A DYNAMIC APPROACH TO ACCOUNTS RECEIVABLE:

A STUDY OF SPANISH SMEs

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ABSTRACT

The main objective of this paper is to extend the literature on the granting of trade credit. The focus is to test whether the accounts receivable decisions follow a model of partial adjustment. To do that, we use a sample of 2,922 Spanish SMEs. Using a dynamic panel data model and employing the GMM method of estimation we control for unobservable heterogeneity and for potential endogeneity problems. The results reveal that firms have a target level of accounts receivable and take decisions in order to achieve that level. In addition, we find that sales growth (if positive), the size of the firms, their capacity to generate internal funds and get short term financing, and economic growth are important in determining trade credit granted by firms.

KEYWORDS: Accounts receivable, trade credit, SMEs, partial adjustment model, endogeneity.

JEL Classification: G31, G32.

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1. INTRODUCTION

Trade credit is provided when there is a delay between the delivery of goods or the provision of services by a supplier and payment for them. For the seller, it represents an investment in accounts receivable. That investment represents an important proportion of a firms' asset. Specifically, the average level of accounts receivable over assets for the Spanish firms considered in this study was 38.63%.

The literature offers various theories explaining the use of trade credit based on the advantages for suppliers and for customers from the operational, commercial and financial perspective: reduction in transaction costs (Ferris, 1981; Emery, 1987); reduction in information asymmetry between buyer and seller (Smith, 1987; Long, Malitz, and Ravid, 1993); a mechanism of price discrimination (Brennan, Maksimovic, and Zechner, 1988; Petersen and Rajan, 1997); and greater access to funds for firms that have difficulty accessing bank financing, as a result of the commercial creditor's comparative advantages in the evaluation and control of the credit risk (Schwartz, 1974; Emery, 1984; Mian and Smith, 1992). Moreover, it should also be borne in mind that the use of trade credit can help firms to obtain bank financing, since it transmits information about the borrower's creditworthiness to the credit institution (Biais and Gollier, 1997). In this sense, trade credit may be used by less creditworthy and constrained firms to acquire reputation and alleviate adverse selection (Antov and Atanasova, 2007) and mitigates moral hazard problems (Burkart and Ellingsen, 2004). Consequently, trade credit is particularly important for small and medium-sized enterprises (SMEs), whose access to capital markets is very limited (Petersen and

Rajan, 1997) and who have more difficulties in funding themselves using credit institutions

Trade credit has an effect on the level of investment in assets and consequently may have an important impact on the profitability and liquidity of the firm. Granting trade credit improves sales for the firm, and consequently may result in higher profitability, but over-investing in accounts receivable can be costly due to the increase of investment in current assets and because it may signal acceptance of late-paying customers. If the cash discount and the credit period granted by the firm are not competitive compared to firms in the same industry, this can have negative effects on the value of the firm. Emery (1984) established that there is an optimal level of accounts receivable when the marginal revenue of trade credit lending is equal to the marginal cost, and this condition produces an optimal credit period. Thus, as pointed out by Pike and Cheng (2001), credit managers must try to keep accounts receivable at its target level in order to avoid the erosion of the value of the firm by lost sales or uncollectible sales. In order to do that, Pike and Cheng (2001) found that firms establish target levels for buyers in order to monitor their investment in accounts receivable and compare the time that debtors take to settle their debts with their targets. Other ways to improve settlement are, for instance, assign credit limits to all customers, review credit terms, give higher cash discounts for prompt payment, charge interest on overdue payment, incentives for credit staff, etc.

In this paper we assume that firms have a target trade credit policy but that they cannot immediately adjust to their target levels of accounts receivable. Previous empirical studies have been based on static models, which implicitly assume that firms can instantaneously adjust toward to the target level of their accounts receivable. In contrast with this, the major objective of this paper is to extend empirical research on

trade credit on the assumption that an adjustment process may take place. Thus, we use a partial adjustment model where we allow for delays in adjusting towards the target level of accounts receivable, where such delays may be justified by the existence of adjustment costs.

In order to do that, we have chosen a sample of small and medium sized Spanish firms for several reasons. SMEs are most likely to suffer severe problems of asymmetric information owing to their size and background and the lack of formal credit rating measures for firms. Thus, trade credit is especially important for SMEs because of their greater difficulty in accessing capital markets (Petersen and Rajan, 1997; Berger and Udell, 1998). Most previous studies that analyze the determinants of trade credit have centred on large firms (Long *et al*., 1993; Deloof and Jegers, 1996; Deloof and Jegers, 1999; Hernández and Hernando 1999; Cheng and Pike, 2003; Pike, Cheng, Cravens and Lamminmaki, 2005, among others), while empirical evidence for SMEs is scarce and focused on Anglo-Saxon countries (Petersen and Rajan, 1997, and Elliehausen and Wolken, 1993, for the US; Wilson and Summers, 2002 for the UK) or focuses on accounts payable (Huyghebaert, 2005; Rodriguez-Rodríguez 2006; and Huyghebaert, Van de Gucht and Van Hulle, 2007): the only exception to this pattern is the study of Niskanen and Niskanen (2006), who studied small Finnish firms, focusing on a bank-based system.

The financial system of the European Union is classified as a bank-based system, except for the UK where capital markets are well developed (Schmidt and Tyrell, 1997). However, as Maroto and Melle (2000) found, the European bank-based financial system presents important differences between Northern countries (Germany, Scandinavia), and Mediterranean countries (Greece, Italy, Portugal, Spain). Among them, as Marotta (2001) point out, the effective payment periods are longer in

Mediterranean countries (France, Italy, Portugal and Spain) compared to Northern countries (Germany, Scandinavia). This may be due to two separate issues: a) initial terms of payment are much longer in Mediterranean countries as opposed to Northern countries; b) payments are much more likely to be delayed in Mediterranean countries than in Northern countries. In this sense, Omiccioli (2004) shows that initial terms of payment in different European countries represent on average around three quarters of the effective payment periods. These results are consistent with the *European Payment Index Report* (2007)[1] which shows that, although payments are made in general more promptly in Scandinavian countries, the average terms of payment (average delay of payment) for Finland is 20,40 days (6,3 days) and for Norway 19 days (7,4 days), while for Spain it is 67,40 days (15,2 days), and for Italy 73 days (23,9 days). Consequently, the longer payment periods in Mediterranean countries are mainly due to the fact that initial terms of payment are much longer than in Scandinavian countries.

