Trade credit, creditor protection and accounting standards: evidence from an international sample

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Abstract: Trade credit is broadly used by firms around the world. Nevertheless, its use by firms in different locations is not homogeneous. A possible explanation for this are heterogeneous levels of creditor protection or quality in accounting systems among the different countries. Both features may influence the borrowing risk involved in selling goods on credit. Using a dataset containing firms from 13 countries, we explain trade credit policy based on the agency theory, according to which it is a result of a trade-off between the moral hazard and the adverse selection phenomena. The results from the estimation show a positive effect of adverse selection on the trade credit extended and a negative effect of moral hazard on the trade credit extended. Furthermore, our analysis shows that the level of creditor protection and the accounting system mitigate the negative influence of moral hazard on trade credit.

Key words: Trade Credit, Moral Hazard, Adverse Selection, Creditor Protection, Accounting Standards

JEL Classification: M21, G39

Resumen: El crédito comercial es ampliamente usado por las empresas en todo el mundo. Sin embargo, el uso por las empresas en las diferentes zonas geográficas no es homogéneo. Una posible explicación para este hecho es la gran heterogeneidad que existe entre los diferentes países en la protección de los acreedores y en la calidad de los sistemas contables. Ambas características pueden influir en el riesgo que se asume cuando se ofrece crédito comercial. Nuestra explicación de la política de crédito comercial se basa en la teoría de la agencia; según esta teoría el crédito comercial es el resultado de un *trade-off* entre los fenómenos de riesgo moral y selección adversa. La evidencia empírica se obtiene utilizando una base de datos de empresas procedentes de 13 países. Los resultados de la estimación muestran un efecto positivo de la selección adversa en el crédito comercial y un efecto negativo del riesgo moral en el crédito comercial. Adicionalmente, nuestro análisis muestra que el nivel de protección de los acreedores y el sistema contable mitigan la influencia negativa del riesgo moral en el crédito comercial.

Palabras Clave: Crédito comercial, riesgo moral, selección adversa, protección de los acreedores, normas contables.

Clasificación JEL: M21, G39

1. INTRODUCTION

Many previous studies have investigated the use and the offer of trade credit by firms. In most of these papers, scholars were concerned only with firm specific determinants and rarely tried to find cross country differences that may cause variations in trade credit policies among firms located in different countries.

Although some works have recently studied trade credit using samples composed of firms from different countries (see, for instance, Wei and Zee, 1997; Demirgüç-Kunt and Maksimovic, 2001; Fisman and Love, 2003; Delannay and Weill, 2004; Pike et al., 2005; and Horen, 2005), none of them have attended to the specific importance of the creditor protection level as a factor that may mitigate supplier risk in extending trade credit. In addition, as far as we know, the quality of the accounting standards of a country has not been studied as a characteristic that diminishes information asymmetries between suppliers and their clients.

In this vein, Wei and Zee (1997) test for the validity of the product quality theory for Germany, Japan, the United Kingdom and the United States. Demirgüç-Kunt and Maksimovic (2001), using a large sample of firms from 39 countries, find that the development of a country's banking system and legal infrastructure predicts the use of trade credit. Fisman and Love (2003) study the relation between industry growth, the development of financial intermediaries and trade credit. However, their work focuses on industry growth instead of on trade credit policies. Additionally, Delannay and Weill (2004) study the determinants of trade credit and trade debt for a large sample of firms from nine Central and Eastern European Countries. Their results did not show generalized determinants of trade credit in all transition countries. Recently, Pike et al. (2005) analyze, for US, UK and Australian firms, whether the twin objectives of reducing information asymmetries and discriminatory pricing are relevant to the definitions of trade credit terms. In another relevant paper, Horen (2005) tests for the use of trade credit as a competitiveness tool using a sample of firms from 42 developing countries.

Although the relation between legal framework and trade credit has been little studied, the association between legal infrastructure and bank credit has been deeply explored by scholars (see, for example, La Porta et al., 1998; Galindo and Micco, 2007; Djankov et al., 2007 and, Safavian and Sharma, 2007). These studies have concentrated on bank credit, usually measured by private credit/GDP, and usually, but not always, analyzing country level data. However, the association between this legal infrastructure and trade credit is still little explored.

Differences in countries' legal systems can be proxied by features such as creditors' rights, investors' rights, laws enforcement, accounting standards, etc. Creditor protection varies strongly around the world. According to La Porta et al. (1998) common-law countries offer creditors the strongest legal protection against managers, followed by countries from German-civil-law tradition and Scandinavian tradition. French-civil-law countries offer creditors the weakest protection. The level of creditors' legal protection is determinant for the size of credit markets (see, Galindo and Micco, 2007), since the borrowing risk increases in countries where creditor protection is low. Generalizing this proposition, it can be affirmed that the level of creditors' legal protection will also affect the risk involved in extending trade credit to a client.

As occurs in the case of creditor rights, the quality of the accounting standards varies substantially among countries. According to La Porta et al. (1998), Scandinavian-civil-law countries

show the strongest accounting system quality, followed by countries from common-law tradition and German-civil-law countries. The weakest quality of accounting is found in those countries from the French-civil-law family.

This article focuses on explaining trade credit by using an agency model on a large sample of companies and also testing for the influence of the level of creditor protection and the quality of accounting standards on trade credit policies. According to the model, trade credit policies are defined by a trade-off between two agency costs, adverse selection and moral hazard. Our sample comprises firms from 13 developed and developing countries with distinct levels of financial system development, creditor protection and accounting standards. The size and the heterogeneity of our sample allow us to check for the validity of the agency model in the trade credit explanation around the world.

This paper presents three main contributions. First, the sample includes firms from developed and developing countries, from different legal systems, and consequently presenting diverse levels of quality in their creditor protection and accounting systems. As a consequence, this sample allows us to analyse the influence of both factors on the moral hazard phenomenon. Second, we improve the proxy variable for the moral hazard phenomenon in comparison to previous studies by using the "provision for bad debts" data available in Worldscope. Third, we estimate the models using the panel data methodology (GMM system) which, unlike cross-sectional analysis, allows us to control for individual heterogeneity and consequently eliminate the risk of obtaining biased results.

Our results indicate that there is a positive relationship between adverse selection and trade credit extended. In other words, in the presence of information asymmetry, sellers will offer trade credit to provide buyers with time to check the real quality of the products before paying for them. We also find a negative relationship between moral hazard and trade credit extended. This result indicates that, in the presence of information asymmetry, suppliers will reduce the trade credit offer when the risk of buyers' not carrying out the payment when it is due increases. Furthermore, our results also provide empirical evidence of a mitigation effect of the level of creditor protection and accounting standards on the moral hazard phenomenon. Therefore, the negative relationship between moral hazard and trade credit extended will be mitigated in firms from countries of high level of creditor protection or high quality in their accounting standards.

