A DYNAMIC PERSPECTIVE ON THE DETERMINANTS OF ACCOUNTS PAYABLE

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Abstract

Companies can use supplier financing as a source of short-term finance. The main objective of this paper is to extend the literature on the determinants of accounts payable and to test whether the accounts payable follow a model of partial adjustment. To do this, we use a sample of 3,589 small and medium sized firms in the UK. Using a dynamic panel data model and employing 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 payable. In addition, we find that larger firms, with better access to alternative internal and external financing and with a lower cost, use less credit from suppliers. Moreover, firms with higher growth opportunities use more trade credit for financing sales growth.

Keywords: Trade credit, Accounts payable, Rationing, SMEs.

JEL classification: G30, G32.

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1. INTRODUCTION

Trade credit is given when suppliers allow their customers a time period to pay for goods and services bought. For the buyer it is a source of financing that is classed under current liabilities on the balance sheet and it represents an important source of funds for most firms. The importance of trade credit as short term finance has been established in different studies (Petersen and Rajan, 1997; Berger and Udell, 1998; Deloof and Jegers, 1999; Summers and Wilson, 2002; Danielson and Scott, 2004; Huyghebaert, 2006; among others). In fact, trade credit represent about 41 per cent of the total debt for medium sized UK firms (35 per cent for medium sized US firms), and about half of the short term debt in both UK and US medium sized firms (Cuñat, 2007).

Several studies have explained the advantages of the use of trade credit as a source of financing. First, firms choose trade credit to overcome financial constraints (Schwartz , 1974), especially when credit from financial institutions is not available (Elliehausen and Wolken, 1993, Petersen and Rajan, 1997; Danielson and Scott, 2004), or in countries with a poorly developed financial sector (Fisman and Love, 2003; Ge and Qiu, 2007). Second, trade credit allows firms to reduce the transaction cost related with the process of paying invoices (Ferris, 1981; Emery 1987), and the verification of the quality of products before paying (Smith, 1987; Long, et al, 1993; Deloof and Jegers, 1996; Pike et al., 2005). Finally, trade credit provides a higher degree of financial flexibility than bank loans (Danielson and Scott, 2004; Huyghebaert et al., 2007). However, using suppliers as sources of finance may result in the loss of discount

for early payments, with a high opportunity cost, depending on the discount percentage and the discount period received (Wilner, 2000; Ng et al., 1999).

Previous empirical studies were based on static models, which implicitly assume that firms can instantaneously adjust toward their accounts payable target level. However, Nadiri (1969) developed a model to select the optimal trade credit, extended and received, in order to maximise net profit. Nadiri (1969) showed that actual levels of payables may not always equal their desired levels, and firms take time to adjust from real to desired levels. There are several reasons why such discrepancies should exist. For instance, the firm cannot always estimate its sales with certainty, and, hence, neither their purchases; most firms do not accurately anticipate changes in the opportunity cost of trade credit; disequilibrium in other assets of the firm, such as inventories, may also reflect that discrepancy, etc. In these circumstances the adjustment process followed by accounts payable can take place. Consequently accounts payable show a dynamic behaviour. Thus, following previous research related to capital structure (Ozkan, 2001) which provided a dynamic model, the main objective of this paper is to extend empirical research on suppliers as sources of financing, on the assumption that an adjustment process may take place. Thus, we use a partial adjustment model where we allow for possible delays in adjusting towards the target for accounts payable.

We use a sample of small and medium sized British firms. This sample set has been chosen for two reasons. First, trade credit is especially important for SMEs given their greater difficulty in accessing capital markets (Petersen and Rajan, 1997; Berger and Udell, 1998). And second, in the UK economy more than 80 per cent of daily business to business transaction is on credit terms (Peel et al., 2000, Wilson and Summer, 2002), and trade credit represents about 41 per cent of the total debt and about half the short term debt in UK medium sized firms (Cuñat, 2007). Moreover, the most

common credit term offered in UK is 30 days net, and a cash discount of 2% is offered in England and Wales (European Payment Guide[1] 2007).

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 the SMEs possess an optimal trade credit level. Finally, the estimation carried out using General Method of Moment (GMM) allows us to control for possible endogeneity problems that may arise, since the random disturbances that affect decisions about the trade credit level may also affect other characteristics of the firm.

The results obtained show that SMEs have a target level of accounts payable to which they attempt to converge, and this adjustment is relatively quick. Moreover, we find that larger firms, with better access to alternative internal and external financing and with lower costs, use less credit from suppliers. In addition, firms with higher growth opportunities use more trade credit for financing sales growth.