Those differences in credit periods between Mediterranean countries and European Northern countries can be explained by following Marotta (2005) in two ways. First, the trade credit cost depends on discounts for quick payment and penalties for delays. While the proportion of suppliers offering discounts in a Southern country such as Italy is really low (Marotta, 2005), Germany, a Northern country, usually grants a 2% discount for payment within 15 days (Harhoff and Körting, 1998). In addition, the majority of companies do not apply penalties for late payment (Wilner, 2000 for the US, Pike and Cheng, 2001 for the UK, Marotta, 2005, for Italy). Second, trade credit use compared with its substitute, short term bank debt, depend on the efficiency of a country's legal system in enforcing contracts, to the extent that this benefits financial intermediaries. More specifically, as pointed out by Burkart and Ellingsen (2004) trade credit should be more important than bank credit when creditor protection is weaker,

because cash is easily diverted while inputs are more difficult to divert, and inputs illiquidity facilitates trade credit. This may explain the finding of Demirgüc-Kunt and Maksimovic (2002) that trade credit is relatively more prevalent in countries with weaker legal protection. This is the case of French Civil Law countries, like, in Europe, Belgium, France, Greece, Italy, the Netherlands, Portugal and Spain (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1998).

In this context, Spain has a banking oriented financial system with an important role played by banks. There has been no real disintermediation process, as has happened in other European countries, because the development of capital markets, and in particular institutional funds, has been led by banks (Gallego, García and Saurina, 2002). This, together with the fact that in Spain the average size of an SME is smaller than in the wealthier northern European countries (Mulhern, 1995), suggests that Spanish SMEs have fewer alternative sources of external finance available, which makes them more dependent on short-term finance in general, and on trade credit in particular. As Demirguc-Kunt and Maksimovic (2002) suggest, firms operating in countries with more developed banking systems grant more trade credit to their customers, and at the same time receive more finance from their own suppliers. In fact, Spanish firms have one of the longest effective credit periods in Europe (Marotta, 2001).

The importance of banks in the Spanish financial system, together with the high proportion of SMEs in the Spanish economy, makes trade credit specially important for Spanish firms, and provides an excellent context to study trade credit dynamic models. Specifically, the high levels of investment in accounts receivable in Spanish SMEs make it particularly important for them to establish target levels for accounts receivable, and hence avoid the negative effects on profitability and liquidity because of lost or

uncollectible sales. Moreover, our results may be interesting for other Southern European countries because of the similarities with the Spanish market with regard to the legal environment, relevance of the SME sector and the high levels of trade credit granted by firms.

In addition, from a methodological perspective, the current work improves on previous work by using dynamic panel data. This offers various advantages. On the one hand, it allows us to control for the existence of unobservable heterogeneity, as there is more than one cross-section. On the other hand, we can examine a partial adjustment model that allows us to confirm whether SMEs possess an optimal trade credit level. Finally, the estimation carried out using the General Method of Moment (GMM) allows us to control for possible endogeneity problems that may arise, since, the random disturbances that affect decisions about trade credit levels may also affect other characteristics of firms.

The results obtained show that SMEs do have a target level of trade credit to which they attempt to converge, and this adjustment is relatively quick. Moreover, we find that firms grant more trade credit to their customers when they have lower sales growth, are smaller, have greater access to short-term finance, generate more internal funds and when economic growth is higher.

The rest of this work is organized as follows: in Section 2 we review the different theories explaining the extent of trade credit. In Section 3 we describe the sample used, while in the fourth section we outline the methodology employed. In Section 5, we report the results of the research. We end with our main conclusions.

2. VARIABLES DESCRIPTION AND HYPOTHESES DEVELOPMENT

If market imperfections did not exist, firms' financial decisions would not affect their value (Stiglitz, 1974). In this situation, as Lewellen, McConnell and Scott (1980) demonstrated, trade credit cannot be used to increase the value of a firm. Then, all credit terms are the present value equivalent of cash terms for both sellers and buyers. However, the presence of market imperfections implies that trade credit decisions may affect the value of the firm. In this sense, Emery (1984) established that there is an optimal amount of accounts receivable when the marginal revenue of trade credit lending is equal to the marginal cost, and this condition produces an optimal credit period. Consequently, trade credit is a significant area of financial management, and its administration may have important effects on a firm's profitability and liquidity (Shin and Soenen, 1998), and consequently its value.

On the one hand, in relation to the benefits, granting trade credit enhances the firm's sales, and consequently may result in higher profitability. Specifically, trade credit can act as an effective price cut (Brennan *et al.*, 1988; Petersen and Rajan, 1997), incentivises customers to acquire merchandise at times of low demand (Emery, 1987), allows customers to check that the merchandise they receive is as agreed (quantity and quality), ensures that the services contracted are carried out (Smith, 1987), and helps firms to strengthen long-term relationships with their customers (Ng, Smith and Smith, 1999; Wilner, 2000).

On the other hand, however, these benefits have to offset the reduction of profitability due to the increase of investment in current assets. Consequently, it is expected that firms will pursue a target trade credit level that balances benefits and costs and maximizes the value of the firm.

On the basis of these benefits and costs, we now describe the main characteristics of firms that are relevant when determining trade credit levels according to numerous theories that have been offered to explain why suppliers grant trade credit to their clients. The dependent variable used in this study is REC, which, following Petersen and Rajan (1997), is calculated as the ratio of accounts receivable to sales. The level of accounts receivable can change in two ways; firms either grant larger amounts of trade credit or grant longer terms of payment. As in our dependent variable we divide accounts receivable by sales; a higher value of REC indicates that firms grant longer terms of payment to their customers.

Sales growth

Firms may use their trade credit policy in order to stimulate their sales. Firms whose sales have developed inadequately and who wish to grow could use trade credit as a mechanism to improve their sales by extending more credit to their customers. Thus, we would expect a negative relationship between trade credit and sales growth. In this way Emery (1987) suggests that when a firm's sales are cyclical or are subject to fluctuations they can use trade credit to incentivise their customers to acquire merchandise in periods of low demand. By relaxing the credit terms, sellers can reduce the storage costs of the excess inventories that would accumulate if they kept production constant. This also allows firms to avoid the costs of changing their production levels. This is supported by Long *et al.* (1993), who found that firms with variable demand granted a longer trade credit period than firms with stable demand. In another way, Molina and Preve (2006) show that firms facing profitability problems tend to increase trade credit receivable prior to entering financial distress.

We measure sales growth (GROWTH) as yearly sales growth. With this variable we try to capture the effect of possible shocks in production and sales on the accounts receivable. Considering that trade credit can be used to stimulate sales, firms could use more trade credit when their sales growth was low. So we would expect a negative relationship between this variable and REC.