The remainder of this paper is organized as follows. In Section 2, we review the trade credit differences across countries. The agency problem in a trade credit relationship, the influence of the level of creditor protection and the quality of the accounting system in the offer of trade credit and hypotheses are discussed in Section 3. Section 4 presents the data and the empirical strategy, while the results are shown in Section 5. Finally, conclusions are presented in Section 6.

2. TRADE CREDIT DIFFERENCES ACROSS COUNTRIES

In the last three decades many studies have been carried out to investigate trade credit. Although its use can differ significantly depending on where firms are located, strangely, researchers have normally ignored these cross-country differences. Except for some studies (see, for instance, Wei and Zee, 1997; Demirgüç-Kunt and Maksimovic, 2001; Fisman and Love, 2003; Delannay and Weill, 2004; Pike et al., 2005 and; Horen, 2005), most of the literature has only sought the

reasons for the differences in trade credit policies between firms by using a firm's specific and internal characteristics, such as differences in firm access to funds (see Brick and Fung, 1984 for tax reasons; or Schwartz, 1974, for financial reasons), in transaction costs (Ferris, 1981; Emery, 1987) or in product quality (Smith, 1987; Emery and Nayar, 1998).

Some of these theories can explain trade credit in a few specific situations, but are not able to explain why there are significant differences in trade credit policies among firms located in different countries. According to the harmonized account data base, BACH[2], for the year 2000 (see Bardes, 2002 and Marotta, 2005), Italy is the country that has the highest level of accounts payable and receivable, followed by France and Spain, while Germany has the lowest. Wei and Zee (1997), using the Disclosure Worldscope database, make an international comparison of the use of trade credit among Germany, Japan, the United Kingdom and the United States and again find that Germany shows the lowest levels.

An interesting research study that has found some empirical evidence of cross-country variations in trade credit used by firms is the one by Demirgüç-Kunt and Maksimovic (2001). In this paper the authors investigate data from 39 countries and also find Italy as the largest trade credit user. However, what does variation really mean and why does it exist? Their main assumption is that trade credit depends on countries' financial systems and legal infrastructure.

Horen (2005), using data from 42 developing countries based on the World Bank Investment Climate Unit (ICU), confirms that the development of the financial system influences the trade credit offered by firms. Specifically, the author suggests and finds some empirical evidence supporting the idea that trade credit is used as a competitiveness tool, mainly by firms in developing countries.

A large body of researchers have already found evidence supporting the idea that the legal system influences economic development, since it is an important determinant of financial institutions (see La Porta et al., 1997, 1998; Levine, 2002; Fisman and Love, 2003, Djankov et al., 2007). However, how does the legal system, and consequently, the legal framework, influence the trade credit offered by firms? According to Safavian and Sharma (2007) "...the extent to which the legal framework allows creditors to enforce their rights to collateral matters to the working of credit markets". This reasoning also works for trade credit markets, that is, a legal framework that is able to mitigate the moral hazard in bank credit operations will also mitigate the risk of buyers' not paying for the products bought when payment is due.

Differences in countries' legal systems include features such as creditors' rights, investors' rights, laws enforcement, accounting standards, etc. In this research we concentrate on two aspects of the legal system: (i) the influence of creditors' rights on trade credit, since we understand that its level is an important determinant of the size of credit markets and, consequently, will result in more or less trade credit use by firms and; (ii) the role played by the level of quality of the accounting system on the trade credit extended by firms, since its variation across countries may result in changes in credit risk as a consequence of the mitigation of information asymmetries.

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2   BACH –harmonized companies accounts database. It provides data for 11 European Countries, Japan and United States.

3. THEORY AND HYPOTHESES

In order to find out the determinants of a firm's trade credit policy and the variation in the amount of trade credit use among firms from different countries, we propose a model supported by two different dimensions.

3.1 First Dimension: The Agency Problem

The first dimension includes some firm and product characteristics that explain the differences in trade credit policy among firms trading in asymmetric information conditions. In these circumstances the trade credit extended by suppliers to clients is a result of two phenomena, adverse selection and moral hazard. The first phenomenon has been proposed and supported by many research studies, such as Smith (1987), Long, Malitz and Ravid (1993), Lee and Stowe (1993), Emery and Nayar (1998), Wei and Zee (1997)[3] and Pike et al. (2005). Adverse selection arises when clients do not know ex-ante the quality of the goods they are going to buy. In this case, sellers extend trade credit to guarantee their buyers product quality. This point of view suggests that firms selling high tech products whose reputation has not been consolidated will extend trade credit to allow clients to check the real quality of the goods before payment. Nevertheless, when trade credit is extended, the risk of buyers not making the payment when it is due increases, giving rise to the moral hazard phenomenon.

In other words, moral hazard and adverse selection are two phenomena that arise from sellers and buyers trading in conditions of asymmetric information. This trade-off characterizes an agency relationship between a firm and its clients, first proposed by Jensen and Meckling (1976). Therefore, the two following hypotheses are proposed:

Hypothesis 1: The greater the presence of adverse selection in a relationship between sellers and buyers, the greater the trade credit offered.

Hypothesis 2: The greater the presence of moral hazard in a relationship between sellers and buyers, the less trade credit offered.

3.2 The Second Dimension: Countries' Specificities

The second dimension refers to two country characteristics that may distinguish financial patterns of firms from different legal environments: differences in creditor protection and the quality of accounting standards. According to the following arguments, high levels of creditor protection may mitigate the moral hazard costs, and high quality accounting systems mitigate information asymmetries and, consequently, moral hazard costs.

3.2.1 Creditor Protection

Evidence found by La Porta et al. (1997), Galindo and Micco (2007) and Djankov et al. (2007) supports the explanation of the importance of creditor rights in credit used by firms. They find

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3   These authors find mixed evidence supporting the product quality theory. However they conclude that "the theory is valid at least for some countries and industries"

that the size of credit markets in countries presenting high levels of creditor rights is much larger than in countries presenting weaker creditor protection. Specifically, Levine (2002) finds that countries whose legal systems emphasize creditor rights and contract enforcements have better developed banks.

Countries with lower creditor protection present a high credit risk to lenders. The higher this credit risk, the higher the borrowing cost for firms. Nevertheless, this cost will be lower in trade credit than in bank credit, since according to the transaction cost theory, suppliers may have cost advantages against financial intermediaries in acquisition information.

This view is in agreement with Fisman and Love (2003), who pointed out that: "...*even though weak creditor protection and imperfect information will affect both formal intermediaries and trade credit providers, trade creditors may mitigate these problems better than formal lenders...*". In this case, non-financial firms (suppliers) are cheaper lenders than banks.