The rest of this work is organized as follows: in Section 2 we review the main determinants of trade credit received. In Section 3 we describe the sample and variables used, while in the fourth section we outline the empirical model employed. In Section 5, we report the results of the research. Finally, we end with our main conclusions.

[1] The European Payment Guide, made by Intrum Justitia, provides an insight into the payment customs and practices of the 22 countries participating in the survey.

2. DETERMINANTS OF ACCOUNTS PAYABLE: HYPOTHESES

Trade credit is a significant area of financial management, and its administration may have important effects on a firm's profitability, and consequently its value. More specifically, trade credit received represents a source of short term financing which may be used to finance a significant portion of the firm's current assets. Thus management of accounts payable involves a trade off between benefits and costs that affect the value of firms.

With regard to the benefits, trade credit allows firms to match payments for goods purchased with the incomes from sales; in the absence of trade credit, firms would have to pay for their purchases on delivery. If the frequency of purchase was either unknown or unpredictable, firms would need to keep a precautionary level of cash holdings to settle these payments, which is an opportunity cost for the firm. With trade credit, the delivery of goods or provision of services and their subsequent payment can be separated. This allows firms to reduce the uncertainty of their payments (Ferris, 1981). Moreover, trade credit allows customers to verify that the merchandise received complies with the agreed terms (quantity, quality, etc.), and ensures that any services are carried out as agreed. If the products do not meet expectations, the customer can refuse to pay and return the merchandise (Smith, 1987). Trade credit may also be used by less creditworthy and constrained firms to acquire reputation and alleviate adverse selection (Antov and Atanasova, 2007).In addition, as pointed out by Danielson and Scott, (2004), trade credit offers more financial flexibility than bank loans. Levels of trade credit increase or decrease with business activity. When firms face liquidity problems it is less costly to delay payment to suppliers than to renegotiate loan conditions with banks. What is more, suppliers tend to follow a more lenient liquidation policy than banks when a firm faces financial distress (Huyghebaert et al., 2007).

However, using suppliers as a source of financing may turn out to be very costly for the firms, due to the fact that the implicit interest rate in trade credit, which is often linked to a discount for early payment, is usually very high. Specifically, there are two basic forms of trade credit: a) full payment on a certain date after delivery of merchandise, and b) payment with a discount for early payment in the discount period, or payment of the net amount at the end of the total credit period. Consequently, financing through credit from suppliers may be an inexpensive source of financing for the discount period, but increasing financing in this way may result in losing the discount for early payment, with a high opportunity cost, depending on the discount percentage and the discount period (Wilner, 2000; Ng et al, 1999).

This trade-off implies that there is a target level that balances benefits and costs. In fact, Nadiri (1969) showed that there is an optimal level of trade credit received. On the basis of these benefits and costs, we now describe the main characteristics that are relevant when determining appropriate level of accounts payable that a firm should aim for, measured as the ratio of accounts payable to total assets (PAY). This dependent variable captures the importance of trade credit in the financing of the firm's assets.

Creditworthiness and access to capital markets

The first variable we consider is related to the quality of the firm's credit. The possibility of obtaining trade credit is related to the customer's creditworthiness. Firms with higher credit quality, measured by variables such as size and age, should receive more credit from their suppliers, and this has in fact been shown by Petersen and Rajan (1997) for SMEs in the US. However, larger and older firms may also conceivably use less credit from their suppliers, since they can go to other sources of finance as a consequence of their credit capacity and reputation. In fact, following the financial growth cycle model of Berger and Udell (1998), trade credit is more important when

firms are smaller, younger and more opaque. This result is partly confirmed by Niskanen and Niskanen (2006) in a sample of Finnish SMEs . From this perspective we expect a negative relationship between trade credit and firm age and size. SIZE is calculated as the logarithm of the sales and the age 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, as the early years of the firm's life are proportionately more important in developing the reputation of the firm than later years.