Creditworthiness and access to capital markets

The financial literature establishes that sellers of products have advantages over financial institutions when it comes to information acquisition and monitoring of debtors, and this permits certain non-financial firms with high creditworthiness to obtain funds to help other firms which have difficulties accessing capital markets due to their low credit rating (Schwartz, 1974; Emery, 1984; Smith, 1987; Mian and Smith, 1992; Petersen and Rajan, 1997). Specifically, suppliers may have a greater ability to obtain information, because of their continuous contact with customers. The volume and frequency of orders can provide suppliers with information about their customer's current financial situation. Moreover, they have greater control of their customers, as they can cut off the supply of the regularly purchased merchandise. This is particularly important when there are few suppliers in the market, and customers depend significantly on their supplier. Sellers also have advantages in the liquidation of the products sold in the case of non-payment. The merchandise is more valuable collateral for suppliers than it is for financial institutions. In the case of non-payment, it can be recovered and sold to another customer. Additionally, trade credit mitigates moral hazard problems because inputs provided by suppliers are less easily diverted than cash provided by banks (Burkart and Ellingsen, 2004), especially for differentiated products and services which are more difficult to sell to another user (Burkart, Ellingsen and

Giannetti, 2005). Finally, suppliers may be interested in the survival of their customers due to shared rents from long standing businesses relationships (Boissay and Gropp, 2007; Cuñat, 2007; Wilner, 2000).

Thus, the level of trade credit granted will depend on the creditworthiness of the supplier and their access to external capital. Firm size and firm age are used in the literature as proxies for the creditworthiness of the firm (Petersen and Rajan, 1997). Larger firms are considered to have better creditworthiness and easier access to funds in the capital markets, and older firms have had more time to develop relationships and can be considered to have greater financial capacity and reputation in the market. From this perspective we expect a positive relationship between trade credit and firm age and size. However, from the perspective of the information asymmetry between buyer and seller, different studies (Long *et al.* 1993; Lee and Stowe, 1993; Pike *et al.* 2005) found that smaller and younger firms that have worse reputations need to use more trade credit in order to guarantee their products. Moreover, customers may exert their market power to buy on credit when the supplier is small in order to reduce uncertainty about the quality of the product purchased (Van Horen, 2007). From this perspective, we can also expect a negative relationship for these measures.

Firm size (SIZE) is measured as the logarithm of sales, and firm age (LAGE) is defined as the logarithm of (1+age), where age is the number of years since the foundation of the firm. Following Petersen and Rajan (1997), we also use the variable LAGE squared, considering that the early years of the firm's life are proportionately more important in developing the reputation of the firm than later years. As we have indicated above, the expected relationship of both SIZE and AGE with the dependent variable could be either positive or negative.

The ability of a seller to grant credit to their customer also depends on the availability of financial resources from banks, and also its cost. This is especially important for small Spanish firms, which operate in an environment which is creditor-oriented and dominated by the banks, and with a less developed capital market. We used two variables. On the one hand we use STLEV as a proxy of short-term finance, calculated as the ratio of current liabilities to sales. On the other hand, we include the variable FCOST to analyze whether the cost of external finance affects the credit granted. It is calculated as the ratio of finance costs over outside financing less trade creditors.

We would expect that firms with a higher proportion of short-term debt and firms with low costs for their debt would provide higher levels of trade credit.

Internal financing

The possibility of obtaining funds for financing customers is also related to internal financing. Petersen and Rajan (1997) point out that firms with a greater capacity to generate internal funds, have more resources available and can offer more finance to their customers. However, their results for US SMEs do not support this analysis. In contrast, more recently Niskanen and Niskanen (2006) found a positive relationship between trade credit and internal financing for Finnish SMEs, operating in a bank-based system similar to that encountered by Spanish SMEs.

Capacity to generate internal resources by firms is measured by the variable CFLOW, defined as the ratio of net profits plus depreciation to sales. We expect a positive relationship to the dependent variable, because firms with a greater capacity to

generate internal funds will have more resources available and will be able to offer more finance to their customers.

Product quality

Smith (1987) points out that suppliers can transmit information about the quality of their products by agreeing credit terms that allow their customers a period of evaluation. Specifically, trade credit allows customers to verify that the merchandise received complies with the agreed terms (quantity, quality, etc.), and ensure that any services are carried out as agreed. If the products do not meet expectations the customers can refuse to pay and return the merchandise. When credit is not offered, or customers pay promptly, the merchandise can still be returned and a refund demanded, but this process is more difficult and costly.

Likewise, longer payment deadlines can be conceded when the quality of the product is difficult to evaluate or requires substantial time to analyze. Similarly, Lee and Stowe (1993) regard trade credit as the best way of guaranteeing products. Smaller and younger firms will make more use of this type of implicit guarantee, since their customers may doubt their capacity to comply with the commitments they make, given that after the sale they could file for bankruptcy and not honour their commitments. Long *et al*. (1993) found that smaller, younger firms grant more trade credit than firms with a more consolidated reputation in the market. These smaller, younger firms use trade credit to signal the quality of their products. More recently, Pike et al. (2005) found that in the US, UK and Australia trade credit can be used to reduce information asymmetries between buyers and sellers.

Product quality has been measured by the proxy variable TURN, calculated as the ratio of sales over assets minus accounts receivable. According to Long *et al*. (1993)

and Deloof and Jegers (1996), the relationship between TURN and REC will be negative. They establish that, all other things being equal (the same item produced for the same use), it is reasonable to assume that it takes longer to produce high-quality goods than low-quality goods, since, at the very least, quality-control testing must be performed. The additional production time is necessary to perform quality-control tests and build in low-maintenance requirements. Consequently, firms with high product quality will offer more trade credit to their customers so that they can evaluate this quality.

Profit margin

Trade credit can be used as a form of price discrimination by firms according to whether delays in payment are allowed or not (Brennan *et al*., 1988; Mian and Smith, 1992). Prolonging the period of credit or raising the discount for prompt payment effectively equates to a price reduction. In this way, the same product can be sold at different prices to different customers. Petersen and Rajan (1994) extend this argument, stating that once firms from a particular industry decide to grant trade credit to their customers, the terms offered follow the industry pattern, regardless of the debtor's creditworthiness. In this situation, trade credit effectively reduces the price paid by the poorest quality customers, who are in turn the most sensitive to the price of the product. Petersen and Rajan (1997) find support for price discrimination theory showing that firms with higher profit margins have more interest in raising their sales. This is due to the fact that the marginal earnings they obtain are high, allowing them to incur additional costs to generate new sales. The profits of this kind of firm come both from their commercial and their financial activities, and thus they can more readily accept

lower returns on the finance they grant. We would therefore expect firms with higher profit margins to increase their trade credit levels.