As explained previously, the effect of a weak creditor protection is lower in trade credit than in bank credit. However, it is also important in the explanation of trade credit policies, since the providers' difficulty in seizing their goods when buyers file for reorganization and have not paid for them yet will affect the trade credit risk. Therefore, adding a new argument to the proposed trade-off between adverse selection and moral hazard, depending on the level of creditor protection in a country, the cost of the moral hazard can oscillate. Although trade credit is expected to be proportionally higher[4] in countries of lower creditor protection, it is also expected that the weakness in creditor rights may enhance the influence of moral hazard in trade credit extended by providers which, as described above, is expected to be negatively related to trade credit. Therefore, creditor protection will act as a moderator in the moral hazard phenomenon.

This explanation has theoretical support in Galindo and Micco (2007), who point out that the low level of creditor protection becomes more relevant in the development of credit markets during bankruptcy. Naturally, we can broaden this reasoning to a trade credit relationship between firms in the case of buyers presenting a high risk of bankruptcy. Thus, the level of creditors' protection will be more important to the development of trade credit markets along the supply chain when buyers' risk of bankruptcy is high.

The inclusion of the level of creditor protection as a moderator of the moral hazard phenomenon and consequently as an indirect determinant of the trade credit extended also finds support in Pindado et al. (2008), who find that insolvency codes play a crucial role in investment decisions. As trade credit extended by suppliers is a category of investment which, on the one hand, is a short term investment in accounts receivable that stimulates demand, and on the other hand, is an investment in a long term client relationship, creditor protection will influence trade credit policies at least indirectly by the mitigation of moral hazard. Therefore, we pose our third hypothesis.

Hypothesis 3: The quality of creditor protection mitigates the moral hazard effects on trade credit policies.

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4 Considering that trade credit and bank credit are substitutes, we expect that in environments where creditor protection is low, the mix of external finance used by firms will be composed of a higher proportion of trade credit and a smaller proportion of bank debt when compared to firms from countries where creditor protection is high. In this case, trade credit is acting as a mechanism to compensate the higher cost of funds from financial institutions.

3.2.2 Accounting Standards

Asymmetric information between lenders and borrowers certainly influences the cost of the credit and its amount. The scarcity of information about a borrower's financial situation or the existence of untrustworthy or precise information about them can lead financial intermediaries to reject credit demands or to increase their cost to compensate the risk. Fisman and Love (2003) find a negative relationship between the accounting standards in a country and credit financing, indicating that the weaker the accounting information the higher the risk of lending for financial intermediaries. Of course, the risk of lending increases for suppliers of trade credit as well, but as suggested by Petersen and Rajan (1997), suppliers will have some informational advantages over formal lenders, which leads us to suppose that the scarcity of accounting information about borrowers is more significant for banks than for suppliers.

Therefore, as in the case of creditor's rights, the low quality of the accounting system will affect, with different intensity, both financial intermediaries and trade credit suppliers. Thus, the more information available about a borrower's or a buyer's financial situation, the cheaper the credit offered. Therefore, the quality in the accounting system will act as a moderator in information asymmetries and, consequently, in the moral hazard phenomenon. Therefore, the quality in the accounting system will act as a moderator in information asymmetries and, consequently, in the moral hazard phenomenon. Therefore, our fourth hypothesis is as follows[5].

Hypothesis 4: The quality of the accounting standards mitigates the moral hazard effects on trade credit policies.

These theoretical hypotheses can be tested by using a model represented by a function to explain trade credit usage by firms from different legal environments as follows: $DSO=\phi(\varpi,\mu)$, where DSO is the day of sales outstanding, ϖ stands for the agency costs arising from the adverse selection phenomenon, while μ represents the agency costs caused by the moral hazard phenomenon. And, as posited above, DSO is directly related to ϖ and inversely related to μ. Additionally, the quality of creditor protection (Ω) and the quality of accounting standards (Ψ) have been included as factors that moderate the moral hazard phenomenon in trade credit.
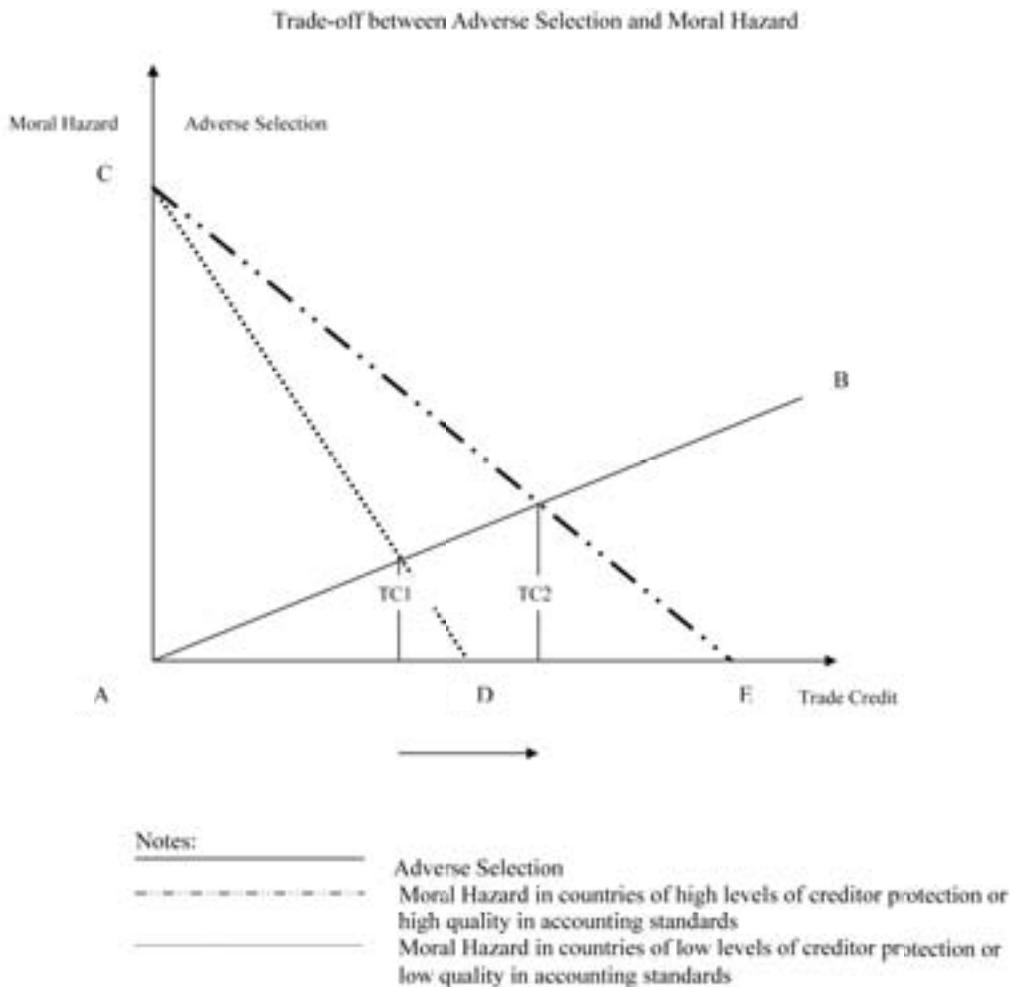
The graph shown in Figure 1 allows us to observe the theoretical construction described above. Line AB represents the adverse selection phenomenon and indicates its expected direct relationship with trade credit. Line CD stands for the moral hazard phenomenon in firms from countries of low creditor protection and low quality in accounting standards. Line CE represents the moral hazard phenomenon in the case of firms from countries of high creditor protection and high quality in accounting standards. In both cases, the expected relationship of moral hazard with trade credit is negative. The graph helps us to understand that, according to the agency model, the trade credit extended will be a result of a trade-off between both phenomena, as represented by points TC1 and TC2. Moreover, the graph shows the expected influence of the creditor protection level and the quality of accounting standards on the moral hazard. According to the model, in countries of high creditor protection or with a high quality accounting system we expect that the influence of moral hazard in trade credit policies will

