FCD use, Firm Value and Corporate Governance

by

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Biographical Note

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Abstract

This study examines the impact of the use of currency derivatives on firm value using a sample of non-financial foreign firms from 14 countries of the European Union that are cross-listed on major stock exchanges between 2005 and 2015. All the results are obtained from an OLS regression and also from the quantile regression approach, to correct standard errors from within cluster dependence.

We hypothesize that currency derivatives use is associated with firm value in companies with a strong firm-specific and country-specific corporate governance.

The results reveal a positive association between the use of currency derivatives and firm value in firms which have strong internal corporate governance and from countries with Scandinavian Civil Law. This could mean that in the European context the legal family with the strongest investor protection rights is the Scandinavian family. We also found evidence that the legal family with the lowest investor protection rights is the French Commercial Code.

This study is important for all the investors that want to understand which countries have the best mechanisms to protect them.

Keywords: Derivatives, Hedging, Firm Value, Corporate Governance

JEL Codes: G3, F3, F4

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1. Introduction

Nowadays the market of derivatives is a huge and complex market, a market where "Futures and options are actively traded on many exchanges throughout the world", stated by John Hull (2011).

John Hull (2011) also stated that "Derivatives markets have come under a great deal of criticism because of their role in the credit crisis that started in 2007". So after 2007, more than ever, investors want to know why companies use derivatives. But even before 2007, through the years authors studied why companies use derivatives. For instance, Smith and Stulz (1985) showed that managers can use derivatives for hedging reasons which can add value for companies. Many others investigated the risk management using derivatives and how this affects firm value.

More recently, in 2012 Allayannis et al. realized that it is expected that the use of currency derivatives to be positively associated with firm value in well-governed firms in countries with strong investor protection rights. These authors added to the previous studies about derivatives and firm value the importance of corporate governance and they realised that investors can evaluate a firm's internal (Firm-level) and external (country-level) corporate governance and draw inferences on a firm's motive behind the use of derivatives.

Following Allayannis et al. (2012), in this investigation it is addressed the question of whether the value-increasing use of derivatives is positively associated with a strong corporate governance (firm-level and country-level). In a first stage we examine the value of the use of currency derivatives without taking into account differences in corporate governance. After that we examine if the use of derivatives is positive associated with firm value when corporate governance (Internal) is strong. To measure the internal corporate governance we followed the work of Karl V. Lins (2003) which provides evidence that large non-management blockholders can mitigate the valuation discount associated with agency problems. We expect the use of derivatives to be positively associated with firm value when a firm have largest outsider blockholders. The third step was to examine the impact of external country-level governance. To do so we separated countries by legal families, using LLSV (1998). We expect the use of derivatives to be positively associated with firm value in firms located in countries with stronger investor

protection rights. In the last step we examine the interaction between firm-specific internal governance and country-specific external governance and its impact on the value of derivatives usage, it is expected that the value-increasing use of derivatives to be the strongest in the presence of a strong external and internal corporate governance[1].

We focus specifically in the use of currency derivatives and the research of Allayannis and Weston (2001) enumerates some reasons why this should be the way forward: (1) the possibility of isolating a common risk among firms, (exchange risk), (2) prior empirical research has shown that different factors affect the choice to use currency, interest rate, or commodity derivatives and this factors can affect firm value and (3) currency derivatives are the most commonly used derivatives.

To pursue our empirical test it is used a sample of foreign firms that are cross-listed on major stock exchanges though ADRs (American Depository Receipts)[2] similar to the study of Allayannis et al. (2012) that focus their analysis in the foreign firms that are cross-listed on a major U.S. Exchange trough ADRs. The choice of using foreign firms that are cross-listed was a necessary one as a way of measuring the external corporate governance, to ensure a sample with firms from several countries. Companies that are negotiated as ADR are from different countries and are constantly exposed to exchange rates because of the foreign sales. The data covers a period of eleven years, from 2005 to 2015 and the final sample includes a total of 129 foreign firms from 14 countries of the European Union, resulting in a number of 1419 observations.

[1] The hypotheses construction was based on the work of Allayannis et al. (2012). This question will be addressed further in a next section.

[2] American Depositary Receipt: *"Certificates issued by a US depository bank, representing foreign shares held by the bank, usually by a branch or correspondent in the country of issue. One ADR may represent a portion of a foreign share, one share or a bundle of shares of a foreign corporation. If the ADR's are "sponsored," the corporation provides financial information and other assistance to the bank and may subsidize the administration of the ADR. "Unsponsored" ADRs do not receive such assistance. ADRs are subject to the same currency, political, and economic risks as the underlying foreign share. Arbitrage keeps the prices of ADRs and underlying foreign shares, adjusted for the SDR/ordinary ratio essentially equal. American depository shares (ADS) are a similar form of certification."* (Definition obtained from Nasdaq)

Two different sources were used to gather the information, the financial and accounting data were obtained from *Thomson Reuteurs Database*, and the data on whether companies use derivatives was hand-collect form the companies financial reports[3].

In this manual process of gathering information from the annual reports, it is essential to understand if the firm uses currency derivatives contracts for hedging purposes.

According to previous literature the financial institutions and utilities were excluded from our sample because they are likely to have different motivations for the use of derivatives than non-financial firms, for example speculative reasons, and in this study we request only the derivatives used for hedging reasons. Tax-heavens such as Bermuda and Luxembourg were also excluded from the sample.

In this analysis Tobin's Q ratio is the dependent variable[4]. As in Allayannis et al. (2012), Rossi Júnior and Laham (2008), among others, we use the market-to-book ratio as proxy for Tobin's Q to reflect a firm's market value.

Econometrically, it is essential to correct standard errors from within cluster dependence. For that reason beyond the OLS method it is performed a Quantile regression approach, more precisely the bootstrap method introduced by Efron (1979). The results are reported for the 10th, 25th, 50th, 75th and 90th quantiles.

Our major findings are that in firms with strong internal corporate governance and from countries with Scandinavian Civil Law, firm value is positively associated with FCD use. In firms with strong internal corporate governance and from countries with French Commercial Code, firm value is negatively associated with FCD use. This could mean that in a European context the Scandinavian Civil Law is the legal family with the strongest investor protection rights and the French Commercial code is the legal family with the weakest investor protection rights, if we assume that FCD use is positively

[3] From the information disclosed in the annual reports was collected data about the use of currency derivative contracts for hedging purposes, about the use of interest derivative contracts for hedging purposes, and information about corporate governance, which will allow us to construct our internal governance index. This question will be addressed further in a next section.

[4] Following previous works the Tobin´s Q Ratio is defined as the book value of total assets less book value of equity plus market value of equity, scaled by the book value of total assets. The Dependent Variable will be addressed further in a next section.

associated with firm value when corporate governance is strong (internal and external), following the findings of Allayannis et al. (2012).

We also found at the highest quantile (90th) a positive association between FCD use and firm value. We didn't find any significant results about the effect of strong internal corporate governance in the value of FCD usage and this might have happened because of the impact of the Sarbanes-Oxley law[5]. After 2002, the year of implantation of the law, ADRs were forced to adopt more strict governance practices and this probably affected our results.

This research contributes to the previous works in several ways: we focus our study in a European context, contrary to the work of Allayannis et al. (2012) which investigates the association between the use of currency derivatives and firm value in well-governed firms from countries all over the world, we only considered firms from European countries. We found that in a European context the legal family with the strongest investor protection rights is the Scandinavian Civil Law instead of the English Common Law as expected if we take into account previous studies such as LLSV (1998) and Allayannis et al. (2012). This could mean two things, that the strength of investor protections rights around the world has changed in more recent years or that in a European context the LLSV (1998) don't apply. We created four dummy variables to quantify a company external corporate governance, taking into account in our research the four legal families, on the other hand Allayannis et al. (2012) in their work used only one dummy variable "English legal origin" to quantify a company external corporate governance. We also cover a more recent period from 2005 to 2015, which allow us to test the impact of the Sarbanes-Oxley law in the internal corporate governance. One of the econometric problems of this research is the possible dependence within clusters as highlighted by Allayannis et al. (2012), to control this we used the quantile regression approach, more precisely the bootstrap method, introduced by Efron (1979) to correct standard errors for within cluster dependence.

[5] *"The Sarbanes-Oxley Act of 2002, sponsored by Paul Sarbanes and Michael Oxley, represents a huge change to federal securities law. It came as a result of the corporate financial scandals involving Enron, WorldCom and Global Crossing. Effective in 2006, all publicly-traded companies are required to implement and report internal accounting controls to the SEC for compliance. In addition, certain provisions of Sarbanes-Oxley also apply to privately-held companies".* (Definition obtained from Sarbanes Oxley 101).

Our research is organized as follows. Section 2 presents a review of the theoretical and empirical literature related to the topic. In section 3 the hypotheses under consideration are developed and in section 4 we develop the sample and the data collection process. Section 5 reports the methodology including the definition of all variables employed and the empirical models. Section 6 shows the results and section 7 concludes.

2. Literature Review

2.1. Hedging

According to Modigliani and Miller (1958) in a perfect market, risk management has no impact in the firm value. For that reason companies should have no motives to engage in hedging strategies.

However, some authors consider that is possible to exist some imperfections in the capital markets, arguing that companies may have reasons to engage in hedging activities. For instance, Smith and Stulz (1985) suggested that the transaction costs of financial distress may induce firms to hedge. In another line of studies, Smith and Stulz in 1985 also highlighted the relationship between the hedging strategies and the agency problems and they found that selfish reasons could be behind the motive why managers engage in risk management activities, in order to protect themselves and not necessarily to benefit shareholders. So hedging could be in fact a way of risk management.

More recently Bartram et al. (2011) gathered support to the idea that derivatives use has been important in limiting the severity of economic downturns in developed economies, reinforcing the idea that the use of derivatives could be, in fact, risk management rather than simply speculation. After that Pérez-González and Yun (2013) reinforced the idea that risk management has a meaningful impact on valuation, investments and financing decisions and they focused on financial innovation to identify the value of risk management.

Following this idea that companies could use derivatives for risk management reasons some authors start studying if hedging creates value for firms.

2.2. Hedging and Firm Value

Many authors studied the value of hedging, in firms from different markets, from different industries and that are exposed to different types of risks.

