, Spanish companies measure their exposure focusing on their purchase volume outside the Eurozone rather than analysing their sales outside the Eurozone. This can be deduced from the analysis of companies' answers to a number of questions, including those on risk management concern (Figure 8) and risk management controls (Figure 15).
- 6) Larger companies are not necessarily the ones that are more likely to enter into complex derivatives. Derivatives such as options with accumulators or barrier options are more widely used by companies with a lower gross operating income. This also implies that, in these companies, the application of special hedge accounting rules is less widespread.

- 7) Centralization or decentralization of foreign currency risk management (from a group perspective) is not explained by companies' exposure or size, but rather by variables such as the group's general management model and how long the group has had control over the subsidiaries (generally speaking, for a while after a new subsidiary has been purchased it continues to apply its previous policy), etc

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## References

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- Al-Shboul, M. (2007). The impact of the Use of Derivatives and Operational Hedging on Foreign Currency Risk Exposure, 20th Australasian Finance & Banking Conference 2007. Available at: <https://ssrn.com/abstract=1008444> 
- Banco de España (2015). Ajuste Competitivo y Recuperación de la Economía Española, Informe Anual 2015, pp.51-58. Available at: <http://www.bde.es/ff/webbde/SES/Secciones/Publicaciones/PublicacionesAnuales/InformesAnuales/descargar/15/Fich/cap2.pdf> 
- Barclays (2012). Global Corporate Risk Management Survey. Available at: <https://www.treasurers.org/risksurvey> 
- Deloitte (2016). Continued Evolution 2016 Global Foreign Exchange Survey. Available at: <https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/finance/sea-fas-2016-global-fx-survey.pdf> 
- EMPEA (2016). Currency Risk Management Survey. Available at: <http://empea.org/research/publications/currency-risk-management-survey> 
- Grant Thornton (2015). How are you Managing Foreign Exchange Risk? Available at: <http://breakwateronline.ca/resources/How%20are%20you%20managing%20foreign%20exchange%20risk.pdf> 
- Ito, T., Koibuchi, S., Sato, K. and Shimizu, J. (2016). Exchange Rate Exposure and Risk Management: The Case of Japanese Exporting Firms, *Journal of the Japanese and International Economies*, **41**, pp. 17-29.
- Jorion, P. (1991). The Pricing of Exchange Rate Risk in the Stock Market, *Journal of Financial and Quantitative Analysis*, **26**, pp. 363-376
- Makar, S. and Huffman, S. (2011). Foreign Currency Risk Management Practices in U.S. Multinationals, *Journal of Applied Business Research*, **13**(2), pp. 73-86.
- Ministerio de Economía y Competitividad (2016). Informe Mensual de Comercio Exterior. January 2016. Available at: <http://www.comercio.mineco.gob.es/es-ES/comercio-exterior/estadisticas-informes/PDF/estadisticas-comercio-exterior/enero%202016/Informe%20de%20Comercio%20Exterior%20-%202016-01.pdf> 
- Muff, T., Diacon, S. and Woods, M. (2008). The Management of Currency Risk: Evidence from UK Company Disclosures. CRIS Discussion Paper Series – 2008.I. Available at: <http://www.nottingham.ac.uk/business/businesscentres/crbfs/documents/cris-reports/cris-paper-2008-1.pdf> 
- Muller, A. and Verschoor, W. (2005). The Impact of Corporate Derivative Usage on Foreign Exchange Risk Exposure. Available at SSRN: <https://ssrn.com/abstract=676012> 
- Muller, A. and Verschoor, W. (2006). European Foreign Exchange Risk Exposure, *European Financial Management*, **12**(2), pp. 195-220.
- Papaioannou, M. (2006). Exchange Rate Risk Measurement and Management: Issues and Approaches for Firms. International Monetary Fund Working Paper. Available at: <https://www.imf.org/external/pubs/ft/wp/2006/wp06255.pdf> 

- Sungard (2010). Foreign Exchange Exposure Management: A Benchmark Survey of Foreign Currency Exposure and Risk Practices, Challenges, and Results. Available at: <http://static.capitalize-on-change.com/Global/pdfs/corporations/Whitepaper%20-%20SunGard%20FX%20Exposure%20Management%20Study.pdf>
- Wells Fargo (2016). 2016 Risk Management Practices Survey. Available at: <https://www08.wellsfargomedia.com/assets/pdf/commercial/focus/intl-rmg-survey-booklet.pdf>

## APPENDIX I

Foreign currency risk management aspect	see Figure	Explained by				Other
		Company size	Sales outside the Eurozone	Purchases outside the Eurozone		
Concern about foreign currency risk	8	X	X	X	Sector	
Defined foreign currency risk management strategy	10	X				
Documented foreign currency risk management strategy approved by senior levels	11	X			Company listed	
Foreign currency risk organization	12 and 13	X				
Controls over foreign currency risk management	15 and 16	X	X	X		
Objective of foreign currency risk management	18	X	X			
Centralization or decentralization of foreign currency risk management	20					
Measurement of economic exposure	21	X			Sector	
Exposure measurement	22	X	X	X		
Exposure on which the strategy is focused	23	X				
Risk management strategy	24	X	X			
Derivatives used	26	X				
Hedge accounting application	28	X			Sector	
Derivatives valuation for accounting purposes	29	X				
Systems and tools used for foreign currency risk management	30	X				