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5   The percentage of customers from different countries will certainly affect this relationship, since export firms will trade with clients under different levels of accounting standards.

decrease. Therefore, when creditor protection is high, as in the United Kingdom, Singapore and Malaysia, the moral hazard line presents a smoother decline as compared to countries where creditor protection is low, as in Mexico and France. As a consequence, the optimum trade credit level point will move to the right as the moral hazard becomes less important in the trade credit policy decision.

Figure 1: Trade-off between moral hazard and adverse selection and creditor rights/accounting system influence

Trade-off between Adverse Selection and Moral Hazard

Notes:

_____ Adverse Selection

— · — · — · — · — Moral Hazard in countries of high levels of creditor protection or high quality in accounting standards

_____ Moral Hazard in countries of low levels of creditor protection or low quality in accounting standards

In short, trade credit extended will be larger in the case of firms from countries where creditor protection is high, ceteris paribus. The same reasoning is valid for the accounting system, that is, the trade credit extended will be larger in the case of firms from countries where the quality in the accounting system is high, ceteris paribus.

4. DATA, EMPIRICAL MODEL AND METHODOLOGY

4.1 Data

Our original file contained data of companies from 19 different developed and developing countries comprising all legal families described by La Porta et al. (1998). The firm data level was obtained from Worldscope and we used La Porta et al. (1998) to complete all the information about the countries' creditor protection and accounting systems. These 19 countries were selected in order to generate a heterogeneous sample of firms immersed in distinct levels of economic development, creditor rights and accounting systems.

The sample was restricted to manufacturing firms because it is in this category where trade credit takes place in its usual form. We constructed a panel containing at least five consecutive years of information for each company. In this step, six countries were kept out of the sample (Argentina, Denmark, Finland, India, Italy and Pakistan), because they did not fulfil this requirement. We also dropped firm-year data with missing values for our crucial variables. As a result, our sample covers active manufacturing companies (SIC 2000 through 3999) from 1990 to 2003. Therefore, we obtained an unbalanced panel comprising 1,213 companies and 6,508 observations from 13 countries.

4.2 Empirical model

Since the aim of this work is to analyze the determinants of trade credit extended, we use two different proxies to measure this variable: the days of sales outstanding (DSO), measured by the natural logarithm of accounting receivable days[6], available in Woldscope, and the ratio of trade receivables to total assets (TRC). The first is a proxy for how long trade credit is extended and the last is a proxy for the amount of trade credit extended.

Now, we explain each right-side variable to measure for both phenomena, adverse selection and moral hazard. The literature has argued that the adverse selection phenomenon can be proxied by several variables, one of them being reputation. Reputation reduces adverse selection costs and can be proxied by SIZE, as measured by the number of employees in the company. SIZE is expected to be negatively related to DSO.

Another proxy for firm reputation and, consequently, for the adverse selection phenomenon, is a firm's fixed assets, since the larger they are, the smaller the asymmetric information in a trade relationship. Therefore, to measure the suppliers' fixed assets we use FIX, calculated as 1-(Fixed Assets/Total Assets), that is, the inverse of firm's fixed assets. For this variable we expected a positive relationship with DSO.

As the negative consequences of adverse selection can be mitigated by the supplier's profitability, the variable ROA, calculated as earnings before interest and taxes divided by total assets, is used to proxy for firms' profitability. This variable is expected to be negatively correlated to DSO.

6   Accounts receivable days are available in Worldscope calculated as follows: 360 / (Revenues / (Current Year's Receivables + Last Year's Receivables / 2))

As Long, Malitz and Ravid (1993) point out, buyers of high-tech products require a longer time period to verify quality and buyers of perishable products need only a short time to resolve quality uncertainty. These differences in the time requirements for verifying the quality of the products exist because of the variation in the presence of adverse selection costs associated with each type of product. Therefore, we follow Bastos and Pindado (2007) in the construction of the Product Quality Level variable (PQL)[7]. This variable takes higher values when the period needed to verify the quality of the product is longer, and vice versa. As a result, the product quality level should be positively related to DSO

The last variable used to proxy adverse selection is the natural logarithm of days to pay accounts payable (DPA), calculated as accounts payable times 360 divided by the cost of goods sold. This variable is entered into the model because high quality firms are prone to increasing the trade credit offered to their clients, and they use this argument to require more trade credit from their suppliers. Therefore, the expected relation between days to pay accounts payable and DSO is positive.

The bad debts provision divided by the net trade receivables (BDP) is used to proxy for the risk of buyers not making the payment when it is due. This measure is used since it represents the main risk for suppliers extending trade credit. The expected relationship between bad debts provision and DSO is negative. Equation 1 represents our model including only those variables described above that are used to proxy for the adverse selection and the moral hazard phenomena, that is, the agency problem.

$$DSO_{it} = \beta_0 + \beta_1 BDP_{it} + \beta_2 POL_{it} + \beta_3 SIZE_{it} + \beta_4 FIX_{it} + \beta_5 ROA_{it} + \beta_6 DPA_{it} + \varepsilon \qquad (1)$$

where ε_{it} is the random disturbance.

To measure the creditor protection in each country of our sample, the index of La Porta et al. (1998) is used. This index is composed of 4 different aspects of creditor protection in bankruptcy situations: (i) whether restrictions are needed, such as creditor consent, when a debtor files for reorganization; (ii) whether secured creditors are able to seize their collateral after a debtor appeal for reorganization is approved (no automatic stay or asset freeze); (iii) whether a secured creditor has preference in receiving money from the liquidation of a bankrupt firm; (iv) whether during reorganization the head of the firm is an administrator appointed by the court and not the manager. For this index, 0 (zero) represents the weakest creditor protection and 4 (four) corresponds to the strongest.