Profit margin (GPROF) has been approximated by the ratio of gross profit to sales. Following Petersen and Rajan (1997) we also include the square of this variable.

Macroeconomics factors

Levels of accounts receivable may be determined by the state of the economy (Smith, 1987). Deteriorating macroeconomic conditions may affect the use of account receivable. On the one hand, under deteriorating macroeconomic conditions firms suffer from a reduced ability to generate cash from their operations, and banks may reduce credit to firms. As a result the number of days of accounts receivable may increase. On the other hand, we also think if firms have more difficulty securing finance, they could offer less credit to their customer. So, we control for macroeconomic effects by using the growth in Gross Domestic Product (GDP), although it is not clear what the expected relationship is between the business cycle and the trade credit granted by firms.

In Chart 1, we summarize the explanatory determinants of trade credits and their expected relationships.

INSERT CHART 1

3. SAMPLE

The data for this study have been obtained from two sources. First, data from balance sheets, and profit and loss accounts have been collected from the Amadeus database, developed by Bureau van Dijk. Second, Gross Domestic Product data were obtained from Eurostat.

The sample comprises small and medium-sized firms from Spain for the period 1997-2001. The selection of SMEs was carried out according to the European Commission recommendation 96/280/CE of 3 April 1996 on the definition of small and medium-sized firms. In particular, we selected those firms that for at last three years met the following conditions: a) had less than 250 employees; b) turnover less than €40 million; and c) possessed less than €27 million worth of total assets.

In addition to those selection criteria, a series of filters was applied. Thus, we eliminated the observations of firms with errors in their financial statement, or which exhibited signs that were contrary to reasonable expectations. For example, when the value of total assets did not coincide with the value of total liabilities, when firms reported a negative value for capital, fixed assets, current assets, current liabilities, when depreciation or interest paid is negative, etc. Finally, we eliminated 1% of the extreme values presented by some variables[2]. As a result, we ended up with a panel consisting of 2,922 firms.

Table 1 reports the mean values of trade credit granted by sector and year. We observe that the level of accounts receivable differs among sectors. So, the smallest percentage of accounts receivable over sales is found in the retail trade (10.56%) and in agriculture (14.69%). In contrast with this, in mining (33.57%) and construction

(40.41%) more financing is granted to customers. In general, the levels of accounts receivable do not register significant changes over the period under consideration.

INSERT TABLE 1

Table 2 summarizes the descriptive statistics of our sample. In general, if we observe the mean values, the level of accounts receivable of the firms studied take an important value representing 26.34% of their sales. These firms sell products and services worth more than €11 million, and have an average age of 23 years. Annual sales growth has been 10%. In addition, they generate a cash flow of 6.4% over sales, finance more that 34% of sales with current liabilities, and have a gross profit over sales close to 5.5%. Over the period 1997 to 2001 the annual Gross Domestic Product growth of Spain was, on average, 3.9%.

INSERT TABLE 2

4. EMPIRICAL MODEL

Following the previous literature reviewed in Section 2, we analyze the determinants of trade credit granted, using a dynamic panel data model.

The static models previously used implicitly assume that firms can instantaneously adjust toward their accounts receivable target level. In contrast, in this paper we assume that an adjustment process may take place. We allow for any possible delays in adjusting the target accounts receivable that may be justified by the existence of adjustment costs. For this proposal, we assume the accounts receivable target level is explained by the following model:

$$REC^{*}_{it} = \rho + \sum_{k=1} \beta_k x_{kit} + \upsilon_{it} \quad (1)$$

Where x is a vector of k explanatory variables, υ_{it} a random disturbance and β_k are unknown parameters to be estimated.

To get to their target level, firms will adjust their account receivable levels according to the following expression:

$$REC_{it} - REC_{it-1} = \gamma\,(REC^{*}_{it} - REC_{it-1}) \quad (2)$$

where $(REC^{*}_{it} - REC_{it-1})$ indicates the adjustment required to reach the target level. A firm's capacity to achieve the desired level will be given by the coefficient γ, which takes values between 0 and 1. If γ is 1, the firms will adjust toward the target level immediately; if it is 0, this indicates that the costs of adjustment are so high that the firms cannot modify their existing levels of accounts receivable.

Substituting (1) into (2) we obtain:

$$REC_{it} = \rho\gamma + (1-\gamma)\, REC_{it-1} + \sum_{k=1} \gamma\beta_k\, x_{kit} + \gamma\upsilon_{it} \quad (3)$$

which can be rewritten as:

$$REC_{it} = \alpha + \delta_0 REC_{it-1} + \sum_{k=1} \delta_k x_{kit} + \varepsilon_{it} \quad (4)$$

where $\alpha = \rho\gamma$; $\delta_0 = (1-\gamma)$; $\delta_k = \gamma\beta_k$; and $\varepsilon_{it} = \gamma\upsilon_{it}$

In addition, if we introduce specifically the explanatory variables, the firm's unobservable individual effects and the time dummy variables, the model to estimate is:

$$REC_{it} = \alpha + \delta_0 REC_{it-1} + \delta_1 GROWTH_{i\ t} + \delta_2 SIZE_{it} + \delta_3 LAGE_{it} + \delta_4 LAGE^2_{it} + \delta_5 STLEV_{it} + \delta_6 FCOST_{it} + \delta_7 CFLOW_{it} + \delta_8 TURN_{it} + \delta_9 GPROF_{it} + \delta_{10} GPROF^2_{it} + \delta_{11} GDP_t + \eta_i + \lambda_t + \varepsilon_{it} \quad (5)$$

where REC_{it} represents the trade credit granted by firm i at time t to its customers; $GROWTH_{it}$ sales growth; $SIZE_{it}$ the size; $LAGE_{it}$ the years of the company; $STLEV_{it}$ the short-term financing; $FCOST_{it}$ the cost of outside financing; $CFLOW_{it}$ the cash flows generated by the firm; $TURN_{it}$ the assets turnover; $GPROF_{it}$ the gross profit margin and GDP_t the Growth Domestic Product growth. In addition, μ_i controls for the unobservable characteristics of each firm (the executives' management capacity, their personal skills, time-invariant industry effects that are specific to the industry in which the firm operates such as entry barriers, etc.), which are constant in the period. λ_t are time dummy variables that change over time, but are equal for all the firms in each of the years considered. ε_{it} are the random disturbances. We should bear in mind that the parameter δ_0 is 1 minus the adjustment coefficient (the adjustment costs).