For instance Allayannis and Weston (2001) investigated the existence of a hedging premium, and they concluded that firms which begin hedging policies experience an increase in value relative to those firms that choose to remain unhedged and firms that quit hedging experience a decrease in value relative to those firms that chose to remain hedge. This suggest that the decision to hedge is value increasing.

In 2006 Jin and Jorion also studied the relationship between hedging and firm value but they focused on the oil and gas market. They found that the hedging premium depends on the types of risks the firm is exposed to.

Rossi Júnior and Laham (2008) on the other hand focused on the Brazilian market. They studied the impact of hedging activities on firm value in a sample of Brazilian firms and they found that for Brazil there is a significant gain in hedging because of the high volatility in macroeconomics variables.

In 2011 Campello et al. gathered proof about the advantages of hedging, they studied the implications of hedging for firm financing and investment and they found that firms pay lower interest rate spreads and are less likely to have restrictions in private credit agreements after start hedging.

More recently in 2013 Ahmed et al. studied simultaneously the usage of four financial derivative for hedging three types of risk and they found that the value of derivative use varies across financial risks. There are derivatives which are more effective in hedging certain types of risks.

2.3. Hedging, Firm Value and Corporate Governance

At some point some authors added the importance of corporate governance in the relationship between firm value and hedging. For instance Ugur Lel (2012) believed that corporate governance could provide mechanisms to effectively monitor the use of derivatives and he found that derivative usage is more likely to reduce risk when corporate governance is strong

Also Allayannis et al. (2012) tried to understand if the value-increasing use of derivatives is positively associated with a strong corporate governance (firm-level and country-level). They added to the literature the importance of the external corporate governance.

To measure the internal corporate governance (firm-level) this authors created an index with 7 alternative unique roles, for example, (1) the absence (presence) of an inside (outside or institutional investor) blockholder, (2) if the CEO is not also the chairman, (3) voting rights of the largest managerial blockholder and (4) voting rights of the largest blockholder. This index was inspired in the work of Gompers, Ishii, and Metrick (2003), who use 24 unique governance rules to construct a governance index to proxy for the

level of shareholder rights in U.S. firms. The rules of the index are also based on the research of Karl V. Lins (2003) and the research of Jensen (1993) and Yermack (1996).

Karl V. Lins in 2003 suggested that a concentrated ownership coincides with a lack of investor protection, because owners will seek to protect themselves by becoming controllers. The author infers that investors discount firms with potentially severe managerial agency problems resulting from misaligned incentives and managerial entrenchment and that large non-management blockholders can mitigate the valuation discount associated with the expected agency problems. This author considered that a shareholder becomes a blockholder when has stakes at or above 5%. If a large non-management shareholder has both the incentive to monitor management and enough control to influence management such that cash flow is increased, firm value should be higher because all equity holders share in this benefit of control.

Jensen (1993) and Yermack (1996) found that firms are more highly valued and boards are more effective monitored when the CEO and the Chairman are separated positions.

Also in 2012 Allayannis et al. added to the literature the importance of the external corporate governance. They focused in the use of foreign currency derivatives for hedging purposes and used a sample of foreign firms that are cross-listed on a major U.S. Exchange (ADRs) and the evidence gathered by them suggests that the value implication of FCD use is the strongest when investors are protected at both the firm and country level.

To measure the external corporate governance Allayannis et al. (2012) followed the LLSV (1998).

The LLSV (1998) tries to understand if the differences in laws across countries could be explained in part because of differences in legal origin. They created some rules that measure how easy it is for investors to exercise their powers against managers. Some of the rules cover voting powers, ease of participation in corporate voting, respect for security of the loan among others. They concluded that common-law countries give both shareholders and creditors the strongest protection and French-civil-law countries the

weakest protection. Generally German-civil-law and Scandinavian countries stay in the middle[6].

Allayannis et al. (2012) used the dummy variable "English legal origin" to quantify a company external corporate governance. For a firm to have an "English legal origin", it has to be in a country that belongs to the common law family. They also used a variety of proxies such as the strength of shareholder rights, the strength of creditor rights, the efficiency of the judicial system, among others, all obtained from the LLSV (1998).

Because Allayannis et al. in 2012 connected the reasons behind the use of derivatives with the value of hedging and the importance of corporate governance we believe in the potentiality of this area of research. For this reason we developed a study on this subject but focusing only on countries of the European Union. We hope to analyse differences in the corporate governance (internal and external) in different countries that are part of the same economic and political union.

To build our study and develop a comprehensive work, we follow some of the researches previously presented. We address the question if the use of currency derivatives for firms that have a strong corporate governance (internal and external) affect firm value, following examples of abroad analyses, mostly Allayannis et al. (2012). Next we will present our hypothesis construction.

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[6] ○ The French Commercial Code, has its origins in Roman Law, was written under Napoleon in 1807 and arrived to Belgium, the Netherlands, part of Poland, Italy, western regions of Germany, the Near East and Northern and sub-Saharan Africa, Indochina, Oceania, French Caribbean islands, and also Luxembourg, Portugal, Spain and some of the Swiss cantons (LLSV, 1998).

○ The German Commercial Code, has its origins in Roman Law and was written in 1987 after Bismarck's unification of Germany. It had an important influence on the legal theory and doctrine in Austria, Czechoslovakia, Greece, Hungary, Italy, Switzerland, Yugoslavia, Japan and Korea, also in Taiwan and China (LLSV, 1998).

○ The Scandinavian family is less derivative of Roman law than the French and German families and for this reason the Nordic countries are kept as a separate family (LLSV, 1998).

○ The common law family includes the law of England and has spread to the British colonies, including the United States, Canada Australia, India, and others (LLSV, 1998).

3. Hypotheses Construction

After the presentation of previous research on the use of financial derivatives, hedging, corporate governance among other pertinent subjects we will formulate the hypotheses that are based on the literature review, being the work of Allayannis et al. (2012) the pillar of our research.

There are different reasons behind the use of derivatives and hedging is one of them. And when managers use derivatives for risk management that can add value (Smith and Stulz (1985).

In this research we want to study the impact of the use of currency derivatives on firm value in the presence of a strong corporate governance. We want to analyse corporate governance at an internal level and an external level, and this will be reflected in our hypothesis.

Manager's risk aversion could lead them to use derivatives to protect themselves and not necessarily to benefit shareholders (Smith and Stulz (1985). This can lead to agency problems that never benefit shareholders. One way to mitigate the valuation discount associated with agency problems is the presence of a non-management blockholder, Karl V. Lins (2003). This blockholder could have the power to control managers. With our first hypothesis we want to examine if the use of derivatives is positively associated with firm value when internal corporate governance is strong:

H1: The use of currency derivatives is positively associated with firm value in the presence of a non-management blockholder.

The use of derivatives should be positively associated with firm value in firms located in countries with stronger investor protection (LLSV (1998)). LLSV (1998) showed that common-law countries give both shareholders and creditors the strongest protection and French-civil-law countries the weakest protection. With our second hypothesis we want to examine if the use of derivatives is positively associated with firm value when external corporate governance is strong:

H2: The use of currency derivatives is positively associated with firm value in firms located in countries with stronger investor protection rights.

Taking into consideration both hypothesis, we want to examine if the use of derivatives is positively associated with firm value when internal and external corporate governance is strong. Thinking in the interaction between external and internal corporate governance, we can infer that, when external corporate governance is weak and managerial control exceeds its proportional ownership, extreme managerial agency problems may arise, because the private benefits of control are large, see Karl V. Lins (2003).

Combining H1 and H2 we can formulate our last hypothesis:

H3: The use of currency derivatives is positively associated with firm value in firms located in countries with stronger investor protection rights and in the presence of a non-management blockholder.

4. Data

Our sample consists of foreign firms that are cross-listed in different exchanges between 2005 and 2015. Firms that trade ADRs are a more natural setting to examine derivatives use because these firms have greater growth opportunities, are exposed to foreign exchange risk and usually are big companies, as showed in Doidge et al. (2004).

In this research we follow a different path, we started from a list of all ADRs that are traded in all stock exchanges in all the countries identified in LLSV(1998)[7] as being part of a legal family, and that belong to the European Union.

The choice to focus only in countries from the European Union aims to investigate the differences in corporate governance between countries that belong to the same economic and political union. We started from a total of 850 ADRs, the list of ADRs was obtained from *Thompson Reuters Datastream* and it should be noted that different ADRs could be related to the same company.

After that we obtained all the variables that were relevant to our research and we eliminated all the ADRs for which no information was available and all the repeated ADRs. The last step was to cross the information obtained from the *Thompson Reuters Datastream* with the information reported in the annual reports[8].

Since the research analyses the use of derivatives for hedging reasons, all the financial firms (Two-Digits US Standard Industrial Classification (SIC) Codes 60-67) were excluded from the sample, because financial firms may have different motives to use derivatives, for example to speculate or for trading reasons. We also excluded utilities (Two-Digits US Standard Industrial Classification (SIC) Code 49), because they may also have other reasons behind the use of financial derivatives.

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[7] Our list of countries includes: Portugal, France, Belgium, Netherlands, Ireland, United Kingdom, Austria, Germany, Denmark, Finland, Greece, Italy, Spain, and Sweden.

8 As part of our data is obtained from the annual reports of the firms of our sample, it is essential to guarantee that we are using the annual reports from the right firm. For that reason, for each firm we compared some variables, namely, total assets, current assets, current liabilities, shareholder´s equity, among others, that we obtained from the database, with the information present in the reports. The differences that we verify are due to currency differences, because all the data we obtained from the database is in US dollars and the reports we analyse are in euros, sterling pound, US dollars, among others.

In previous researches it is usual to exclude firms from tax-heavens, such as Bermuda and Luxemburgo, but this doesn´t apply to our research because our sample doesn´t have any firm from tax-heavens. We also excluded all the companies that had not at least six years of data, namely the Tobin's Q Ratio, in our total eleven years sample. Summing up, we started with 850 ADRs and after applying all the steps mentioned above and excluding some firms for the reasons already mentioned we obtained a sample with 127 companies. If we take into account the eleven years of data, the total observations reach the number of 1397.

The financial and accounting data were obtained from *Thompson Reuters Datastream*. The exception was the Diversification Dummy, for which the information was not available on *Thompson Reuters Datastream* and was collected from another source, Bureau Van Dijk Amadeus Database. To ensure the correct match between these two databases some tests were applied[9].