Internal financing

A firm's liquidity position may also affect the demand for trade credit. Pecking Order Theory, developed by Myers and Majluf (1984), established that under information asymmetry, firms favour internal over external financing, short-term over long-term debt, and debt over the issue of shares. Moreover, the financial hierarchy established by the Pecking Order Theory is particularly relevant for SMEs because of their limited access to external capital (Holmes and Kent, 1991). Therefore, firms with a greater capacity to generate internal funds have more resources available, and consequently they will decrease their demand for financing through their suppliers, and this has been confirmed by previous studies (Petersen and Rajan, 1997 for US SMEs, Dellof and Jegers, 1999 for Belgian firms; Niskamen and Niskamen, 2006 for Finnish SMEs)

The capacity of firms to generate internal resources is measured by CFLOW calculated as the ratio of net profits plus depreciation to total assets. Hence, we expect a negative relationship between accounts payable and these two measures of a firm's capacity to generate cash internally.

Availability of financial resources and their cost

Trade credit is used by firms as a source of financing, and consequently accounts payable depend on the availability of financial resources from banks, since bank credit can be considered a substitute of supplier financing. Trade credit also mitigates moral hazard problems because inputs provided by suppliers are less easily diverted than cash provided by banks (Burkart and Ellingsen, 2004). In this sense, the previous literature finds that firms increase their demand for trade credit to overcome financial constraints (Schwartz , 1974), especially when credit from financial institutions is not available (Petersen and Rajan, 1997; Danielson and Scott, 2004). Actually, supplier financing may turn out to be more costly for the reasons set out above (Wilner, 2000; Ng et al, 1999). Therefore, a company will resort to funding from suppliers only when other forms of credit have already been exhausted and it still has an unsatisfied demand for funds (Elliehausen and Wolken, 1993; Petersen and Rajan, 1997; Danielson and Scott, 2004). Therefore, we should expect to find a substitution effect between supplier-provided credit and other sources of alternative financing.

Specifically, we should consider the availability of financial resources, and their cost. In this respect**,** we expect that the variable STFIND, measured as the ratio of short-term financial debt to assets, will be negatively related with the dependent variable, since access to short-term bank debt could reduce the need for trade credit, the latter normally having higher implicit interest rates. Following Deloof and Jegers (1999), we also include the variable LTDEBT, defined as the ratio of long-term debt to assets, to test whether there is a substitution effect between long-term debt and debt provided by suppliers. And we consider the cost of external finance (FCOST), measured as the ratio of financial expenses over total debt minus accounts payable. In this case, we would

expect firms incurring higher costs for their financial debt to demand more financing from their suppliers, to the extent that this is possible.

Sales growth

The existence of growth opportunities in a firm is an important factor that positively affects the demand for finance in general, and for trade credit in particular. In fact, as Cuñat (2007) points out, high growth firms get a higher proportion of trade credit from their suppliers. Therefore, firms with greater increases in sales will use more trade credit in order to finance their new investments in current assets. Specifically, as shown in previous studies by Deloof and Jegers (1999) and Niskamen and Niskamen (2006), this variable is measured by the ratio $sales_0/sales_{-1}$ (GROWTH). Moreover, in order to differentiate between positive and negative values of sales growth, we built the variables PGROWTH and NGROWTH. The first is calculated from the yearly positive variations in the sales, and the second from the yearly negative variations in the sales. We anticipate that firms with higher sales growth will have greater growth opportunities, so they will have an increased demand for funds and consequently for trade credit.

Asset maturity

The corporate finance literature establishes that firms have to adapt asset liquidity to the time it takes to settle liabilities. Specifically, Morris (1976) established that firms have to match the maturity of assets and liabilities in order to ensure that cash flow generated by assets is sufficient to pay periodic debt payments. Myers (1977) also argues that a firm can reduce agency problems between shareholders and bondholders if it matches the maturity of its debt to the life of its assets. In this sense, with the idea that firms tend to match the maturity of their liabilities and the liquidity of their assets, we

introduce the variable CURRAS, defined as the ratio of current assets to total assets. We would expect firms that have made a bigger investment in current assets to use more short-term finance in general, and more supplier financing in particular. In addition, following Deloof and Jegers (1999), we consider a greater disaggregation of the current assets into its components: cash holdings (CASH), accounts receivable (RECEIV) and inventories (INVENT), in all cases as a proportion of total assets.

Macroeconomic factors

Trade credit levels may be affected by changing macroeconomic conditions (Smith, 1987). Deteriorating macroeconomic conditions may provoke an increase in levels of accounts payable as firms delay paying their trade credits. Also, 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. However, improvement in economic conditions may also provoke an increase of accounts payable of firms, as can be observed in the study by Niskanen and Niskanen (2006). This may be explained by the fact that in these conditions firms may have more investment opportunities and, consequently more need to fund operations. Consequently, we control for the evolution of the economic cycle using the variable of growth in gross domestic product (GDP), which measures the annual rate of GDP growth for UK. It is not clear what the expected relationship is between the business cycle and the trade credit received by firms.