Regressions of dynamic panels are characterised by the existence of autocorrelation, as a consequence of considering the lagged dependent variable as an explanatory variable. In this way, estimations used in static frameworks lose their consistency[3]. Indeed, the estimation by OLS of Equation (5) is inconsistent even if the ε_{it} are not serially correlated, since REC_{it-1} is correlated with η_i. The intragroup estimator, which estimates the variables transformed into deviations from the mean, is also inconsistent as a consequence of the correlation that arises between $(REC_{it-1} - \overline{REC}_{it-1})$ and $(\varepsilon_{it} - \overline{\varepsilon_{it}})$. Finally, the OLS estimation of first differences is equally inconsistent, since ΔREC_{it-1} and $\Delta\varepsilon_{it}$ are correlated, given that REC_{it-1} and ε_{it-1} are.

Considering these limitations, the parameters of Equation (5) should be estimated using instrumental variable estimators and specifically applying the General Method of Moment (GMM) to the equation in first differences. This procedure, developed by Arellano and Bond (1991)[4], presents two levels of application dependent upon the nature of the ε_{it}. If the residuals are homoskedastic, the 1-stage GMM turns out to be optimal. If, however, there is heteroskedasticity, the estimator of instrumental variables in one stage continues to be consistent, but conducting the estimation in two stages increases efficiency. This procedure makes use of the residuals of the 1-stage estimation.

The GMM estimations that use lagged variables as instruments under the assumption of "white noise" disturbances are inconsistent if the errors are autocorrelated. In this way this methodology assumes that there is no second-order serial correlation in the errors in first differences. For this reason, in order to test the consistency of the estimations, we used the test for the absence of second-order serial correlation proposed by Arellano and Bond (1991). We also employed the Sargan (1958) test for over-identifying restrictions, which tests for the absence of correlation between the instruments and the error term.

5. RESULTS

5.1 Univariate Analysis

In order to have a preliminary idea of the possible effect that the determinants previously considered have on the trade credit granted, in Table 3 we present the mean value of variables for each quartile of the variable REC. As we have constructed the

quartiles annually, the range of variable REC overlaps across quartiles. To test if there are difference between the fourth quartile and the first quartile, we carried out a difference of means tests based on Student's t.

INSERT TABLE 3

In general, all the variables, with the exception of the variable TURN, present values which are significantly different for high and low values of accounts receivable. According to what we expected initially, we observe greater levels of trade credit granted by smaller firms, by firms with more cash flow, with more short-term financing, with higher gross profit margin, and when the cost of external funds is lower. However, in contrast to our initial expectations, we found that the effects for variable AGE are contrary to the effects for the variable SIZE, and that the level of accounts receivable is higher in firms with higher sales growth.

The results obtained in the univariate analysis point out the need to conduct further analysis. As we can see, the variables considered could have an effect on the level of trade credit granted. But some of them do not change monotonically with levels of accounts receivable, and comparing the first and fourth quartiles is not sufficient to describe the relationship between accounts receivable and the explanatory variables considered.

5.2 Multivariate Analysis

Table 4 reports alternative estimates of the empirical specification. In column 1 we estimate, following Petersen and Rajan (1997), a static model using OLS. The results are quite similar. Like these authors, our results show that the dependent variables relate positively with the age of the firms and with their capacity to get short

term funds, and negatively with their capacity to generate internal funds. It also confirms, as in Petersen and Rajan (1997), the price discrimination theory. However, this specification assumes, as in the previous literature about accounts receivable, instantaneous adjustment toward the target level of accounts receivable, which may be very restrictive. Therefore, in column 2 we explore the implications of allowing dynamic adjustment, and re-estimate the OLS regression with the inclusion of the lagged dependent variable. This result would indicate that the dynamic specification is appropriate, since the lagged dependent variable is significant.

Nevertheless, in the presence of firm-specific effects OLS coefficients are biased assuming that η_i is unobservable and covariances between regressors and η_i are non-zero (Hsiao, 1985). Additionally, in the dynamic specification, even when unobservable firm-specific characteristics are not correlated with the regressors, OLS will result in inconsistent estimation of the coefficient parameters since REC_{it-1} will be correlated with η_i which is constant. One way of dealing with this problem is to take differences in order to eliminate the firm-specific effects, although again, OLS regressions do not consistently estimate the parameters.

That problem advocates the use of an instrumental variable estimation method, where the dependent variable is instrumented. Hence, we have estimated equation (5) using GMM, where the fixed effects haven been eliminated by first differencing and all the variables except the lagged dependent variable are treated as exogenous. In column 3 we present the results obtained. However another estimation problem, that is not necessarily specific to the dynamic specification, arise because the firm's specific variables are unlikely to be strictly exogenous. In this way, the null hypothesis of valid instruments is rejected at 1% level of significance. We accordingly conclude that it is inappropriate to treat the regressors as strictly exogenous. Shocks affecting accounts

receivable levels of firms are also likely to affect other explanatory variables. Furthermore, it is likely that the regressors may be correlated with the past and the current values of the idiosyncratic component of disturbances.

INSERT TABLE 4

Consequently in Table 5 we show the results from regressing accounts receivable over its potential determinants where all variables including the lagged dependent variable are treated as endogenous. We do not detect any second-order serial correlation and the Sargan test indicates that the instruments used in these GMM estimations[5] are not correlated with the error term. In Column 1, we present the results of the estimation of our initial model (Equation 5). The results present important differences from the results in Table 4. These differences indicate that endogeneity is a real concern requiring proper econometric treatment, and present the GMM estimation where the lagged dependent variable and explanatory variables are assumed to be endogenous as the most appropriate. From our perspective, these differences in findings serve to highlight the importance of the present study, since we have taken into account the potential endogeneity problem, which may have biased the estimated relationships in the previous literature.

INSERT TABLE 5

In Column 2, to get additional information about the effects of sales growth, we estimated the model excluding the variable GROWTH, and including variables PGROWTH and NGROWTH. The first one is built as the positive yearly variation in sales, and the second as the negative yearly variation. Continuing this line of reasoning, in Column 3 we replace the variable CFLOW with the variables PCFLOW and

NCFLOW, which measure the positive cash flow and negative cash flow separately. Finally, in spite of the fact that η_i could capture industry-specific effects, in Columns 4 and 5 we check whether the results would change if we controlled specifically for such effects. As all the analysis was carried out using the panel data methodology, and the estimation transforms the variables in first differences, the introduction of sectorial dummies, which take value 1 if the firm belongs to a specific sector and 0 otherwise, is not possible. So, in one mode of analysis, in Column 4 we consider that assets turnover is a sector's characteristic, and generate the variable IND as the difference between TURN and the mean value that this variable presents in the firm sector. Using a different mode of analysis, in Column 5 we include the traditional industry dummies (0, 1) without transforming this variable in first differences. The results obtained in the different estimations (Columns 1 to 5) are totally consistent.