According to Pindado et al. (2008), these four aspects mentioned above are determinants of the risk borne by bondholders and can increase the likelihood of underinvestment. As explained in Section 3, trade credit extended is also an investment and its level will also be affected by this measure of creditor protection. Therefore, based on this index we construct a dummy variable by splitting our

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7   We calculate the PQL variable as follows: PQL=(30/(1+Natural Logarithm of Total Assets)) for technical industries, PQL=(0.5/(1+ Natural Logarithm of Total Assets)) for perishable industries, and PQL=(3/(1+ Natural Logarithm of Total Assets)) for the remaining firms. The figures 30, 3 and 0.5 have been chosen in order to give more power to the first characteristic related to industry, as suggested in financial literature. However, note that the second characteristic (Natural Logarithm of Total Assets) plays an important role, since it distributes the values within each kind of industry and provides variability to PQL, which is necessary when using the panel data methodology. More details will be provided by the authors upon request.

sample into two groups, one taking the value of zero, containing firms from countries of low levels of creditor protection, that is, with a index value smaller than two and another, taking the value of one, containing firms with high levels of creditor protection, that is, with an index value equal to or greater than two. Hereafter, we refer to this measure as the Creditors' Rights Dummy (CRD).

To proxy for the quality of a country's accounting system we used the accounting standard index (AS), also based on La Porta et al. (1998). This measure is an index checking for the inclusion or the omission of 90 items in annual reports of companies from several countries. We again constructed a dummy variable that takes the value of 1 for firms from countries where the quality of the accounting standards are above average and zero otherwise, that is, countries of high and low quality accounting systems. Hereafter, we refer to this measure as the accounting standard dummy (ASD). Equation 2 represents our model, including, for the moral hazard phenomenon, an interaction dummy variable (INT_i) that measures the level of a country's creditor protection or the level of a country's quality in accounting standards as described above.

$$DSO_{it} = \beta_0 + BDP_{it}(\beta_1 + \lambda INT_i) + \beta_2 PQL_{it} + \beta_3 SIZE_{it} + \beta_4 FIX_{it} + \beta_5 ROA_{it} + \beta_6 DPA_{it} + \varepsilon \tag{2}$$

where INT_i represents the country specificity interaction in the moral hazard phenomenon as the creditors' rights index (CR) or the quality of the accounting system (AS) and ε_{it} is a random disturbance.

4.3 Methodology

We estimate the proposed model by using panel data methodology for two main reasons. First, unlike cross-sectional analysis, it allows us to control for individual heterogeneity. This heterogeneity could lead to biased results (see, for instance, Moulton, 1986, 1987). Therefore, in our paper we control for heterogeneity by modelling it as an individual effect, η_i. Consequently, the error term in our models, ε_{it}, has been split into four components. First, the firm-specific effect, η_i. Second, d_t, which is time specific effects and allows us to control for some macroeconomic influences on the trade credit decision. Third, as the estimation of our model uses data from several countries, we included country dummy variables, c_i. Finally, v_{it} is the random disturbance.

The second reason for using panel data methodology is because endogeneity may be a problem in our model. Particularly, firms that receive trade credit from their suppliers use this source of finance to extend credit to their buyers. However, the inverse direction of this relationship may also occur, since high quality suppliers that extend trade credit to their clients use this argument to require more credit from their suppliers. A similar problem also occurs between days of sales outstanding and the provision for bad debts, since the latter is a measure for buyers' moral hazard and when trade credit is extended bad debts are likely to increase. To control for this problem we use all the right-hand-side variables in the model lagged from t-1 to t-2 as instruments for the equations in differences. Therefore, our model in Equation 1 and 2 would be, respectively, as follows:

$$DSO_{it} = \beta_0 + \beta_1 BDP_{it} + \beta_2 PQL_{it} + \beta_3 SIZE_{it} + \beta_4 FIX_{it} + \beta_5 ROA_{it} + \beta_6 DPA_{it} + \eta_i + d_t + c_i + v_{it} \tag{3}$$

$$DSO_{it} = \beta_0 + BDP_{it}(\beta_1 + \lambda INT_{it}) + \beta_2 PQL_{it} + \beta_3 SIZE_{it} + \beta_4 FIX_{it} + \beta_5 ROA_{it} + \beta_6 DPA_{it} + \eta_i + d_t + c_i + v_{it} \tag{4}$$

where η_i is an individual effect, d_t is the time specific effect, c_i are countries' dummy variables and v_{it} is the random disturbance.

With the aim of checking for the potential misspecification of the models, we also test the joint significance of the reported coefficient by running three Wald tests, where z_1 is a test of the joint significance of the reported coefficients; z_2 is a test of the joint significance of the time dummies; and z_3 is a test of the joint significance of the country dummies. Additionally, we use the Hansen J statistic of over-identifying restrictions in order to test the absence of correlation between the instruments and the error term. We also use the m_2 statistic, developed by Arellano and Bond (1991), in order to test for lack of second-order serial correlation in the first-difference residual. All these statistics are shown joined with the estimation results.

5. RESULTS

In this section we first present the distribution of our sample by industry, by the level of creditor protection and by the level of quality in accounting standards, the descriptive statistics and Pearson's correlation for all variables included in our model. We then estimate the agency model without the inclusion of the countries' specificities as an interaction term. Finally, we test for the importance of the creditor protection level and the accounting standards as a factor that moderates the effect of buyers' risk of default on the trade credit offer by suppliers.

5.1 Descriptive Statistics and Preliminary Results

The structure of the sample by number of companies and number of observations per level of creditor protection and per level of the quality in accounting standards are provided in Table 1. Note that our sample is balanced between what we consider "high" and "low" levels of creditor protection and "high" and "low" levels of quality in accounting standards.

Table 1
Structure of the sample according to creditor protection and accounting standards

Panel A: Number of companies and observations per level of creditor protection

CR	Nº of Companies	Nº of Observations	% of Total	
0	193	1,435	22.05	LOW (43,73)
1	293	1,411	21.68	LOW (43,73)
2	645	3,291	50.57	HIGH (56,27)
3	24	130	2.00	HIGH (56,27)
4	58	241	3.70	HIGH (56,27)
Total	1,213	6,508	100.00	

Panel B: Number of companies and observations per level of quality in the accounting standards

AS	Nº of Companies	Nº of Observations	% of Total	
36	19	122	1.88	LOW (54,46)
54	6	27	0.41	
60	2	9	0.14	
62	24	130	2.00	
64	32	273	4.19	
65	606	2,984	45.85	
69	191	1,426	21.91	HIGH (45,52)
71	268	1,262	19.40	
74	4	19	0.29	
76	34	138	2.12	
78	24	103	1.58	
83	3	15	0.23	
Total	1,213	6,508	100.00	

Table 2 presents all the countries included in our sample and their respective level of creditor protection and accounting system. Note that the countries are dispersed in their levels of creditor protection and accounting system.

Table 2
Country level data

This table provides the creditors' rights index (CR) and the accounting standards index for all countries included in the sample. CR and AS classification are based on La Porta et al. (1998).