Control variable

Finally, we introduce the variable PURCH, measured as the ratio of purchases[2] to assets. The purpose is to control for the quantity of credit offered by the sellers to their customers.

3. SAMPLE AND DATA

The data used in this study were obtained from the AMADEUS database. This database was developed by Bureau van Dijk, and contains financial and economic data on European companies.

The sample comprises small and medium-sized firms from United Kingdom for the period 1996-2001. The selection of SMEs was carried out according to the requirements established by the European Commission recommendation 96/280/CE of 3rd April, 1996, on the definition of small and medium-sized firms. Specifically, the sample firms met the following conditions, for at least three years: a) have less than 250 employees; b) turn over less than 25.5 million pound; and c) possess less than 17.2 million pounds worth of total assets.

After this first trawl, the information obtained was refined. In this way, we eliminated cases with missing values for some of the variables or with errors in the accounting data. For example, we required that variables such as assets, current assets, fixed assets, liabilities, current liabilities and capital be positive, as well as any other variable defined as positive. In addition, we eliminated 1% of the extreme values (percentiles 1 and 99) presented by the variables defined in next section, which might alter the results. As a result of applying these filters, we ended up with a panel of 3,589 firms.

[2] Due to value for purchases not being in straight financial statements we use “cost of good sold” as a proxy for purchases.

Data on Gross Domestic Product (GDP) for UK was obtained from Eurostat.

Table 1 reports the mean values of trade credit received (over asset) by sector and year. In general, the level of accounts payable has been very similar throughout this period. Nevertheless, we observed a slight decrease in the period for firms which belong to the wholesale trade, transport and public services and service sectors. In addition, we find important differences between industries. The p value for an ANOVA indicates that the mean values of accounts payable by industry are significantly different for each year. Construction (28.99 per cent mean) usually works on the basis of high levels of credit received, while trade sectors such as wholesale trade (22.60 per cent mean) and retail trade (20.61 per cent mean) use more financial support from their suppliers. In contrast, firms in the sector of agriculture or mining have the lowest levels of accounts payable, which barely account for 10 per cent to 12 per cent of their liabilities.

INSERT TABLE 1

Table 2 shows descriptive statistics about the variables. In general, firms in the sample are small, with a mean turnover of above 5.9 million pounds (median more than 4.8 million pounds). Moreover, the firms are consolidated in the market, so the median age is 20 years old. Accounts payable represent around 20 per cent of their liabilities, although as noted previously, this value differs from one sector to another. This value is greater than the mean of other financial resources, including short term financial debt and long term debt, which reveals the importance of supplier financing for firms. The low value of long term debt is relevant; the median is less than 6 per cent. Investment in current assets is significant, more than 65 per cent of assets. It is particularly noteworthy that the most important component of current assets is accounts receivable, with a mean value of around 28 per cent. Therefore, funds received from suppliers are in general less

than the financing that the firms grant to their customers. In the period analyzed (1997-2001) the GDP grew at an average rate of 3.1 per cent.

INSERT TABLE 2

In Table 3 we present the matrix of Pearson correlations. Correlations between PAY and independent variables are all significant and present the sign expected, except for variable SIZE. In addition, correlations between independent variables are not high, suggesting that multicollinearity is not likely to be a problem in our study.

INSERT TABLE 3

4. METHODOLOGY

We tested the hypotheses on the factors determining the level of a firm's accounts payable using the panel data methodology.

Panel data are useful in that they allow us to relax and test assumptions that are implicit in cross-sectional analyses. In particular, we might mention two relevant aspects. Firstly, it is possible to control for unobservable heterogeneity, since the methodology provides us with more than one cross section. This allows us to eliminate biases deriving from the existence of individual effects (Hsiao, 1985). Secondly, the panel data methodology also makes it possible to model dynamic responses with micro data.