First, we find that the variable REC_{t-1} is significant at the 1% level in all the estimations made. This result confirms our main aim of providing evidence that the dynamic nature of our model is not rejected. Therefore, we contribute to the trade credit literature finding that firms have a target level of accounts receivable and follow an adjustment process to reach this target. The adjustment coefficient ($1-\delta_0$) is high in all the estimations (ranging between 0.73 and 0.77) indicating that this adjustment is relatively quick. This speed of adjustment could be partially affected by the long delay payment periods presented by the SMEs Spanish firms.

The evolution of sales has an effect on the decision about trade credit, as indicated by the negative and significant coefficient at the 1% level of the variable GROWTH (Column 1). Firms with less growth in sales grant more financing to their customers. This could be interpreted as meaning that firms use trade credit in an attempt to stimulate sales. To explore this further, we study whether there is a different effect

when sales growth is positive or negative. To do that, in Column 2, we substitute the variable GROWTH by PGROWTH and NGROWTH to consider separately the effects of positive and negative sales growth. The former takes positive values of sales growth, and 0 otherwise, and the latter takes negative values, and 0 otherwise. In all the estimations, only the variable PGROWTH is significant (at the 1% level). Hence, firms use trade credit to stimulate sales only when they have positive growth. In addition, the economic impact[6] of this variable is relevant, since if PGROWTH decreases by one standard deviation the dependent variable increases, depending on the regression used, by between 9.45% and 10.65%. Nevertheless, when sales growth is negative there is no significant effect on trade credit, perhaps because in a recession firms have more difficulty in securing funds, and as a consequence, in granting financing.

The coefficient of SIZE is significant and negative, which demonstrates that the larger firms grant less financing to their customers. This supports the argument of Long et al. (1993) who considered that smaller firms have less reputation and need to use more trade credit to guarantee their product. Specifically, an increase in one standard deviation in the variable SIZE involves a reduction in the variable REC (over the mean) of around 17.39% (from 15.88% in Column 2 to 20.90% in Column 1). However, the coefficients of variables AGE and its square are not significant, which shows that the age of the firm has no effect on the level of accounts receivable.

We also observe that the coefficient of variable STLEV is positive and significant in all regressions (in three of them at the 5% level, and in two at the 10% level). This result can be interpreted as meaning that firms offer longer terms of payment when they can get more short-term funds. The higher the level of short-term financing, the higher the level of trade credit granted. In addition, this result could show that firms match the maturity of their assets and liabilities. With regard to the economic

effect on the dependent variable, an increase of one standard deviation in the variable STLEV produces an increase in REC, on average, of around 11.26%. However, we detect no significant effects of FCOST on accounts receivable. The cost of external funds appears not to be a relevant factor considered by firms when taking decisions about offering trade credit.

As we expected, we find that firms finance a higher proportion of their sales when they are capable of generating more internal funds. We also considered whether the positive relationship between CFLOW and REC remained if we considered the effects of positive cash flow and negative cash flow separately. As before, we removed the variable CFLOW and replaced it with the variables PCFLOW and NCFLOW. PCFLOW is calculated as the ratio of the resources generated internally (net profits plus depreciation) to sales, when these resources are positive, and NCFLOW is the ratio of the negative internal resources to sales. In this way, the results show that firms only grant more trade credit when they have positive cash flows, since only the variable PCLFOW is significant. The economic effect on the dependent variable is quite similar to the variable STDEBT. Specifically the economic impact of this variable is around 10.60%. It follows from the preceding results that, taking the variables CFLOW and STLEV, we can confirm that the capacity of firms to get funds affects the decision of the firms about granting trade credit.

Similarly, none of the coefficients estimated for the variable TURN are significant. Consequently, we cannot provide any empirical support for the argument advanced by Long et al. (1993), that firms with lower sales turnover, which could be considered to produce a higher quality product, offer more trade credit to their customers so that they can test product quality.

As far as the variable GPROF is concerned, the estimated coefficients are significant only in two of the five estimations, and that only at the 10% level. For its square, the coefficients are not significant in any of the estimations. With these results, we do not have enough evidence to accept that the dependent variable is determined by GPROF. As a consequence, the price discrimination theory is not supported. We do not find, as we initially expected, that firms with larger operating margins, in order to generate further cash flow, use trade credit to finance the sales of additional units to poorer costumers.

Finally, with regard to the effect of economic growth on the level of trade credit granted, the estimated coefficients for the variable GDP are positive and significant at the 1% level in all the estimations carried out. This shows that when economic growth is higher, firms finance more sales to their costumers. This is consistent with the results obtained for STLEV and CFLOW which indicated that firms granted more credit when they had more capacity to get financing. However, the economic impact of this variable is limited. The greatest impact is observed in Column 1, and barely exceeds 2%.

CONCLUSIONS

Trade credit has an effect on levels of invested assets and consequently may have an important impact on the profitability and liquidity of a firm. Granting trade credit improves sales for the firm, but it also has costs due to the increase of investment in current assets. Emery (1984) established that there is an optimal level of accounts receivable when the marginal revenue of trade credit lending is equal to the marginal cost, and this condition produces an optimal credit period. Following this line of argument, in this paper we have investigated the determinants of accounts receivable

assuming that firms have an optimal trade credit policy and they cannot immediately adjust to this target level of accounts receivable. Thus, in contrast to previous evidence, our main contribution was to test whether the accounts receivable decisions follow a partial adjustment model. Moreover, using a dynamic panel data model and employing GMM methods of estimation, we controlled for unobservable heterogeneity and for potential endogeneity problems.

The results show that, in effect, the decisions about granting trade credit follow a partial adjustment model. This aspect, not considered previously in the literature, reveals that firms have a target level of accounts receivable and take decisions in order to reach that level. The estimated adjustment coefficient, which ranges between 0.73 and 0.77 according to the different estimations, reveals that that adjustment is relatively quick.