The derivatives information was hand-collected from companies' annual reports[10]. This manual process is essential to collect data on the use of currency derivatives, which will be our dependent variable. Also we collected data on the use of interest rate derivatives which will be used as a control variable. The information relatively to the internal corporate governance was also manually collected, namely if the CEO is different from the Chairman and we looked for the existence of blockholders (insiders and outsiders).

To localize the information of interest we applied a keyword system to facilitate and to save some time. If a keyword "derivatives", "currency risk", "interest rate risk" and "hedge" was found, we read all the important information and created the variables. If we didn't find any results we assumed that the firm doesn't use derivatives for hedging reasons, as in prior studies. Same companies also disclose in their reports that they don't hedge their risks, so we classified them as non-derivatives users. We also applied the keywords "chairman" and "chief executive officer", and we analysed if the same person

[9] Because our list obtained from the *Thompson Reuters Datastream* is a list of ADRs it was difficult to cross with the *Amadeus Database*. For that reason we searched for each company and compared the Four-Digits US Standard Industrial Classification (SIC) Codes for each firm, in the two databases. If the SIC Code is the same our similar we ensure that we are analysing the same company. For all the companies which we couldn't cross the SIC codes the variable Diversification Dummy wasn´t considerate.

[10] The annual reports were obtained from companies' official sites.

occupies both positions or not and we created manually our variable. Finally we used the keywords “share capital”, “significant shareholders”, “major shareholders”, “holding” to reach the information about the blockholders. This was the variable that demanded more time because we had to be sure if we were dealing with an outsider blockholder or with an insider blockholder. For that reason all the relevant notes were explored. After that, we created manually our variables. If we didn´t find any information about the existence of a blockholder, we assumed that the company had none.

Before 2005 the information about hedging and derivatives wasn´t available. Ugur Lel, (2012) highlighted the fact that the disclosure of information on the use of derivatives was voluntary in the majority of countries. Recently thanks to IAS 39, firms have to disclose the financial instruments related to hedging activities and for that reason is easier to access this information since 2005. So our sample starts in 2005 and ends in 2015.

5. Methodology

To understand the role of currency derivatives on the firm market value, we ran a set of regressions. These regressions comprise the presence of foreign sales, the internal governance index and the external corporate governance (measured by legal origin).

Below we explain the main variables and the empirical models used in this research.

5.1 Variables

5.1.1 Measurement of firm value

In this study our dependent variable is the market-to-book ratio as a proxy for Tobin's Q to capture the market value of the firm, because we want to understand the impact of the use of currency derivatives on firm market value. Following previous studies such as Rossi Júnior and Laham (2008), Allayannis et al. (2012) among others we defined Tobin's Q as the ratio of total assets less the book value of equity plus the market value of equity to the book value of assets.

We used the natural log of Q to prevent possible econometric problems since the distribution of Tobin's Q is skewed[11], following previous literature such as Allayannis and Weston (2001), Rossi Júnior and Laham (2008), Allayannis et al. (2012).

5.1.2 Measurement of Multinational diversification

Foreign sales is a dummy variable that equals one if the firm has foreign sales and zero otherwise and works as a proxy for multination diversification. Firms with foreign sales are multinationals firms, and many theories suggested that multinationality increases value, for instance Rossi Júnior and Laham (2008) and Ahmed et al. (2013).

Further in our investigation we will split up our sample with respect to foreign sales, to understand the effect of currency derivatives on firm value.

5.1.3 Measurement of currency derivatives

We constructed a variable dummy to separate foreign currency derivative users (FCD user) from foreign currency derivative non users (FCD non user) such as Allayannis et al. (2012) to capture the currency hedging derivatives. This information was collected

[11] The mean value of Tobin's Q is 1,80 whereas its median value is 1,49.

manually from the company's annual reports and the 20-F forms. For the firms that do not disclose any currency derivatives we read the entire set of notes to ensure that the firm is a FCD non user.

Previous literature construct a dummy variable separating hedgers from non-hedgers, for instant Jin and Jorion (2006), but we chose to focus only on the use of currency derivatives to hedge exchange rate risk, because as showed by Allayannis and Weston (2001) et al. if we focus on FCD users we can isolate a common risk factor among firms (exchange rate risk) and examine how currency derivatives affect the market firm value. Also different reasons can be behind the use of different types of derivatives, and this can have implications on firm value (Jin and Jorion (2006)), (Ahmed et al. (2013)). And also currency derivatives are the most commonly used derivatives.

In our sample of 127 firms, 9 of them are FCD non users and the remaining 118 are FCD users, which means we have an undiversified sample[12]. This happens because firms that trade ADRs also use currency derivatives to hedge the exchange rate risk.

5.1.4 Measurement of internal governance

We constructed a firm-level governance index following the work of Gompers, Ishii, and Metrick (2003) who use a 24 governance rules to construct a governance index as a proxy for shareholder rights in U.S firms and following the work of Allayannis et al. (2012) who use 7 governance rules (such as the presence of insider and outsider blockholders) to construct an index for each firm in the sample. Our internal governance index is comprised by 3 rules to measure a firm's internal corporate governance. Below you can see all 3 rules:

1. CEO and Chairman: equals 1 if the role of CEO is different from the role of Chairman, and 0 if the same person occupies both positions (dual CEO). Jensen (1993) and Yearmack (1996) found that when the CEO and chairman positions are separated firms are more highly valuated.

[12] When a firm in some point of our eleven years sample uses currency derivatives, this firm is classified as FCD user.

2. Outsider Blockholder: equals 1 if we verify the presence of an outsider blockholder, and 0 otherwise. Following Karl V. Lins (2003) any shareholder with stake at or above 5% is considered a blockholder.
3. Insider Blockholder: equals 1 if we verify that there is no insider blockholder and 0 otherwise. Once again an insider shareholder with a stake at or above 5% is considered a blockholder, Karl V. Lins (2003).

Our index ranges from 0 (weak governance) to 3 (strong governance) and firms are distributed across these categories (4,79% of our sample have a score of 0, 17,18% of our sample scored 1, 35,58% of our sample scored 2 and 42,45% of our sample scored 3). One advantage of this index is the use of the entire sample of firms, as showed in Allayannis et al. (2012).

Comparatively with other index used in previous literature, our index is smaller. This is a consequence of the time necessary to collect all this information manually.

5.1.5 Measurement of external governance

We created 4 dummy variables following LLSV (1998), separating countries in legal families:

1. English Common Law: This family comprises all firms from Ireland (4) and United Kingdom (47), this family totalizes 51 firms.
2. French Commercial Code: This family comprises all firms from Portugal (2), Greece (1), Italy (2), Spain (2), Belgium (3), France (20) and Netherlands (13), 43 firms on total.
3. German Commercial Code: This family comprises all firms from Germany (17) and Austria (5), this family totalizes 22 firms.
4. Scandinavian Civil Law: This family comprises all firms from Sweden (2), Denmark (4) and Finland (5) in a total 11 firms.

We report the results in the different legal families to identify differences across countries.

5.1.6 Control Variables

Previous literature (e.g., Allayannis and Weston (2001), Jin and Jorion (2006), Allayannis et al. (2012)) showed how important is to control factors that affect firm value.

Below we will introduce all the control variables we used in our research:

5.1.6.1 IRD Dummy: To ensure that the effect we find is due to the use of currency derivatives to hedge exchange rate risk and not due to interest rate derivatives use we created a dummy variable that equals 1 if the firm uses interest rate derivatives and zero otherwise. Similar to Allayannis et al. (2012).

5.1.6.2 Leverage: The possible effect of capital structure on firm value is controlled by leverage. We defined leverage as the ratio of total debt to shareholder equity following Allayannis et al. (2012). Previous studies such as Allayannis and Weston (2001) and Allayannis et al. (2012) found that leverage affects negatively firm value, and we expect to verify the same relation on our research.

5.1.6.3 Size: Firm size may also affect firm value as showed in Allayannis and Weston (2001), Jin and Jorion (2006), Allayannis et al. (2012) and Ahmed et al. (2013). The log of total assets was used as proxy of firm size.

For instance, Allayannis and Weston (2001) found that size has a negative sign and Allayannis et al. (2012) confirmed these results and showed that smaller firms are associated with higher value.

5.1.6.4 Dividends: We used a dummy variable that equals one if the firm pays dividends and zero otherwise. "If a firm paid a dividend, it is less likely to be capital constrained and may thus have a lower Q" (Allayannis and Weston (2001)). It is expected a negative relation between profit distributions and firm value, as obtained by Allayannis and Weston (2001) and Allayannis et al. (2012).

5.1.6.5 Investment Opportunities: We used two ratios to control for investment opportunities, the ratio of capital expenditures to sales and the ratio of research and development expenses to sales, following Allayannis and Weston (2001), Allayannis et al. (2012). Controlling investment opportunities is important because firms that hedge probably have larger investment opportunities as showed by Belghitar et al. (2008) and Pérez-González and Yun (2013). And for that reason we expect a positive relation between this two ratios and Q.

The information about Research and Development expenses was scarce and for that reason we followed Allayannis and Weston (2001) and assumed that the missing values were zero.

5.1.6.6 Liquidity: To control liquidity differences we used the ratio of current assets to current liabilities as in Rossi Júnior and Laham (2008). We expect a negative relation with Q.

5.1.6.7 Return on Assets: We used the return on assets as proxy for profitability, return on assets is the ratio of net income to total assets (Allayannis and Weston (2001), Jin and Jorion (2006) and Allayannis et al. (2012)). It is expected that more profitable firms have higher Q's, and for that reason we expect a positive relation.

5.1.6.8 Industry Diversification: To control for industry diversification we created a dummy variable that equals one if the firm has at least one other business segment with a different four-digit SIC code, and zero otherwise[13].

Ambiguous results were obtained through the years, for instance Allayannis and Weston (2001) showed that diversification is negatively related to firm value and on the other side Allayannis et al. (2012) evidence a positive relation between diversification and Q. For that reason we don't expect any specific signal in this variable.

5.1.6.9 Global Industry Q: We used a firm global industry Q to control industry growth. We calculated Global industry Q as the average Q of all firms within a classification, this classifications are based on the 4-digit SIC codes[14], following Todd Mitton and Thomas O'Connor (2008).