In this way, and in contrast to previous research which considers a static trade credit model, we adopt an approach that recognises that an adjustment process may take place. Static panel data models implicitly assume that firms are able to adjust their financing structure without any delay. Nevertheless, we allow for any possible delay in adjusting to the target accounts payable that may occur due to the presence of adjustment costs. So, the levels achieved at any time will also be explained by the

decisions taken in previous periods. To test this assumption, we consider that the desired target accounts payable level is given by the particular characteristics of the firm explained in prior sections plus a random disturbance, such that:

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

The model then assumes that firms adjust their current accounts payable level according to the degree of adjustment coefficient γ, in order to approach their target level:

$$PAY_{it} - PAY_{it-1} = \gamma\,(PAY^{*}_{it} - PAY_{it-1}) \qquad (2)$$

where $(PAY^{*}_{it} - PAY_{it-1})$ 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 their trade credit levels to the target level immediately; if it is 0, this indicates that the costs of adjustment are so high that the firms cannot modify their accounts payable levels.

Thus, substituting (1) into (2), the equation that explains the accounts payable levels is:

$$PAY_{it} = \alpha + \delta_0\ PAY_{it-1} + \sum_{k=1} \delta_k x_{kit} + \varepsilon_{it} \qquad (3)$$

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

In addition, if we introduce the firm's unobservable individual effects, the time dummy variables, and the explanatory variables considered in section 2, the model to be estimated becomes:

$$PAY_{it} = \alpha + \delta_0 PAY_{it-1} + \delta_1 SIZE_{it} + \delta_2 LAGE_{it} + \delta_3 LAGE^2_{it} + \delta_4 CFLOW_{it} + \delta_5 STFIND_{it} + \delta_6 LTDEBT_{it} + \delta_7 FCOST_{it} + \delta_8 PGROWTH_{it} + \delta_9 NGROWTH_{it} + \delta_{10} CURRAS_{it} + \delta_{11} GDP_t + \delta_{12} PURCH_{it} + \eta_i + \lambda_t + \varepsilon_{it} \quad (4)$$

where PAY_{it} represents the funding received by firm i at time t from its suppliers; $SIZE_{it}$ the size; $LAGE_{it}$ indicates the age of the company; $CFLOW_{it}$ the capacity to generate internal resources; $STFIND_{it}$ the short-term financing received from financial institutions; $LTDEBT_{it}$ the long-term debt; $FCOST_{it}$ the cost of outside financing; $PGROWTH_{it}$ and $NGROWTH_{it}$ the positive and negative sales growth, respectively; $CURRAS_{it}$ the investment in current assets; GPD_t the gross domestic product growth and $PURCH_{it}$ the purchases made. The variable η_i is designed to measure unobservable characteristics of the firms that have a significant impact on the firm's accounts payable. They vary across firms but are assumed constant for each firm. Examples include attributes of managers such as ability and motivation. They may also include industry-specific effects such as entry barriers or market conditions, among others. The parameters λ_t are time dummy variables that change over time but are equal for all firms in each of the time periods considered. In this way, we attempt to capture the economic variables that firms cannot control and which may affect their trade credit decisions. 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 (4) is inconsistent even if the ε_{it} are not serially correlated, since PAY_{it-1} is correlated with η_i. Likewise, the intragroup estimator, which estimates Equation (1) with the variables transformed into deviations from the mean, is also inconsistent, as a consequence of the correlation that arises between $(PAY_{it-1} - \overline{PAY}_{it-1})$ and $(\varepsilon_{it} - \overline{\varepsilon_{it}})$. Finally, the OLS estimation of first differences is equally inconsistent, since ΔPAY_{it-1} and $\Delta\varepsilon_{it}$ are correlated, given that PAY_{it-1} and ε_{it-1} are.

Considering the previous limitations, the parameters of Equation (4) will be estimated using instrumental variable estimators and specifically applying the General Method of Moment (GMM) on the equation in first differences. This procedure, developed by Arellano and Bond (1991), presents two levels of application depending upon the nature of ε_{it}. If the residuals are homoskedastic, the 1-stage GMM turns out to be optimal. If 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 uses 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). Likewise, we employed the Sargan

[3] See Baltagi (2001).

test of over-identifying restrictions, which tests for the absence of correlation between the instruments and the error term.

5. RESULTS

5.1 Univariate analysis

We first conducted a univariate analysis in order to determine if there were significant differences for the variables studied in relation to the levels of accounts payable. From this, we present in Table 4 the mean values of the variables used in this study for each quartile of the variable PAY. The quartiles have been constructed annually. This indicates that the ranges of the variable PAY overlap across quartiles. In addition, we carried out a difference of means tests based on Student's t to determine if the mean values of the fourth quartile are significantly different from those of the first. The t statistic is shown in the final column in Table 4.