We also find that decisions about granting trade credit are explained by several factors, including the growth in sales (if positive), the size of the firms, their capacity to get short-term financing and to generate internal funds, and by economic growth. In this way, we find that firms granted more credit to their customers when their sales growth was smaller, which could indicate that firms use trade credit to stimulate their sales. This result only remains when positive sales growth is considered. Moreover, the smaller firms, which usually have less reputation, use more trade credit to guarantee their product. In addition, the capacity of firms to get funds also determined the level of trade credit granted. In this way, firms use more trade credit when they have more currents liabilities and when they generate more cash flow. We also found a positive relationship between accounts receivable and economic growth, but the economic impact of this variable is limited.

Nevertheless, contrary to what we previously expected, factors such as the age of the firm, the cost of external financing, the rate of turnover of assets, and the gross profit margin, which initially could be considered as determinants of the level of trade credit granted, do not affect the levels of accounts receivable.

To conclude, our results are different in some important respects from the findings of previous papers, and this underlines the importance of the present study. This result suggests that the heterogeneity of firms and endogeneity problems are crucial in analyzing trade credit decisions.

This paper shows the importance of trade credit management for firms with high levels of investment in accounts receivable, and especially for firms facing long delay payment periods, such as in Southern European countries, due to the cost of over-investing in accounts receivable. As long as there is an optimal level of accounts receivable, firms may establish target levels in order to monitor accounts receivable investment, and so avoid negative effects on value because of lost sales or uncollectible sales.

While our research makes a valuable contribution to the literature of trade credit, to understand trade credit completely is very important, not only to study trade credit as part of the firm's assets (accounts receivable) but also as a resource for financing (accounts payable). To study the determinants of trade credit received (accounts payable), considering its possible dynamic behavior is an important step for future research.

NOTES

[1] European Payment Index is a report based on a written survey carried out by *Intrum Justia* in 25 European countries on an annual basis involving several thousand companies.
[2] For all variables defined in the following section, except for GDP.
[3] See Baltagi (2001).

[4] Arellano and Bond's (1991) GMM estimators use more instruments and are more efficient than the estimator proposed by Anderson and Hsiao (1982).

[5] The estimations have been carried out using the 2-stage GMM estimator, since the 1-stage estimations can present problems of heteroskedasticity, as is shown by the rejection of the null hypothesis of the Sargan test.

[6] The economic impact of statistically significant explanatory variables is measured as the percentage of change (over the mean value) in the dependent variable due to a one standard deviation change in the explanatory variable, all other things being equal. In addition, recall that in this partial adjustment model, the estimated coefficient (δ_k) is equal to $\gamma \beta_k$. So, the interpretation of how that characteristic impacts target cash levels (β_k) should be divided by γ.

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Chart 1
Determinants of accounts receivable

Factor	Relation with trade credit	Explanation
Growth sales	Negative	- Trade credit to stimulate sales
Creditworthiness	Positive	- More capacity to grand funds
	Negative	- Less need to use trade credit for guarantee products
Internal financing	Positive	- More capacity to grand funds
Product quality	Positive	- Trade credit to signal the products quality
Profit margin	Positive	- More interest in raising the sales
Macroeconomic factors	Positive	- Use trade credit as alternative funds
	Negative	- More difficulties to offer credit to costumer

Table 1
Accounts receivable by year and sector

Accounts receivable is calculated as the ratio of accounts receivable to sales

	1997	1998	1999	2000	2001	1997-2001
Agriculture	0.1429	0.1437	0.1707	0.155	0.12123	0.1469
Mining	0.3706	0.3415	0.3236	0.3305	0.3122	0.3357
Manufacturing	0.2953	0.2856	0.2926	0.2942	0.2886	0.2913
Construction	0.4107	0.4112	0.3908	0.4063	0.4016	0.4041
Retail trade	0.1081	0.1058	0.1019	0.1077	0.1044	0.1056
Wholesale trade	0.2691	0.2644	0.2702	0.2689	0.2687	0.2683
Transport and public services	0.2522	0.2454	0.258	0.2584	0.2556	0.2539
Services	0.2	0.2069	0.1994	0.2171	0.2225	0.2092
Total	*0.2658*	*0.2595*	*0.2634*	*0.266*	*0.2623*	

Table 2
Summary statistics

REC represents the trade credit granted; GROWTH sales growth; SALES the sales in thousands of euros; AGE the age of the company; STLEV the short-term financing; FCOST the cost of outside financing; CFLOW the cash flows generated by the firm; TURN the assets turnover; GPROF the gross profit margin and GPD the Gross Domestic Product growth.

	Mean	Std. Dev.	Perc. 10	Median	Perc. 90
REC	0.2634	0.1388	0.0708	0.2656	0.4304
GROWTH	0.1058	0.1986	-0.0780	0.0830	0.3016
SALES	11819	6711	5174	9968	24523
AGE	23	14	9	20	40
STLEV	0.3463	0.1561	0.1651	0.3262	0.5467
FCOST	0.0579	0.0370	0.0197	0.0510	0.1022
CFLOW	0.0640	0.0584	0.0126	0.0496	0.1365
TURN	3.2734	2.9649	1.2547	2.5952	5.5986
GPROF	0.0541	0.0544	0.0066	0.0441	0.1213
GDP	0.0390	0.0056	0.0280	0.0420	0.0430

Table 3
Mean values of the determinants of accounts receivable by REC quartiles

REC represents the trade credit granted; GROWTH measure sales growth; SIZE is the log of sales, LAGE the log (1+ the age of the company); STLEV the short-term financing; FCOST the cost of outside financing; CFLOW the cash flows generated by the firm; TURN the assets turnover and GPROF the gross profit margin. t statistic for a difference of means tests between the fourth quartile and the first one in last column.

	1er Quartile	**2nd Quartile**	**3rd Quartile**	**4th Quartile**	**t**
Range of REC	(0.0001 to 0.1748)	(0.1629 to 0.2702)	(0.2598 to 0.3470)	(0.3387 to 0.9496)	
GROWTH	0.1047	0.0929	0.1050	0.1208	3.28
SIZE	9.3386	9.2378	9.1958	9.1429	-15.26
LAGE	2.9524	3.0593	3.0822	3.0591	8.44
STLEV	0.2342	0.3153	0.3725	0.4632	69.44
FCOST	0.0599	0.0620	0.0586	0.0511	-9.96
CFLOW	0.0560	0.0673	0.0678	0.0650	6.35
TURN	3.3627	3.1378	3.1484	3.4447	1.18
GPROF	0.0433	0.0535	0.0591	0.0604	13.15

Table 4
Determinants of accounts receivable (I)

Dependent variable is REC calculated as accounts receivable to sales. GROWTH measure sales growth; SIZE is the log of sales; LAGE the log (1+ the age of the company); STLEV the short-term financing; FCOST the cost of outside financing; CFLOW the cash flows generated by the firm; TURN the assets turnover; GPROF is the gross profit margin and GPD the Gross Domestic Product growth. t statistic in brackets. m_2 is a test for second-order serial autocorrelation in residuals in first differences, distributed asymptotically as N(0,1) under the null hypothesis of no serial correlation. The Sargan Test is a test of over-identifying restrictions distributed asymptotically under the null hypothesis of validity of instruments as Chi-squared. Degrees of freedom in brackets. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% level, respectively.