[13] All the data in our investigation was obtained from *Thompson Reuters Datastream*, but the necessary data to create this dummy doesn't exist in this database, and for that reason we resorted to *Amadeus Datastream*. We collected the primary US SIC codes and the secondary US SIC codes and if the secondary US SIC code exists and is different from the primary US SIC code our dummy takes the value one. This process was hard and time consuming because we had to compare some variables from both databases before we constructed our dummy variable, to guarantee we were analysing the same company.

[14] We used some of the classifications created by Todd Mitton and Thomas O'Connor (2008), namely Agriculture and Food (0100-0999 & 2000-2111), Mining and Construction (1000-1999, excluding 1300-1399), Textiles and Printing/Publishing (2200-2799), Chemicals (2800-2824, 2840-2899), Pharmaceuticals (2830-2836), Extractive (2900-2999, 1300-1399), Durable Manufactures (3000-3999, excluding 3570-3579), Transportation e Communication (4000-4899), Retail (5000-5999), Services (7000-8999, excluding 7370-7379) and Computers (7370-7379, 3570-3579).

We expect a positive and significant relation between Global industry Q and firm value following Allayannis et al. (2012).

5.1.6.10 Time effects: We controlled for time effects creating year dummies, following previous researches such as Allayannis and Weston (2001), Rossi Júnior and Laham (2008) and Allayannis et al. (2012).

5.1.6.11 Industry effects: We controlled for the industry-fixed effects creating a variable dummy based on one-digit SIC codes. "If hedgers are concentrated in high-Q industries, then hedgers will have higher values, not because of their use of derivatives but because of the industry they belong" (Allayannis and Weston (2001)). For that reason and others it is a standard practice to control industry effects.

5.1.6.12 Country effects: To control unobserved country factors we created country dummies following Allayannis et al. (2012).

5.2 Empirical Models

Our work pursuit to understand if firm market value is affected by the use of currency derivatives in firms with a strong internal and external corporate governance.

We combined our dependent variable Tobin Q and all the other variables in a set of empirical models.

Below we have the first regression model, where *t* refers to time and *i* to each firm:

(A)

$$QTobin_{i,t} = \partial + \theta_1 FCD_{i,t} + \theta_2 GOV_{i,t} + \rho X_{i,t} + \varepsilon_{i,t}$$

∂ represents the constant term and θ_1 and θ_2 represent respectively, foreign currency derivative coefficient and internal governance coefficient. *X* represents all control variables – *Size, Leverage, ROA, Dividend Dummy, R&D, Capital Expenditures, Liquidity, Industry Diversification, Global Industry Q, Year dummies, Industry dummies* and *Country dummies.* ε is the regression error term. Model A allow us to test H1.

(B)

$$QTobin_{i,t} = \partial + \theta_1 FCD_{i,t} + \theta_2 LF_{i,t} + \rho X_{i,t} + \varepsilon_{i,t}$$

Model B permits us to test the hypothesis H2, because it consider the external corporate governance, θ_2 represents the Legal Families that are the English Common Law, the French Commercial Code, the German Commercial Code and the Scandinavian Civil Law.

(C)

$$QTobin_{i,t} = \partial + \theta_1 FCD_{i,t} + \theta_2 GOV_{i,t} + LF_{i,t} + \rho X_{i,t} + \varepsilon_{i,t}$$

Model C test H3, because it considers both internal and external corporate governance.

We faced some econometric problems during our analysis which required us to take some caution. First we used year dummies because FCD use is likely to be correlated from year to year. Second, we used country dummies to control the unobserved country effects, because Tobin's Q is known to vary across countries. Third the effect of industry on firm value was controlled by using industry dummies (based on one-digit SIC codes). Last, we could be in the presence of possible dependence within clusters, so the standard errors are likely to be inflated because of dependence at the firm level (Allayannis et al. (2012)).

We used primarily an OLS method but as showed by Rogers (1993), *"Ordinary linear regression applied to the observations of a cluster is a nonstandard maximum-likelihood estimate; that is, a maximum of the "wrong" likelihood, given this sampling procedure"* (Rogers, 1993). Because OLS may not be the best choice we also used the quantile regression approach, more precisely the bootstrap method, introduced by Efron (1979) because it is essential to correct standard errors for within cluster dependence. To conclude all the results are reported from an OLS regression and reported for the 10th, 25th, 50th, 75th and 90th quantiles.

6. Empirical Results

6.1 Descriptive statistics and univariate analysis

The Panel A from Table 1 presents the country distribution of the firms and the FCD use by country. We have a total of 127 firms in our sample and only 9 firms out of the 127 didn't use foreign currency derivatives for hedging reasons during the period of 2005 to 2015. That means only 7% of our sample corresponds to FCD non-users. This confirms that firms that issue ADRs tend to use FCDs to reduce their risks. Our sample has firms from 14 European Union countries and contains the largest number of firms from the UK (37,01%), France (15,75%) and Germany (13,39%).

The Panel B from Table 1 presents the mean, median, standard deviation and number of observations for all the variables for the full sample. Our full sample has a total of 1147 observations and 96,69% of the firms in our sample have foreign sales which means that almost all the firms in our sample have foreign sales and have incentives to use currency derivatives for hedging reasons. The average of Tobin´s Q is 1,82 which is in line with the 2, 21 from Allayannis et al. (2012). In our sample 92,94% of the firms are FCD users and 75,33% are IRD users which is in line with the idea that currency derivatives are the most commonly used derivatives, Allayannis and Weston (2001). If we pay attention to the size of the firms we can see that in our sample we have large firms with an average (median) size of 34,5 billion dollars (13,8 billion dollars). The internal governance index has an average value of 2,15 in a range from 0 to 3 and 42,11% of the firms in our sample have the English Common Law. Further 88% of the firms in this sample distribute dividends, 78% operate in several industries. The return on assets mean is 4,7% and the leverage is about 73% which is larger than the 54,7% obtained by Allayannis et al. (2012).

Following Allayannis et al. (2012), in our analysis we separate firms with and without exchange-rate exposure because firms with no exchange-rate exposure may have other reasons to use currency derivatives then hedging. So, in Panel C from Table 1 we present the mean, median, standard deviation and number of observations for all the variables for all the firms with foreign sales separating FCD users from FCD non-users. Comparing the FCD users with the FCD non users we can see that Tobin's Q is higher in firms that don´t use FCDs, 1,98 is the average value of Tobin's q for FCD non-users and 1,81 is the average value for FCD users. The Internal Governance Index is higher in firms that use

FCDs and FCD users are larger than FCD non-users, the average size of FCD users is 36,6 billion dollars and the average size of FCD non-users is 17,9 billion dollars. If we pay attention to the legal origin, most of the firms in the sample of FCD users have the English Common Law, but the French Commercial Code is the most common among the FCD non users. Because 92,94% of the firms in our sample are FCD users we only have 70 observations in the FCD non-users sample.

Table 1: Summary Statistics

This table shows relevant information about the sample. Panel A shows the country distribution of the firms in the sample across FCD users and non-users. Panel B displays the mean, median and standard deviation values as well as the total number of observation used in the statistic tests for the variables for the full sample. Panel C reports the mean, median and standard deviation values as well as the total number of observations only for firms with positive foreign sales across FCD users and non-users. The variables analysed are Tobin's Q, FCD dummy, Internal governance index (ranges from 0 to 3), English Common Law, French Commercial Code, German Commercial Code, Scandinavian Civil Code, IRD dummy, Liquidity, Total Assets, Total Sales, ROA (Return on Assets), Leverage, Capex/Sales, Diversification dummy, R&D/Sales, Dividend dummy and Global Industry Q.

Panel A: Country Distribution				
Country Name	**# obs**	**Country %**	**FCD user**	**FCD non user**
Austria	55	3,94%	5	0
Belgium	33	2,36%	2	1
Denmark	44	3,15%	4	0
Finland	55	3,94%	5	0
France	220	15,75%	18	2
Germany	187	13,39%	16	1
Greece	11	0,79%	1	0
Ireland	44	3,15%	4	0
Italy	22	1,57%	2	0
Netherlands	143	10,24%	12	1
Portugal	22	1,57%	2	0
Spain	22	1,57%	2	0
Sweden	22	1,57%	2	0
United Kingdom	517	37,01%	43	4
Total	**1397**	**100,00%**	**118**	**9**

Panel B: Summary Statistics Full Sample				
Variable Name	**No. Obs.**	**Mean**	**Median**	**Std. Dev.**
Tobin's Q	1147	1,8196	1,4939	1,1705
Foreign sales dummy	1147	0,9669	1,0000	0,1791
FCD dummy	1147	0,9294	1,0000	0,2563
Internal governance index	1147	2,1482	2,0000	0,8886
English Common Law	1147	0,4211	0,0000	0,4940
French Commercial Code	1147	0,3426	0,0000	0,4748
German Commercial Code	1147	0,1508	0,0000	0,3580
Scandinavian Civil Code	1147	0,0854	0,0000	0,2797
IRD dummy	1147	0,7533	1,0000	0,4313
Liquidity	1147	1,3391	1,2181	0,7259
Total Assets	1147	34 540 967	13 796 455	54 465 912
Total Sales	1147	26 223 551	12 037 468	44 555 187
ROA	1147	0,0472	0,0509	0,1004
Leverage	1147	0,7289	0,6321	8,0152
Capex/Sales	1147	0,0756	0,0464	0,1673
Diversification dummy	1147	0,7768	1,0000	0,4166
R&D/Sales	1147	0,9408	0,0068	9,1818
Dividend dummy	1147	0,8797	1,0000	0,3255
Global Industry Q	1147	0,5548	0,5148	0,2706