Countries	CR	AS
Civil Law (French-origin)		
France	0	69
Spain	2	64
Portugal	1	36
Brazil	1	54
Mexico	0	60

Countries	CR	AS
Civil Law (German-origin)		
Germany	3	62
Japan	2	65
Civil Law (Scandinavian-origin)		
Norway	2	74
Sweden	2	83
Common Law (English-origin)		
UK	4	78
US	1	71
Singapore	4	78
Malaysia	4	76

The observations in our sample are industry dispersed, i.e., the sample does not appear to be more concentrated in any industry. Table 3 shows the distribution by industry for our sample.

Table 3
Sample distribution by industry

SIC	Industry	Number	%
20	Food and Kindred Products	554	8.517
21	Tobacco Products	9	0.14
22	Textile Mill Products	156	2.40
23	Apparel and Other Finished Products Made from Fabrics and Similar Materials	169	2.60
24	Lumber And Wood Products, Except Furniture	71	1.09
25	Furniture and Fixtures	94	1.44
26	Paper and Allied Products	185	2.84
27	Printing, Publishing, and Allied Industries	128	1.97
28	Chemicals and Allied Products	848	13.03
29	Petroleum Refining and Related Industries	71	1.09
30	Rubber and Miscellaneous Plastic Products	247	3.80

SIC	Industry	Number	%
31	Leather and Leather Products	45	0.69
32	Stone, Clay, Glass, and Concrete Products	237	3.64
33	Primary Metal Industries	412	6.33
34	Manufactured Metal Products, Except Machinery and Transport Equipment	353	5.42
35	Industrial and Commercial Machinery and Computer Equipment	912	14.01
36	Electronic and Other Electrical Equipment and Components, Except Computer Equipment	930	14.29
37	Transport Equipment	516	7.93
38	Measuring, Analyzing, and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks	396	6.08
39	Miscellaneous Manufacturing Industries	175	2.69
	Total	6,508	100.00

This table shows the distribution by industry for the 6,508 observations.

Summary statistics for the variables used in our analysis and Pearson's correlations are shown in Table 4. The days of sales outstanding is around 95 days. Note that correlation coefficients are moderate and do not violate the assumption of independence between explanatory variables. Not surprisingly, all dependent variables included in the model present the expected relation with DSO. The positive signs of PQL and FIX and the negative signs of SIZE and ROA suggest that smaller and less profitable firms producing high quality products and presenting a small proportion of fixed assets related to total assets tend to offer more trade credit to their clients. These outcomes support the idea that in asymmetric information environments there is a positive influence of adverse selection on the trade credit offered by sellers. The results for DPA also support the adverse selection phenomenon in the trade credit extended by providers. Regarding the BDP variable, the negative sign of the relationship with DSO was as expected by the proposed model.

Table 4
Descriptive statistics and Pearson's correlations

This table provides the mean, the standard deviation, the median, and the Pearson's correlations for the 6,508 observations. DSO denotes the natural logarithm of days of sales outstanding, BDP stands for the second power of bad debt provision divided by total assets, PQL denotes the product quality level, SIZE is the natural logarithm of the number of employees of the firm, FIX is the fixed assets proportion of total assets, ROA stands for earnings before interest and taxes divided by total assets, and DPA denotes the natural logarithm of days to pay accounts payable.

	Mean	Standard Deviation	Median	DSO	BDP	PQL	SIZE	FIX	ROA	DPA	CR	AS

DSO	4.4846	0.41421	4.5325	1.0000							
BDP	0.0815	1.07063	0.0200	-0.0088	1.0000						
PQL	1.1648	1.00005	1.5574	0.1619	0.0205	1.0000					
SIZE	7.9057	1.70947	7.6478	-0.1815	-0.0209	-0.1077	1.0000				
FIX	0.7069	0.13772	0.7162	0.1685	0.0128	0.3377	-0.1409	1.0000			
ROA	0.0417	0.10476	0.0425	-0.2043	0.0240	-0.0826	0.1064	0.0484	1.0000		
DPA	4.1826	0.53121	4.2523	0.4518	-0.0586	0.0597	0.0455	0.0384	-0.1624	1.0000	

We also test for the difference in days of sales outstanding between firms from countries of high and low levels of creditor protection. The same test was run for firms from countries of high and low quality accounting systems. Results in Table 5 show that firms from countries where creditor protection is high extend more trade credit than those located in countries where creditor protection is low. These outcomes are evidence in favour of the idea that lower levels of creditor rights may diminish not only the amount of bank credit available but also the trade credit offered by suppliers. These results are consistent with those found by Fisman and Love (2003), Galindo and Mico (2005) and Safavian and Sharma (2007).

Table 5
Test of independent samples

Variables	High CR[a]	Low CR[b]	T-Statistic of Difference
Days of Sales Outstanding	104.0658	85.52565	-20.4248*
Variables	High AS[c]	Low AS[d]	T-Statistic of Difference
Days of Sales Outstanding	86.14715	104.1583	19.8885*

* Significant at the 0.01 level.

a. High CR is defined as CR equal or greater than 2.

b. Low CR is defined as CR index less than 2.

c. High AS is defined as AS index greater than average (66.85).

d. Low AS is defined as AS index under than average (66.85).

Preliminary results for differences in DSO between firms from countries of different accounting systems show that firms from countries presenting high quality in their accounting standards extend less trade credit than those from countries where the accounting standards present low levels of quality. This result may occur because financial reports are likely to be more important for banks, since suppliers have informational advantages in acquisition information about buyers' creditworthiness. Although we understand that high quality in the accounting standards is very important for the credit decision in the bank sector, we also consider that a high quality accounting

system also favours a trade credit decision and should, at least, mitigate the moral hazard costs present in a trade relationship.

5.2 Results for the Agency Model

The results of the GMM estimation of our agency model are provided in Column I of Table 6. Coefficients for all variables that are proxies for adverse selection present the expected sign and, except for DPA, are significant at the 1% level. The variable ROA is negatively related to DSO, indicating that profitable firms tend to offer a shorter period of credit. The variable SIZE is negatively related to DSO, giving support to the argument that large and well-established firms tend to offer less credit to their clients. PQL is positively related to DSO, supporting that firms producing high quality products tend to offer more credit to their clients to allow them to assess the quality of goods before payment. FIX is positively related to DSO, supporting that firms with a large proportion of fixed assets tend to extend less credit to clients since tangible assets mitigate information asymmetries. All these results yield strong evidence in favour of a positive relationship between adverse selection and trade credit extended and consequently support Hypothesis 1.