	1	**2**	**3**
	(OLS)	**(OLS)**	**(GMM-EX)**
REC_{t-1}	-	0.7831***	0.1766***
	-	(167.32)	(4.29)
GROWTH	-0.0105**	-0.0588***	-0.0187***
	(-2.29)	(-18.72)	(-3.5)
SIZE	-0.0210***	-0.0021**	-0.0502***
	(-12.23)	(-2.0)	(-7.09)
LAGE	0.0314**	0.0155*	-0.1824**
	(2.51)	(1.85)	(-2.01)
$LAGE^2$	-0.0001	-0.0015	0.0675***
	(-0.06)	(-1.13)	(2.65)
STLEV	0.5500***	0.1708***	0.4155***
	(93.47)	(40.34)	(20.86)
FCOST	-0.3855***	-0.1967***	-0.2237***
	(-15.76)	(-12.53)	(-6.95)
CFLOW	-0.1576***	-0.0283**	0.1655***
	(-6.98)	(-2.03)	(4.12)
TURN	0.0094***	0.0032***	0.0090***
	(28.66)	(15.86)	(5.41)
GPROF	0.7152***	0.1772***	0.0325
	(24.72)	(9.77)	(0.83)
$GPROF^2$	-0.9164***	-0.1437*	-0.1092
	(-7.14)	(-1.87)	(-0.6)
GDP	-0.2873*	0.2425***	0.2294**
	(-1.8)	(2.79)	(2.45)
Constant	0.1532***	-0.0261	-0.0045
	(5.72)	(-1.48)	(-1.52)
m_2			-1.19
Sargan			16.19 (5)
Observations	14610	11688	8766

Table 5
Determinants of accounts receivable (II)

Dependent variable is REC calculated as accounts receivable to sales. GROWTH measure sales growth; PGROWTH the positive sales growth; NGROWTH the negative sales growth; SIZE is the log of sales; LAGE the log (1+ the age of the company); STLEV the short-term financing; FCOST the cost of outside financing; CFLOW the cash flows generated by the firm; PCFLOW the positive cash flows; NCFLOW the negative cash flows; TURN the assets turnover; IND control for sectorial effects; GPROF is the gross profit margin and GPD the Gross Domestic Product growth. All estimations have been carried out using the 2-stage GMM estimator. z statistic in brackets. m_2 is a test for second-order serial autocorrelation in residuals in first differences, distributed asymptotically as N(0,1) under the null hypothesis of no serial correlation. The Sargan Test is a test of over-identifying restrictions distributed asymptotically under the null hypothesis of validity of instruments as Chi-squared. Degrees of freedom in brackets. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% level, respectively.

	1	**2**	**3**	**4**	**5**
REC_{t-1}	0.2284***	0.2273***	0.2380***	0.2334***	0.2603***
	(4.22)	(4.13)	(4.37)	(4.35)	(5.03)
GROWTH	-0.0673***	-	-	-	-
	(-2.69)	-	-	-	-
PGROWTH	-	-0.1094***	-0.1216***	-0.1204***	-0.1098***
	-	(-2.73)	(-3.15)	(-3.1)	(-3.02)
NGROWTH	-	0.0588	0.1392	0.1458	0.1345
	-	(0.51)	(1.34)	(1.4)	(1.33)
SIZE	-0.0777**	-0.0591*	-0.0587*	-0.0604*	-0.0637*
	(-2.13)	(-1.8)	(-1.79)	(-1.87)	(-1.93)
LAGE	-0.0812	-0.0943	-0.0997	-0.1071	-0.1116
	(-0.88)	(-1.03)	(-1.08)	(-1.17)	(-1.23)
$LAGE^2$	0.0327	0.0346	0.0357	0.0381	0.0406
	(1.17)	(1.27)	(1.29)	(1.39)	(1.5)
STLEV	0.1520**	0.1663**	0.1354*	0.1385**	0.1327*
	(2.08)	(2.32)	(1.93)	(1.99)	(1.91)
FCOST	0.0336	0.0047	-0.0222	-0.0290	-0.0437
	(0.32)	(0.04)	(-0.22)	(-0.28)	(-0.43)
CFLOW	0.3390*	0.2397	-	-	-
	(1.79)	(1.24)	-	-	-
PCFLOW	-	-	0.3369*	0.3301*	0.4522**
	-	-	(1.87)	(1.82)	(2.55)
NCFLOW	-	-	0.3803	0.3641	0.3310
	-	-	(1.04)	(1.01)	(0.92)
TURN	-0.0003	-0.0007	-0.0005	-	0.0004
	(-0.08)	(-0.18)	(-0.12)	-	(0.12)
IND	-	-	-	0.0001	-
	-	-	-	(0.02)	-
GPROF	-0.3183*	-0.2127	-0.2803	-0.2784	-0.2952*
	(-1.67)	(-1.2)	(-1.63)	(-1.64)	(-1.67)

GPROF²	0.1839	-0.0308	0.0795	0.0479	0.0227
	(0.28)	(-0.05)	(0.12)	(0.07)	(0.03)
GDP	0.7556***	0.7137***	0.6682***	0.6574***	0.6234***
	(4.25)	(3.98)	(3.88)	(3.89)	(3.73)
Agric	-	-	-	-	0.0074
	-	-	-	-	(0.71)
Manufac	-	-	-	-	0.0114
	-	-	-	-	(1.22)
Construc	-	-	-	-	0.0126
	-	-	-	-	(1.23)
Retail	-	-	-	-	0.0096
	-	-	-	-	(1.01)
Wholes	-	-	-	-	0.0114
	-	-	-	-	(1.21)
Trans_util	-	-	-	-	0.0148
	-	-	-	-	(1.55)
Serv	-	-	-	-	0.0160
	-	-	-	-	(1.59)
Constant	0.0038	0.0022	0.0020	0.0018	-0.0101
	(1.07)	(0.65)	(0.59)	(0.53)	(-1.01)
m_2	0.83	0.59	0.58	0.54	0.74
Sargan	58.79 (45)	58.80 (49)	60.58 (53)	60.63 (53)	63.80 (53)
Observations	8766	8766	8766	8766	8766