Panel C: Summary Statistics FCD users vs. non-users for firms with foreign sales >0								
	Foreign Sales >0							
	FCD users				FCD non-users			
Variable Name	**No. Obs.**	**Mean**	**Median**	**Std. Dev.**	**No. Obs.**	**Mean**	**Median**	**Std. Dev.**
Tobin's Q	1039	1,8078	1,5038	1,1089	70	1,9793	1,4637	1,1883
FCD dummy	1039	1,0000	1,0000	0,0000	70	0,0000	0,0000	0,0000
Internal governance index	1039	2,1530	2,0000	0,9116	70	2,0286	2,0000	0,6588
English Common Law	1039	0,4216	0,0000	0,4940	70	0,2714	0,0000	0,4479
French Commercial Code	1039	0,3369	0,0000	0,4729	70	0,5143	1,0000	0,5034
German Commercial Code	1039	0,1530	0,0000	0,3602	70	0,1714	0,0000	0,3796
Scandinavian Civil Code	1039	0,0885	0,0000	0,2842	70	0,0429	0,0000	0,2040
IRD dummy	1039	0,7834	1,0000	0,4121	70	0,2857	0,0000	0,4550
Liquidity	1039	1,3398	1,2363	0,6593	70	1,4962	1,1782	1,0451
Total Assets	1039	36 637 588 000	14 612 912 000	56 314 147 000	70	17 900 000 000	4 990 000 000	27 600 000 000
Total Sales	1039	27 301 349 000	13 365 448 000	45 656 103 000	70	19 200 000 000	3 330 000 000	36 000 000 000
ROA	1039	0,0531	0,0539	0,0797	70	-0,0341	0,0276	0,2503
Leverage	1039	0,6859	0,6257	8,4056	70	0,6621	0,6251	0,9654
Capex/Sales	1039	0,0772	0,0467	0,1745	70	0,0589	0,0406	0,0639
Diversification dummy	1039	0,7854	1,0000	0,4108	70	0,8571	1,0000	0,3525
R&D/Sales	1039	1,0284	0,0079	9,643	70	0,1172	0,0064	0,2760
Dividend dummy	1039	0,8949	1,0000	0,3028	70	0,6286	1,0000	0,4867
Global Industry Q	1039	0,5500	0,5145	0,2679	70	0,6915	0,6311	0,2915

6.2 Multivariate Results

To understand the effect of the use of currency derivatives on firm value, we preformed several tests. First we examined the value of the use of derivatives without taking into account differences in corporate governance, after that we examined the association between the use of currency derivatives and firm value when firm-specific internal corporate governance is strong, then we tested the impact of external country-level governance and for last we examined the interaction between internal corporate governance and external corporate governance and its impact on the value of derivatives use.

6.2.1 The value of FCD Use

In Table 2 we analyse the value of the use of FCDs for the sample with positive foreign sales, in other words, for the sample of firms with exposure to exchange rates. We do not present the results for the sample with no foreign sales (Foreign Sales =0) because we do not have enough observations, as we showed before only 3.31% of the firms in our sample don't have foreign sales. Table 2 shows results from an OLS regression with country dummies to control for possible country fixed effects, year dummies and also industry controls at the 1-digit SIC codes. Table 2 also shows results from a quantile regression approach, more precisely the bootstrap method at the 10th, 25th, 50th, 75th, and the 90th quantiles to correct standard errors for within cluster dependence.

We found a negative and not significant association between currency derivatives use and firm value for firms with positive foreign sales at the OLS regression. Relatively to the quantile regression we found at the lower quantile (10th) a negative and statistically significant association at 5% level between FCD use and firm value but at the highest quantile (90th) we found a positive and statistically significant association at 5% level. The R^2 increases from 0,2242 at the 10th quantile to 0,4345 at the 90th quantile. This means that the association between FCD use and firm value is better explained at the highest level.

Some control variables are significant and have the expected sign such as log of total assets, which have a negative and significant association at 1% level with firm value. This means that small firms are associated with higher value. Also ROA and Global Industry Q are positive and statistically significant at 1% level, which means more profitable firms

have higher value and firms with high global Q are associated with higher value. We found all this associations at the OLS estimation and in all quantiles. Diversification dummy is positive and significantly associated with firm value at the higher quantiles. This means that firms with more than one business segment are higher valuated. Contrary to expectations we found a positive and statistically relation between liquidity and firm value. This could mean that firms use liquidity to develop projects with positive net present value which increases value. Our control variable IRD dummy is not significantly associated with firm value, this is in line with Allayannis et al. (2012).

Table 2: FCD usage and Firm Value

This table shows the impact of FCD usage on firm value for the sample with positive foreign sales. Coefficients and *t*-statistics in parentheses are reported from an OLS regression and for the 10th, 25th, 50th, 75th, and the 90th quantiles. The *t*-statistics are computed using bootstrapped cluster standard errors which were obtained using 100 bootstrap replications. The dependent variable is Ln (Tobin's Q), a proxy to the firm value. The stars ***, ** and * represent statistical significance at the 1%, 5% and 10% level, respectively.

	Foreign Sales > 0					
Variable Name	**OLS**	**q0,1**	**q0,25**	**q0,5**	**q0,75**	**q0,9**
C	1,5224***	0,4623	1,1000***	1,6305***	2,3795***	2,6682***
	(7,0397)	(1,2816)	(5,1009)	(4,9120)	(7,9942)	(5,6694)
FCD dummy	-0,0001	-0,1402**	-0,0469	0,0423	0,0162	0,1398**
	(-0,0028)	(-2,5032)	(-0,9996)	(1,2568)	(0,3010)	(1,9686)
IRD dummy	-0,0026	0,0224	-0,0135	0,0107	0,0896*	-0,0479
	(-0,0818)	(0,4395)	(-0,4157)	(0,2849)	(1,7973)	(-1,0041)
Liquidity	0,0772***	0,0088	0,0172	0,0206	0,1147***	0,1983***
	(3,9008)	(0,2624)	(0,5949)	(0,7017)	(2,6476)	(3,5394)
Ln (Total Assets)	-0,0763***	-0,0377**	-0,0569***	-0,0765***	-0,1080***	-0,1220***
	(-8,4630)	(-2,3875)	(-6,7633)	(-5,7454)	(-8,0724)	(-6,5277)
ROA	1,0558***	1,4806***	1,9968***	2,3207***	2,0183***	1,3598**
	(8,9203)	(2,9509)	(6,7317)	(5,8631)	(5,1098)	(2,4701)
Leverage	-0,0005	-0,0016	-0,0010	0,0000	-0,0013	-0,0006
	(-0,4038)	(-0,2381)	(-0,3399)	(-0,0056)	(-0,5509)	(-0,3054)
Capex/Sales	-0,2901**	-0,3113	-0,1033	-0,0835	-0,1990	-0,4129
	(-2,1185)	(-0,6422)	(-0,6501)	(-0,6168)	(-0,9551)	(-1,3413)
Diversification dummy	0,0420	0,1470**	0,0781*	0,1070***	0,1066***	0,1636***
	(1,4550)	(2,5714)	(1,7434)	(2,8858)	(2,8392)	(3,1607)
R&D/Sales	0,0039	0,0046	0,0026	0,0010	0,0011	0,0020
	(1,5777)	(0,6091)	(0,8573)	(0,3927)	(0,2753)	(0,3094)
Dividend dummy	0,1295***	0,1011	0,0747	-0,0502	0,0549	0,1246
	(3,2252)	(1,5895)	(1,4370)	(-1,2314)	(0,9768)	(1,3415)
Global Industry Q	0,6403***	0,4787***	0,4374***	0,5430***	0,6243***	0,7500***
	(10,7400)	(6,2045)	(5,9313)	(7,6206)	(8,5048)	(7,1386)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	1109	1109	1109	1109	1109	1109
R-Squared	0,4702	0,2242	0,2662	0,3154	0,3864	0,4345
Adjusted R-Squared	0,4503	0,1952	0,2387	0,2898	0,3634	0,4133
F-Statistic	23,6926					
Prob(F-statistic)	0,0000					

6.2.2 Internal Corporate Governance and the value of FCD use

In this section we test our first hypothesis, when internal corporate governance is strong FCD use is positively associated with firm value. To do this we created an internal governance index that scores from 0 to 3 and works as a proxy for the internal corporate governance.

Table 3, panel A, shows the results from the sample of firms with foreign exchange exposure and with high internal corporate governance. All the firms have an internal governance index of 2 or 3. Table 3, panel B, shows the results from the sample of firms with positive foreign sales and with low internal governance index (scores of 0 and 1). All the results are presented from an OLS regression and from a quantile regression approach at the 10th, 25th, 50th, 75th and 90th quantiles. Contrary to our hypothesis we found that firms with high internal governance index (strong internal governance) have a negative and statistically significant association between FCD use and firm value at 5% level in the OLS regression. At the higher quantiles we found a positive but not significant relation between FCD use and firm value in firms with strong governance. In Panel B we can see that firms with weak governance have a negative but not statistically significant association between firm value and FCD use at the OLS estimation in almost all of the quantiles, in the quantile regression. Only at the 10th quantile we found a negative and statistically significant association at 10% level between FCD use and firm value in firms with low internal governance.

We couldn't confirm our first hypothesis and we gathered evidence in the opposite direction, probably because our internal governance index only have 3 rules. The similarity between the results obtained from firms with strong governance and weak governance could be a proof that our index may not have enough rules to work correctly as a proxy for internal corporate governance. Unfortunately gathering manually this information from the annual reports is time consuming and for this reason it was impossible to create a larger index. Allayannis et al. (2012) for instance built an index with 7 rules, the short number of rules in our index is one of the limitations of our research.

Allayannis et al. (2012) highlight the possible impact of the Sarbanes-Oxley (SOX) law on the results, because after 2002, the year of implantation of the law, ADRs where forced to adopt more strict governance practices, so after the implantation the results could have

become weaker. Because our sample has data between 2005 and 2015 this could mean that Sarbanes-Oxley law affected our results.

The coefficients on the significant control variables are consistent with previous research such as size which is negatively associated with firm value and global industry Q which is positively associated with firm value. The variable research & development is positive and statistically associated with firm value for firms with weak governance but R&D is not statistically associated with firm value for firms with strong governance, following Allayannis et al. (2012). This suggests that separate samples based on governance has merit.

Table 3: FCD usage, firm value and Internal Corporate Governance:

This table shows the impact of FCD usage on firm value for the sample with positive foreign sales split up with respect to the internal governance index. Panel A shows the results for the sample with high internal governance index (≥ 2) and Panel B shows the results for the sample with low internal governance index (≤ 2). Coefficients and *t*-statistics, in parentheses, are reported from an OLS regression and for the 10th, 25th, 50th, 75th, and the 90th quantiles. The *t*-statistics are computed using bootstrapped cluster standard errors which were obtained using 100 bootstrap replications. The dependent variable is Ln (Tobin's Q) a proxy to the firm value. The stars ***, ** and * represent statistical significance at the 1%, 5% and 10% level, respectively.