Table 6

Estimation results

The table presents parameter estimates from panel GMM regressions of Days of Sales Outstanding on several different specifications. The dependent variable is the natural logarithm of days of sales outstanding, and the details about the independent variables are in Table 4. The rest of the information needed to read this table is: i) Heteroscedasticity consistent asymptotic standard error in parentheses; ii) *, ** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) t is the t-statistic for the linear restriction test under the null hypothesis of no significance; iv) z_1, z_2, z_3 are the Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; v) m_i is a serial correlation test of order i using residual in first differences, asymptotically distributed as $N(0,1)$ under the null of no serial correlation; vi) Hansen is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null of no correlation between the instruments and the error term, degrees of freedom in parentheses.

Explanatory Variables	(I)	(II)	(III)
DSO_{it-1}	0.8070182*	0.8065625*	0.7994892*
	(0.0027917)	(0.0017489)	(0.0014077)
BDP_{it}	-0.0021076*	-0.0082181*	-0.0854915*
	(0.0004063)	(0.0003119)	(0.0012036)
$CRD_{it}*BDP_{it}$	-	0.006841*	-
	-	(0.0005106)	-
ASD*BDP	-	-	0.0837446*
	-	-	(0.001247)

Explanatory Variables	(I)	(II)	(III)
ROA_{it}	-0.2158091*	-0.2158615*	-0.2212084*
	(0.0090072)	(0.0044247)	(0.0054363)
$SIZE_{it}$	-0.0069287*	-0.0110325*	-0.0086201*
	(0.0009708)	(0.0004525)	(0.0005186)
DPA_{it}	0.0002108	0.0011698	0.0010408
	(0.0018253)	(0.0008244)	(0.0011731)
PQL_{it}	0.0098456*	0.0076157*	0.010218*
	(0.0009052)	(0.0003244)	(0.0003301)
FIX_{it}	0.178817*	0.1777168*	0.1575226*
	(0.0097991)	(0.0043614)	(0.0066489)
Const.	1.038491*	1.066129*	1.091373*
	(0.0211224)	(0.0168437)	(0.0161428)
T	-	-3.5538856	-4.8933783
z_1	37214.63 (7)	1.2e+05 (8)	1.3e+05 (8)
z_2	496.07 (11)	1212.60 (11)	1354.63 (11)
z_3	337.10 (13)	538.81 (13)	702.61 (13)
M_1	-8.32	-8.32	-8.30
M_2	-1.93	-1.95	-1.93
Hansen	416.72 (274)	446.22 (307)	444.90 (309)

The results of the estimation also provide empirical evidence in favour of a negative relationship between the moral hazard phenomenon and the trade credit extended. The coefficient for the BDP variable is negative and significant at the 1% level. This indicates that suppliers tend to tighten terms of credit when they notice an increase in the possibility of buyers' default. Therefore, we can confirm Hypothesis 2.

The results described here support Hypotheses 1 and 2 in that: (i) suppliers tend to offer more credit when they are not well known by the clients, such as those which are smaller, less profitable and have a small proportion of fixed assets; and (ii) suppliers will reduce the trade credit offered when the risk of their clients increases. In this case, suppliers will try to mitigate the moral hazard cost by shortening the trade credit period of its clients.

Trade credit, creditor protection and...

Finally, all the results together highlight the validity of the agency model in explaining trade credit policies adopted by firms around the world. This agency model is based on the proposition of Jensen and Meckling (1976) in which two phenomena arise from the relationship between a firm and its clients, in asymmetric information conditions: adverse selection and moral hazard. The former is an agency cost that emerges when clients do not know ex-ante the quality of the goods that are being acquired and therefore require a period to verify product quality before payment. The latter is an agency cost that arises when sellers do not know ex-ante the creditworthiness of their clients and therefore reduce the trade credit extended.

5.3 The moderating role of creditors' rights

To find out whether trade credit offered by firms is in any way influenced by a country's level of creditor protection, we again run the model but including an interaction effect on the BDP variable (see Equation 4). With this aim, as explained in Section 4, we construct a dummy variable that takes the value of one if the creditors' rights index is equal to or greater than 2 and zero otherwise. We therefore extend the agency model by interacting the creditors' rights index obtained in La Porta et al. (1998) and here transformed into a dummy, with the provision for bad debts (BDP). Column II of Table 6 gives the results.

All the variables used to proxy for the adverse selection and the moral hazard phenomena show the same results as in the previous model. Specifically, the coefficients for ROA, SIZE, PQL and FIX still significant and present the same sign of the basic model, again giving support to Hypothesis 1. The result for the variable BDP, which in the basic model presented an expected negative relation with DSO, again supports Hypothesis 2, since its coefficient is still significant in this extended model. Overall, this evidence provides a robustness check for our results.

The results for the influence of the level of creditor protection on moral hazard point to two different facts. First, when the creditor protection of a country is high, the dummy variable takes the value of 1 and, consequently, the coefficient is $\beta_1 + \gamma_1$. We have performed a linear restriction test whose null hypothesis is $H_0 : \beta_1 + \gamma_1 = 0$ in order to know if the coefficient $\beta_1 + \gamma_1 = -0.0013771$ is significantly different from zero. As the t-value is -3.55, we can reject the null hypothesis that the coefficient is equal to zero. This result supports our explanation that in countries where credit protection is high the moral hazard effect is mitigated, and, in this case, the trade-off existing in the trade credit policy decision will tilt in favour of the adverse selection that will predominate since clients' risk importance will diminish for trade credit policy makers. Second, when a country's creditor protection is low, the dummy variable takes the value of zero and the coefficient is $\beta_1 = -0.0082181$, indicating that in these countries the clients' risk will represent a very heavy weight in the suppliers' decision of how long trade credit should be extended.

Therefore, we can confirm that creditor rights act to mitigate the negative effect of the moral hazard phenomenon on credit extended, thus giving support to our Hypothesis 3. As we theorized in Section 3, high levels of creditor's rights alleviate the moral hazard effects on trade credit.

Therefore, the level of a country's creditor protection acts in favor of the development of the credit markets. This does not occur only in the case of bank credit, as suggested by previous studies, but also in the case of trade credit. Furthermore, the improvement of creditors' rights will probably

bring benefits to trade relations between suppliers and buyers because of the reduction in the moral hazard costs. All these results strongly support our approach in explaining the role of the level of creditor protection as a moderator of the relationship between trade credit extended and moral hazard costs.

5.4 The moderating role of the quality of the accounting system

Finally, to check for the validity of Hypothesis 4, we perform a third estimation to confirm whether the quality of a country's accounting system also moderates the moral hazard in trade credit extended. With this aim, we again run the model in Equation 4, but this time using a dummy for the AS index as an interaction on BDP. As explained in Section 4, this dummy takes the value of one if the accounting system index is greater than average and zero otherwise.