Panel A.

	High Internal Corporate Governance (GOV≥2)					
Variable Name	**OLS**	**q0,1**	**q0,25**	**q0,5**	**q0,75**	**q0,9**
C	1,3749***	0,4227	0,8030***	1,1963***	2,2702***	1,9592***
	(5,6351)	(1,1455)	(3,4503)	(3,1051)	(4,9862)	(3,3370)
FCD dummy	-0,1213**	-0,0592	-0,1481***	-0,0608	0,0022	0,0491
	(-2,1039)	(-0,7893)	(-2,8823)	(-0,8583)	(0,0296)	(0,6619)
IRD dummy	-0,0197	-0,0744	-0,0052	0,0136	0,0434	-0,0846
	(-0,5307)	(-1,2157)	(-0,1347)	(0,2385)	(0,6361)	(-1,1792)
Liquidity	0,0962***	0,0226	0,0498	0,0563*	0,0811*	0,1741***
	(4,1704)	(0,6002)	(1,4745)	(1,6617)	(1,6845)	(3,3511)
Ln (Total Assets)	-0,0655***	-0,0348**	-0,0428***	-0,0556***	-0,1026***	-0,0905***
	(-6,6472)	(-2,1716)	(-4,5043)	(-3,5314)	(-6,0320)	(-3,8734)
ROA	0,8956***	1,5230***	2,0574***	1,9214***	1,9473***	1,0248
	(7,2103)	(2,9710)	(4,8264)	(4,6607)	(3,4372)	(1,5187)
Leverage	-0,0005	0,0041	-0,0014	-0,0006	0,0007	-0,0002
	(-0,4015)	(0,5637)	(-0,3467)	(-0,1740)	(0,2905)	(-0,1143)
Capex/Sales	-0,1369	-0,2378	-0,0757	-0,0647	-0,0766	-0,1555
	(-0,9794)	(-0,7971)	(-0,4379)	(-0,3747)	(-0,3160)	(-0,4453)
Diversification dummy	-0,0155	-0,0215	-0,0787	0,0077	0,0985*	0,1260*
	(-0,4700)	(-0,2973)	(-1,5417)	(0,1679)	(1,7654)	(1,9049)
R&D/Sales	0,0014	0,0033	0,0032	0,0016	-0,0010	-0,0024
	(0,5754)	(0,6167)	(0,9314)	(0,4869)	(-0,2325)	(-0,3518)
Dividend dummy	0,1735***	0,3117***	0,0404	-0,0065	0,0265	0,1504
	(3,9729)	(2,8542)	(0,5731)	(-0,1234)	(0,3120)	(1,4128)
Global Industry Q	0,5370***	0,4114***	0,4296***	0,4998***	0,5275***	0,7057***
	(7,7298)	(3,6547)	(4,9023)	(5,6028)	(3,9778)	(4,3195)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	845	845	845	845	845	845
R-Squared/ Pseudo R-Squared	0,4613	0,2479	0,2944	0,3258	0,3607	0,3944
Adjusted R-Squared	0,4352	0,2114	0,2602	0,2931	0,3298	0,3651
F-Statistic	17,6727					
Prob(F-statistic)	0,0000					

Panel B.

	Low Internal Corporate Governance (GOV≤2)					
Variable Name	**OLS**	**q0,1**	**q0,25**	**q0,5**	**q0,75**	**q0,9**
C	1,6254***	1,4342	0,1123	1,2907*	2,4086***	4,5087***
	(2,8834)	(1,4860)	(0,1612)	(1,9332)	(2,8679)	(3,6168)
FCD dummy	-0,0623	-0,2676*	-0,1136	0,0524	-0,1491	-0,1473
	(-0,5301)	(-1,7473)	(-0,6868)	(0,3236)	(-0,8840)	(-0,8200)
IRD dummy	0,0076	0,0137	0,0493	0,0422	0,0913	0,0807
	(0,1426)	(0,1598)	(0,7155)	(0,5840)	(1,1634)	(0,8959)
Liquidity	-0,1179***	-0,2018***	-0,0989*	-0,1247**	-0,0838	0,0003
	(-2,7445)	(-2,7967)	(-1,7726)	(-2,5379)	(-1,1085)	(0,0031)
Ln (Total Assets)	-0,0911***	-0,0647**	-0,0402	-0,0838***	-0,1357***	-0,1961***
	(-4,6309)	(-2,0244)	(-1,5464)	(-2,9434)	(-4,1758)	(-4,3568)
ROA	2,3018***	0,8023	2,8416**	3,1736***	3,3089***	2,6769***
	(7,8476)	(0,5716)	(2,5576)	(4,2031)	(4,5083)	(3,0510)
Leverage	-0,0529***	-0,0186	-0,0586	-0,0526	-0,0736*	-0,0380
	(-4,4175)	(-0,4399)	(-1,2753)	(-1,4177)	(-1,7166)	(-0,8189)
Capex/Sales	-0,0076	-1,1726	-0,2883	0,5802	0,8935	-0,6251
	(-0,0173)	(-0,8459)	(-0,2156)	(0,5648)	(1,0681)	(-0,6145)
Diversification dummy	0,0225	-0,0724	-0,0171	0,0012	0,0664	-0,1191
	(0,3733)	(-0,7525)	(-0,2179)	(0,0149)	(0,7768)	(-0,9347)
R&D/Sales	2,0607***	2,0251**	2,1045**	2,8308***	1,6600	0,7023
	(4,0943)	(2,3746)	(2,5442)	(3,5979)	(1,6345)	(0,5400)
Dividend dummy	-0,1186	-0,0305	-0,0410	-0,1546	-0,1662	-0,0049
	(-1,4041)	(-0,2369)	(-0,3001)	(-1,0103)	(-0,9514)	(-0,0226)
Global Industry Q	0,6664***	0,5645***	0,6089***	0,4221***	0,5137***	0,3570**
	(6,2111)	(3,5194)	(3,7406)	(3,7960)	(4,8354)	(2,3894)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	264	264	264	264	264	264
R-Squared/ Pseudo R-Squared	0,7542	0,5342	0,5250	0,5602	0,6209	0,6916
Adjusted R-Squared	0,7165	0,4627	0,4521	0,4927	0,5627	0,6442
F-Statistic	19,9922					
Prob(F-statistic)	0,0000					

6.2.3 External Corporate Governance, FCD use and firm value

Table 4 examines the influence of external country-level governance on the value of FCD use, testing our second hypothesis. We split our sample of firms with positive foreign sales in legal families. Panel A shows the results from firms with English Common Law, Panel B the results from firms with French Commercial Code, Panel C the results from firms with German Commercial Code and Panel D the results from firms with Scandinavian Civil Law. All the results are presented from an OLS regression and from a quantile regression approach at the 10th, 25th, 50th, 75th and 90th quantiles.

Panel A show us the results from the sample of firms with English Common Law. We found a negative association between firm value and FCD use in firms from countries with English Common Law, and this association is statistically significant at 5% level in the 10th and 25th quantiles. Analysing Panel B we found a positive association between FCD use and firm value in firms from countries with French Commercial Code, in the OLS estimation and at the 50th, 75th and 90th quantiles. Although positive this association is not statistically significant. At the 10th and 25th quantiles we found a negative and not statistically significant association. Panel C shows us a positive but not statistically significant association between firm value and FCD use in firms from countries with German Commercial Code in the OLS estimation and in the 10th and 25th quantiles, and a negative and not statistically significant association between firm value and FCD use in the 50th, 75th and 90th quantiles. In Panel D we have a positive but not statistically significant association between FCD use and firm value for firms from countries with Scandinavian Civil Law in the OLS estimation and in the 10th, 25th and 50th quantiles and a negative but not statistically significant association between FCD use and firm value in the 75th and 90th quantiles.

Once again we couldn't confirm our second hypothesis that currency derivatives use is positively associated with firm value in countries with stronger investor protection rights.

Our hypothesis was based on the work of Allayannis et al. (2012). They used countries from all over the world in their research and found a positive and statistically significant association between FCD use and firm value in firms from countries with English

Common Law[15]. They used firms from countries such as Australia, Hong Kong, India, Israel, Singapore, South Africa, the UK, among others. In the sub-sample of firms from countries with English Common Law we only used firms from the UK and from Ireland because we chose to study the importance and influence of investors protection rights in countries from the European Union.

To conclude, amongst countries from the European Union the effect of investors protection rights on firm value could diminish because these countries share the same guidelines.

If we analyse the control variables we can see differences between legal families, for instance, in firms from countries with English Common Law we identified a positive and statistically significant association between liquidity, ROA and global industry Q and firm value. In firms from countries with French Commercial Code, Capital Expenditures and Research & Development are associated with higher value and in firms from countries with German Commercial Code the diversification dummy and firm value are positively associated. The Scandinavian Civil Law is the legal family that presents more differences in relation to the remaining legal families, for instance, the control variables size and global industry Q are not statistically associated with firm value. All this differences between legal families could mean that preforming regressions in four different samples based on legal families has merit.

[15] They created a dummy variable *"English Origin"* which equals 1 if the firm is from a country with English Common Law and zero otherwise.

Table 4: FCD usage, firm value and External Corporate Governance:

This table shows the impact of FCD usage on firm value for the sample with positive foreign sales split up with respect to the legal origin. Panel A shows the results for the sample with English Common Law, Panel B shows the results for the sample with French Commercial Code, Panel C displays the results for the sample with German Commercial Code and Panel D presents the results for the sample with Scandinavian Civil Law. Coefficients and *t*-statistics, in parentheses, are reported from an OLS regression and for the 10th, 25th, 50th, 75th, and the 90th quantiles. The *t*-statistics are computed using bootstrapped cluster standard errors which were obtained using 100 bootstrap replications. The dependent variable is Ln (Tobin's Q) a proxy to the firm value. The stars ***, ** and * represent statistical significance at the 1%, 5% and 10% level, respectively.

Panel A.

	English Common Law					
Variable Name	**OLS**	**q0,1**	**q0,25**	**q0,5**	**q0,75**	**q0,9**
C	1,2274***	0,9412**	0,7140**	1,4781***	2,2130***	2,8801***
	(4,0722)	(2,0440)	(1,9769)	(4,6214)	(4,0860)	(4,1683)
FCD dummy	-0,2263	-0,4284**	-0,3380**	-0,2728	-0,0413	0,3529
	(-1,6378)	(-2,2278)	(-2,0005)	(-1,2755)	(-0,1416)	(0,8407)
IRD dummy	-0,1630***	-0,2911***	-0,1421**	-0,0167	0,0082	-0,1800
	(-2,6828)	(-3,7502)	(-2,1135)	(-0,2691)	(0,0788)	(-1,3356)
Liquidity	0,2278***	0,1043	0,1346**	0,1105**	0,1968**	0,3038***
	(6,3957)	(1,6511)	(2,4809)	(1,9950)	(2,4014)	(3,7795)
Ln (Total Assets)	-0,0512***	-0,0425*	-0,0367**	-0,0586***	-0,1029***	-0,1521***
	(-3,4880)	(-1,9589)	(-2,5798)	(-3,6343)	(-3,4976)	(-5,0588)
ROA	0,6207***	0,8233	1,6123***	2,1107***	1,7984**	0,2164
	(3,6786)	(1,4397)	(3,1669)	(3,3425)	(2,0745)	(0,2540)
Leverage	-0,0009	-0,0024	-0,0018	-0,0004	-0,0019	-0,0013
	(-0,6419)	(-0,2508)	(-0,2379)	(-0,0702)	(-0,6623)	(-0,7168)
Capex/Sales	-0,1598	-0,1618	-0,1091	-0,0739	0,0416	-0,0119
	(-0,9858)	(-0,5801)	(-0,6482)	(-0,5492)	(0,2156)	(-0,0361)
Diversification dummy	0,0340	0,0518	-0,0337	0,0092	0,0993	0,1127
	(0,6366)	(0,3944)	(-0,3643)	(0,1406)	(1,2584)	(1,2828)
R&D/Sales	-0,0007	0,0003	0,0010	-0,0004	-0,0042	-0,0083
	(-0,2281)	(0,0761)	(0,3468)	(-0,1580)	(-1,0989)	(-1,2647)
Dividend dummy	0,2626***	0,5048***	0,2053	0,0908	0,2212	0,4310**
	(3,3876)	(3,7179)	(1,3875)	(0,7872)	(1,4401)	(2,3223)
Global Industry Q	0,5140***	0,3661***	0,5236***	0,4630***	0,5990***	0,6668***
	(4,5908)	(2,7368)	(4,3349)	(3,6108)	(2,8672)	(3,0110)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	457	457	457	457	457	457
R-Squared/ Pseudo R-Squared	0,4010	0,3135	0,2729	0,2682	0,2690	0,3240
Adjusted R-Squared	0,3647	0,2720	0,2289	0,2240	0,2248	0,2831
F-Statistic	11,0697					
Prob(F-statistic)	0,0000					

Panel B.

	French Commercial Code					
Variable Name	**OLS**	**q0,1**	**q0,25**	**q0,5**	**q0,75**	**q0,9**
C	2,1878***	0,7460	1,8903***	2,8786***	1,6467**	0,7146
	(5,2028)	(1,2664)	(2,8466)	(4,1138)	(2,5178)	(0,8656)
FCD dummy	0,0200	-0,0223	-0,0329	0,0118	0,0206	0,0389
	(0,3168)	(-0,3174)	(-0,5605)	(0,1901)	(0,3109)	(0,4830)
IRD dummy	0,2621***	0,2832**	0,2111*	0,2025**	0,2336***	0,2445**
	(5,7323)	(2,1624)	(1,9450)	(2,4286)	(2,7745)	(2,2216)
Liquidity	-0,1094***	-0,0924	-0,1002*	-0,0986**	-0,0335	0,0420
	(-3,4474)	(-1,3458)	(-1,6940)	(-2,1735)	(-0,5579)	(0,5415)
Ln (Total Assets)	-0,1221***	-0,0522**	-0,0994***	-0,1468***	-0,1001***	-0,0765**
	(-6,7192)	(-1,9873)	(-3,2731)	(-4,5959)	(-3,5193)	(-2,2360)
ROA	1,7787***	1,2433*	1,7979**	2,7141***	2,5875***	1,5498***
	(7,2231)	(1,7900)	(2,4770)	(4,5659)	(4,6116)	(2,7164)
Leverage	-0,0051	0,0126	0,0053	0,0041	-0,0053	-0,0128
	(-0,8916)	(0,7117)	(0,5952)	(0,4915)	(-0,3511)	(-1,0114)
Capex/Sales	2,3498***	1,4799	1,5100	2,0235***	1,7457**	2,2988***
	(4,6063)	(1,6056)	(1,6419)	(3,0043)	(2,0876)	(2,7231)
Diversification dummy	-0,0849*	0,0942	0,0347	-0,0476	-0,0381	-0,1816*
	(-1,8195)	(0,9832)	(0,4625)	(-0,6845)	(-0,4429)	(-1,6440)
R&D/Sales	1,0858***	0,6022	0,6152	1,2427**	1,1311	1,2684
	(4,8593)	(1,0911)	(1,3250)	(2,4110)	(1,4933)	(1,4806)
Dividend dummy	0,0628	0,0042	0,0659	0,0408	-0,0406	0,0658
	(1,1916)	(0,0655)	(1,0857)	(0,5408)	(-0,4585)	(0,6467)
Global Industry Q	0,5122***	0,3452***	0,2566**	0,3305**	0,5912***	0,9231***
	(5,6690)	(3,3433)	(2,1643)	(2,1003)	(4,2125)	(5,3670)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	386	386	386	386	386	386
R-Squared/ Pseudo R-Squared	0,5483	0,3312	0,3140	0,3271	0,4086	0,5325
Adjusted R-Squared	0,5059	0,2685	0,2497	0,2640	0,3531	0,4887
F-Statistic	12,9474					
Prob(F-statistic)	0,0000					

Panel C.

	German Commercial Code					
Variable Name	**OLS**	**q0,1**	**q0,25**	**q0,5**	**q0,75**	**q0,9**
C	0,5521	-0,8886	-0,1845	0,2972	1,3234	2,7264***
	(1,2442)	(-1,1978)	(-0,2999)	(0,5002)	(1,6513)	(2,6882)
FCD dummy	0,0008	0,1149	0,0072	-0,0649	-0,0002	-0,0070
	(0,0103)	(0,8275)	(0,0552)	(-0,5521)	(-0,0019)	(-0,0539)
IRD dummy	-0,1082*	0,0015	-0,0668	-0,0289	-0,0961	-0,0482
	(-1,8107)	(0,0181)	(-0,6938)	(-0,3470)	(-1,0796)	(-0,3991)
Liquidity	0,0449	0,0683	0,0046	0,1434*	0,0521	0,0009
	(0,9864)	(0,8401)	(0,0595)	(1,9202)	(0,7528)	(0,0104)
Ln (Total Assets)	-0,0467**	-0,0165	-0,0262	-0,0305	-0,0670*	-0,1321***
	(-2,5639)	(-0,5859)	(-1,0319)	(-1,1752)	(-1,7939)	(-2,7599)
ROA	1,2168***	1,8203*	1,3998*	0,6919	1,3373**	1,1033
	(3,6069)	(1,8097)	(1,6948)	(1,2035)	(2,2800)	(1,5301)
Leverage	-0,0173	-0,0147	-0,0492	-0,0176	0,0067	0,0706
	(-0,4806)	(-0,3150)	(-1,1452)	(-0,3864)	(0,1182)	(1,1295)
Capex/Sales	-0,5618	0,7060	0,1604	-0,5322	-1,4139	-2,7250*
	(-1,0067)	(0,9620)	(0,2224)	(-0,6831)	(-1,2789)	(-1,9175)
Diversification dummy	0,4332***	0,4389***	0,3899***	0,4620***	0,4329***	0,5606***
	(6,1167)	(5,9938)	(5,3706)	(5,4636)	(4,4957)	(4,5545)
R&D/Sales	-0,1918	-0,0472	-0,3091	-0,6692	0,5132	-0,1541
	(-0,6165)	(-0,0513)	(-0,3498)	(-0,7135)	(0,6839)	(-0,1739)
Dividend dummy	0,1475**	0,1097	0,0976	0,1366*	0,1524	0,2524
	(2,0196)	(1,4688)	(1,1478)	(1,7649)	(1,5204)	(1,6403)
Global Industry Q	0,6938***	0,7938***	0,8543***	0,5870***	0,4821***	0,5354***
	(6,6355)	(5,7834)	(5,2010)	(3,4418)	(3,3546)	(3,5402)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	171	171	171	171	171	171
R-Squared/ Pseudo R-Squared	0,7581	0,5738	0,5269	0,5149	0,5925	0,6825
Adjusted R-Squared	0,7144	0,4968	0,4415	0,4273	0,5189	0,6252
F-Statistic	17,3536					
Prob(F-statistic)	0,0000					

Panel D.