As shown in column III of Table 6, the results for the proxies for adverse selection and for moral hazard again support our previous results, that is, all the variables included in the model without interactions maintain the same relationship with the dependent variable. Turning our attention to the level of the quality of the accounting system, the result supports our explanation that in high quality accounting system countries the moral hazard effect is mitigated. Again we perform a linear restriction test whose null hypothesis is $H_0: \beta_1 + \gamma_1 = 0$ in order to know if the coefficient $\beta_1 + \gamma_1 = -0.0017469$ is significantly different from zero. As the t-value is -4.89, we can reject the null hypothesis and conclude that the coefficient is significantly different from zero.

As a consequence, high quality accounting systems mitigate the effect of the moral hazard in a trade credit decision. In this case, suppliers from these countries will give less importance to buyers' risk in comparison to those firms from countries where the quality of the accounting system is low. Therefore, results from this last estimation provide empirical evidence supporting Hypothesis 4 in that the moral hazard effects on trade credit are stronger in suppliers from countries with a low quality accounting system.

5.5 Robustness Test

Columns I to III of Table 7 give the results from the same models using as a dependent variable TRC, measured by the ratio of trade receivables to total assets. As explained before, this measure is a good proxy for trade credit extended because it complements DSO. While DSO is used to assess how long trade credit has been extended, TRC quantifies the amount of trade credit extended by suppliers.

Table 7
Estimation results

The table presents parameter estimates from panel GMM regressions of trade receivables on several different specifications. The dependent variable is the trade receivables divided by total assets (TRC) , and the details about the independent variables are in Table 4. The rest of the information needed to read this table is: i) Heteroscedasticity consistent asymptotic standard error in parentheses; ii) *, ** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) t is the t-statistic for the linear restriction test under the null hypothesis of no significance; iv) z_1, z_2, z_3 are the Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; v) m_i is a serial correlation test

of order i using residual in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation; vi) Hansen is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null of no correlation between the instruments and the error term, degrees of freedom in parentheses.

Explanatory Variables	(I)	(II)	(III)
TRC_{it-1}	0.613973*	0.6074278*	0.6126192*
	(0.0050757)	(0.0035106)	(0.0025159)
BDP_{it}	-0.0029648*	-0.0203535*	-0.0508026*
	(0.0004333)	(0.0005036)	(0.0006125)
$CRD_{it}*BDP_{it}$	-	0.0184557*	-
	-	(0.0005032)	-
ASD*BDP	-	-	0.0480631*
	-	-	(0.0006673)
ROA_{it}	0.0349389*	0.0347032*	0.0361553*
	(0.0036168)	(0.0023283)	(0.0020736)
$SIZE_{it}$	-0.0031483*	-0.0045607*	-0.0036663*
	(0.0003261)	(0.0001612)	(0.0001544)
DPA_{it}	0.0286654*	0.0287636*	0.0284515*
	(0.000931)	(0.0006222)	(0.0002813)
PQL_{it}	0.0034416*	0.0025737*	0.0033031*
	(0.0003608)	(0.0002128)	(0.0001095)
FIX_{it}	0.0482065*	0.0568653*	0.0479648*
	(0.0027451)	(0.0009841)	(0.0016498)
Const.	0.0608963*	0.0698005*	0.0673014*
	(0.00514)	(0.0041943)	(0.0040858)
t	-	-36.293338	-7.9482289
z_1	7558.29 (7)	81708.06 (8)	71313.17 (8)
z_2	1481.25 (11)	3559.00 (11)	7239.10 (11)
z_3	115.40 (13)	152.93 (13)	176.81 (13)
m_1	-10.18	-10.16	-10.16
m_2	-2.31	-2.48	-2.31
Hansen	551.12 (274)	598.32 (307)	581.13 (309)

As shown in Column I, with the exception of ROA, all proxies for the adverse selection and moral hazard phenomena keep the same sign. The main difference here is the coefficient of DPA, which is now significant. Our findings support the hypothesis that the greater the adverse selection problem the more trade credit offered. Variable SIZE is negatively related to TRC and variables PQL and FIX are positively related to it supporting that large and low quality producers, with a high proportion of fixed assets, tend to offer a shorter period of credit since they have already built

a reputation and, therefore, buyers will not need long periods to check product quality. The positive and significant sign of the coefficient of DPA indicates that as high quality firms extend more trade credit to clients, they use this argument to require more trade credit from their suppliers.

Regarding the coefficient of the BDP variable, it is again negative and significant. This result confirms that the greater the moral hazard cost the smaller the trade credit offered by suppliers. As a consequence, trade credit extended by suppliers will be a result of a trade-off between both phenomena, adverse selection and moral hazard. Therefore, the outcomes reported here allow us to confirm Hypotheses 1 and 2.

Columns II and III show the results for both extended models, one that CRD interacts with BDP and the other that ASD interacts with BDP. As can be seen, the results again provide evidence in favour of Hypotheses 3 and 4. In both cases, the coefficients for the interaction term (INT) are as expected. These results provide an excellent robustness check for our hypotheses.

In a nutshell, trade credit consists of an agency relationship between suppliers and their clients in which, in asymmetric information conditions, buyers will need time to check the quality of the goods before paying for them (the adverse selection phenomenon), and suppliers will diminish the time of the credit extended as they do not know the creditworthiness of the client(the moral hazard phenomenon). However, in countries with high levels of creditor protection or high quality of accounting standards, the moral hazard is mitigated since the credit risk is diminished.

6. CONCLUSIONS

In the present paper we test an agency model to explain trade credit policy. The model considers that two phenomena arise from the relationship between providers and buyers: adverse selection and moral hazard. In this context, and in asymmetric information conditions, trade credit policy is a result of an agency relationship between providers and buyers, in which trade credit is extended to allow clients to check the real quality of the goods they are buying before the payment is made. In the meantime, sellers do not know, ex-ante, the creditworthiness of the buyer and thus they will reduce the trade credit offered as they notice an increase in the risk of buyers' default. This model is then extended to test for the moderator effect of different levels of creditor protection and accounting standards in the relationship between moral hazard and trade credit.

When trading with sellers who have not yet built a good reputation in the market, that is, in the presence of adverse selection costs, buyers will demand time to check quality before payment. In addition, providers will reduce the terms of credit in order to mitigate the moral hazard costs that vary depending on the level of creditor protection and the quality of the accounting standards in a country. This means that high levels of creditor protection increase the suppliers' probability of receiving the goods sold and consequently mitigate the moral hazard effects on trade credit. In addition, high quality accounting systems mitigate information asymmetries between buyers and sellers and consequently diminish the moral hazard costs.

This study contributes to understanding the importance of legal institutions in the finance of economic activities. In this vein, an important conclusion drawn from this research is that countries with creditor unfriendly commercial laws and low quality of accounting standards will provide

a risky environment for credit, not only to formal lenders but also to suppliers when extending trade credit. Therefore, if the high quality of creditor protection and the accounting system acts in favour of the development of the trade credit, changes in theses issues should be taken by governments, which should consider all the benefits involved for the development of commerce and consequently of the economy.

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