	Scandinavian Civil Law					
Variable Name	**OLS**	**q0,1**	**q0,25**	**q0,5**	**q0,75**	**q0,9**
C	-1,2252	-1,4584	-0,7196	-0,7419	-0,1530	3,2505
	(-1,0902)	(-0,5826)	(-0,2783)	(-0,3114)	(-0,0667)	(1,1817)
FCD dummy	0,1846	0,0823	0,0965	0,1816	-0,0170	-0,0521
	(1,2099)	(0,0766)	(0,0948)	(0,1935)	(-0,0178)	(-0,0553)
IRD dummy	-0,2893**	-0,4112*	-0,2932	-0,2900	-0,1264	-0,1231
	(-2,5762)	(-1,7827)	(-1,3888)	(-1,1988)	(-0,5175)	(-0,4527)
Liquidity	0,1479**	0,0194	0,0862	0,0682	0,2732	0,2595
	(2,5842)	(0,0964)	(0,4007)	(0,2843)	(1,2137)	(1,1736)
Ln (Total Assets)	0,0560	0,0514	0,0050	0,0299	-0,0098	-0,1826
	(0,9572)	(0,5160)	(0,0522)	(0,2777)	(-0,0894)	(-1,4826)
ROA	3,3500***	3,2404***	3,5555***	3,6556***	3,6688***	3,9749***
	(7,7829)	(3,5319)	(4,1838)	(3,9383)	(4,0115)	(4,1737)
Leverage	-0,1974**	-0,1038	-0,1422	-0,2592*	-0,0618	-0,0745
	(-2,2202)	(-0,6549)	(-1,0021)	(-1,6858)	(-0,4479)	(-0,4697)
Capex/Sales	-0,2742	-3,1246	-0,9075	1,7259	-0,6756	2,6613
	(-0,2133)	(-1,1579)	(-0,3393)	(0,7259)	(-0,3600)	(1,1993)
Diversification dummy	-0,4649***	-0,5560*	-0,4744	-0,4591	-0,1600	0,1905
	(-2,6644)	(-1,9924)	(-1,6051)	(-1,4090)	(-0,4818)	(0,5005)
R&D/Sales	1,3439***	1,8075	1,9043	1,8037	1,5202	1,6350
	(4,8572)	(1,0198)	(0,9915)	(0,9353)	(0,7936)	(0,8322)
Dividend dummy	-0,0778	-0,0311	-0,1128	-0,1438	-0,0587	-0,1844
	(-0,7173)	(-0,2080)	(-0,6651)	(-0,6512)	(-0,1952)	(-0,5756)
Global Industry Q	-0,0914	-0,0799	-0,1217	-0,1866	-0,2076	-0,2700
	(-0,6209)	(-0,2338)	(-0,4454)	(-0,7261)	(-0,8203)	(-0,8812)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	95	95	95	95	95	95
R-Squared/ Pseudo R-Squared	0,9346	0,7277	0,7050	0,7407	0,8054	0,8401
Adjusted R-Squared	0,9109	0,6290	0,5982	0,6467	0,7349	0,7821
F-Statistic	39,4194					
Prob(F-statistic)	0,0000					

6.2.4 Internal and External Corporate Governance and the value of FCD use

In the previous sections we didn't found evidence that FCD use adds value in firms with strong internal corporate governance and external corporate governance. In this section we want to test our third hypothesis that firm value is positively associated with FCD use in firms with strong internal and external corporate governance. Table 5 shows the results from the sample split in several categories. All the firms in the sample have positive foreign sales. First we separated our sample in terms of internal corporate governance, we separated the sample in two: firms with a strong governance and firms with weak governance. A firm has a strong governance if the internal governance index equals three and has a weak governance if the internal governance index equals zero, one or two[16]. After that we separated our sample from firms with a strong governance and firms with a weak governance, by legal origin, for example first on table 5 we examined the sample of firms with strong governance and from countries with English Common Law.

All the results are presented from an OLS regression and from a quantile regression approach at the 10th, 25th, 50th, 75th and 90th quantiles. For a question of brevity in table 5 we only report results on the FCD dummy. We didn't report the results from firms from countries with German Commercial Code because we didn't have enough observations.

Analysing table 5 we can see that in firms with strong internal corporate governance from countries with Scandinavian Civil Law firm value is positive and statistically significant associated with FCD use at the 5% level in the OLS estimation. In firms with high internal corporate governance and from countries with French Commercial Code FCD use is negative and significantly associated with firm value at 5% level in the 10th and 25th quantile. In firms with low internal corporate governance and from countries with English Common Law we found a positive and statistically association at the 5% level between FCD use and firm value in the OLS estimation and a negative and statistically association between FCD use and firm value at 10% level in the 10th and 25th quantiles.

[16] When we tested our first hypothesis, if FCD use adds value in firms with a strong governance, we separated our sample in two, from firms with a strong governance (an internal governance index of zero or one) from firms with a weak governance (an internal governance index of two or three). In this section we thought it could be interesting to consider with a strong governance only firms with an internal governance index of three because our index only scores from zero to three and we want to analyse our sample with the highest index possible.

Once again we didn't confirm our hypothesis but we did find some interesting results. First in firms with strong internal corporate governance and from countries with Scandinavian Civil Law firm value is positively associated with FCD use. In Allayannis et al. (2012) the legal family with the strongest investor protection rights was the English Common Law and they used countries from all over the word. We on the other hand only used firms from countries of the European Union. This could mean that in an European context the legal family with the strongest investor protection rights is the Scandinavian Civil Law, if we assume that FCD use is positively associated with firm value when corporate governance is strong (internal and external), following the findings of Allayannis et al. (2012). So, the findings of LLSV (1998) could not apply in a European context.

We also found a negative and statistically association between FCD use and firm value in firms with strong governance and from countries with French Commercial Code as expected.

Table 5: FCD usage, Firm Value and Internal and External Corporate Governance:

This table shows the impact of FCD usage on firm value for the sample with positive foreign sales split up with respect to the internal governance index and legal origin. Coefficients and *t*-statistics, in parentheses, are reported from an OLS regression and for the 10th, 25th, 50th, 75th, and the 90th quantiles. The *t*-statistics are computed using bootstrapped cluster standard errors which were obtained using 100 bootstrap replications. The dependent variable is Ln (Tobin's Q) a proxy to the firm value. The stars ***, ** and * represent statistical significance at the 1%, 5% and 10% level, respectively.

	High Internal Corporate Governance (GOV≥3)								
	English Common Law			**French Commercial Code**			**Scandinavian Civil Law**		
	No. Obs.	FCD dummy	t-statistic	No. Obs.	FCD dummy	t-statistic	No. Obs.	FCD dummy	t-statistic
OLS	344	0,0907	(0,5349)	92	-0,1654	(-1,3646)	32	0,4406**	(2,3729)
q0,1	344	-0,0799	(-0,3223)	92	-0,4411**	(-2,0716)	32	0,1502	(0,0457)
q0,25	344	0,0445	(0,1864)	92	-0,4965**	(-2,4788)	32	0,1502	(0,0455)
q0,5	344	0,2064	(0,9609)	92	-0,1700	(-0,9886)	32	0,3440	(0,0741)
q0,75	344	0,2549	(0,8015)	92	-0,0956	(-0,5890)	32	0,5796	(0,1096)
q0,9	344	0,6460	(1,4716)	92	0,0608	(0,3114)	32	0,5796	(0,1929)
	Low Internal Corporate Governance (GOV≤3)								
	English Common Law			**French Commercial Code**			**Scandinavian Civil Law**		
	No. Obs.	FCD dummy	t-statistic	No. Obs.	FCD dummy	t-statistic	No. Obs.	FCD dummy	t-statistic
OLS	113	0,7581**	(2,0611)	294	-0,0207	(-0,2818)	63	-0,0855	(-0,4825)
q0,1	113	-1,4889*	(-1,7782)	294	-0,0808	(-0,8307)	63	0,1237	(0,0876)
q0,25	113	-1,5300*	(-1,8562)	294	-0,1346	(-1,5186)	63	0,1025	(0,0417)
q0,5	113	0,4289	(0,5828)	294	-0,0269	(-0,3888)	63	-0,0851	(-0,1150)
q0,75	113	0,8646	(1,3554)	294	0,0303	(0,3594)	63	-0,1493	(-0,0506)
q0,9	113	0,9640	(1,5309)	294	0,0328	(0,3023)	63	-0,0626	(-0,0206)

7. Conclusions

In this research we addressed the question if currency derivatives use affects firm value when corporate governance is strong. Our sample consists of foreign firms that are cross-listed in different stock exchanges between 2005 and 2015. This question was studied before, but in our research we updated to more recent years and we focused in the European context, our sample has firms from 14 countries.

To answer this question we separated our sample, first we analysed the effect of currency derivatives use on firm value in firms with exchange-currency exposure. Second we analysed the effect of FCD use on firm value in firms with positive foreign sales and with a strong internal corporate governance. Third we analysed the association between currency derivatives use and firm value in firms with positive foreign sales and from countries with strong investor protection rights. At last we examined the value of FCD use in firms with exchange-currency exposure and with strong internal and external corporate governance.

When we tested the association between FCD use and firm value in firms with positive foreign sales we found a positive and statistically significant association at 5% level between FCD use and firm value in the 90th quantile with a R^2 of 0,4345. Some control variables are significant and have the expected sign such as log of total assets, which have a negative and significant association at 1% level with firm value, which means small firms are associated with higher value. Also ROA and Global Industry Q are positive and statistically significant at 1% level, which means more profitable firms have higher value and firms with high global Q are associated with higher value.

We didn't find significant results about the effect of internal corporate governance in the value of FCD use and this could have happened because of two factors: the few rules on our index (only 3 rules), and the possible impact of the Sarbanes-Oxley (SOX) law on the results, because after 2002, the year of implantation of the law, ADRs where forced to adopt more strict governance practices, so after the implantation the results could have become weaker.

We also didn't find significant results about the effect of external corporate governance in the value of FCD use. This could mean that among countries from the European Union

the effect of investors protection rights on firm value could diminish because this countries share the same guidelines.

When we tested the effect of corporate governance (firm-level and country-level) in the value of FCD use we obtained our major findings. These findings are related to the legal families in an European context. In firms with strong internal corporate governance and from countries with Scandinavian Civil Law, firm value is positively associated with FCD use and in firms with strong internal corporate governance and from countries with French Commercial Code, firm value is negatively associated with firm value. This could mean that in a European context the Scandinavian Civil Law is the legal family with the strongest investor protection rights and the French Commercial code is the legal family with the weakest investor protection rights. This is only possible if we assume that FCD use is positively associated with firm value when corporate governance is strong (internal and external), following the findings of Allayannis et al. (2012). So the findings of LLSV (1998) could not apply in a European context.

This thesis could be interesting for investors to understand which countries offer the strongest investor protection rights, because in the future when they have to choose whether to invest in a firm or not, the country of the firm can be a key point in the decision process. But our study have some limitations, our sample is relatively small and our internal governance index only has three rules, this being a consequence of the time required to collect all this information manually. Other limitation is the lack of observations in our sample concerning firms with no exchange-currency exposure and firms from countries with German Commercial Code, this prevents us from analysing some questions.

Following our discoveries, a possible line of investigation is to focus on firms from countries with Scandinavian Civil Law as a way to understand if firms from countries with this legal family are well-governed, and try to adapt the LLSV (1998) for a more recent period and in an European Context.

8. References

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