INSERT TABLE 4

This univariate analysis indicates that effectively there are differences between the explanatory variable depending on the value of accounts payable. Firms with higher values of accounts payable have values in the explanatory variable which are significantly different from firms with smaller values. The higher the accounts payable, the higher size, higher cost of financial debt, more growth in sales, more investment in current asset in general, and in accounts receivable and stock in particular. In contrast, firms with more financing from suppliers are generally younger, have less capacity to generate internal resources, have less short term financial debt and long term debt, and hold less cash. These results, are generally consistent with what we would expect, except for the variable SIZE. However, it can also be seen that the variables as AGE,

CFLOW and CASH do not change monotonically with accounts payable levels. Therefore, this preliminary analysis lets us get an initial intuition about the results, although comparing the first and fourth quartiles is not sufficient to describe the relationship between accounts payable and the explanatory variables considered in Equation (4).

5.2 Multivariate analysis

In Tables 5 we report the results of the multivariate analysis. The explanatory variables (with the exception of GDP) have been assumed to be endogenous[4]. This is justified since these variables are built from financial figures presented by the firms, so that it is difficult to regard them as exogenous (Kremp, Stohs and Gerdesmeier, 1999).

All the estimations have been carried out using the 2-stage GMM estimator. We do not detect any second-order serial correlation, which confirms the consistency of the estimations.

Column 1 presents the results obtained for the estimation of the dynamic model described in Section 4. In column 2, we repeat the estimation without desegregating the investment in current assets into different components: cash, accounts receivable and stock. Finally, in column 3 and 4 we test whether the results are affected by the industry in which the firms operate. In order to do that and considering that the estimation transforms the variables in first differences, we cannot include dummy variables which take the value 1 if the firm belongs to a specific sector and 0 otherwise. If the firms do not change from one industry to another, this variable is dropped. To solve this problem, in column 3 we consider that the investment in current assets is a industrial characteristic, and generate the variable IND as the difference between CURRAS and

[4] $E(x_{it}\ \varepsilon_{is}) \neq 0$ for $s \leq t$ and $E(x_{it}\ \varepsilon_{is})=0$ for all $s>t$.

the mean value that this variable has in the firm's sector[5]. In column 4 we include the traditional dummy variables to indicate the industrial sector (0, 1) without transforming in the first differences. In general, the results obtained in different estimations (column 1 to 4) are totally consistent[6].

INSERT TABLE 5

The coefficient of variable PAY_{it-1} is positive and significant at the one per cent level, which confirms the major aim of this paper. This result suggests that the dynamic approach adopted in this paper is not rejected, and that firms adjust their accounts payable in an attempt to reach their target accounts payable ratio. The adjustment coefficient, which is given by 1 minus δ_0, take values between 0.77 and 0.79 providing evidence that firms adjust their accounts payable ratio relatively quickly. Moreover, this significant coefficient in the lagged dependent variable may also show that the levels of accounts payable in firms are persistent over time.

According to the explanatory variables considered previously, first we find that the relationship between PAY and SIZE is significant and negative. This result is consistent with the expected relationship, as these firms have better access to the financial markets and can get financing from other alternative sources. Moreover, the importance of this variable is demonstrated if we calculate its economic impact[7], since an increase of one standard deviation in the variable SIZE produces a decrease in the

[5] We also consider current liabilities as and industry characteristic and the results are similar. The main characteristic of panel data model is to control of firm specific aspects, and industry would be considered in this way. Perhaps it explains the lack of significance of specify industry effects in regressions.

[6] Neither do the results change if we eliminate industries not carrying inventory (service firms and utilities and transportation firms).

[7] 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.

accounts payable ratio between 20.50 per cent (column 3) and 23.03 per cent (column 4).

However, we do not find sufficient support for the effect of the variable AGE. The coefficient of the variables AGE and AGE^2 are not significant in any of the estimations carried out. This result does not change if we exclude the variable AGE^2.

In keeping with the result found for the variable SIZE, we also find a significant and negative relationship between PAY and the variables used as proxies for other sources of funds. Like Petersen and Rajan (1997) and Niskanen and Niskanen (2006), we find an inverse relation between the level of financing from suppliers and the resources generated internally. The economic impact of this variable is also very significant. If we increase one standard deviation in the variable CFLOW the dependent variable decreases, on average, by almost 14 per cent. In addition, and as shown by Deloof and Jegers (1999), we observe a negative relationship between the dependent variable and both STFIND and LTDEBT. Thus, firms reduce their levels of debt from suppliers not only when they have the chance to access other short-term financial resources but also when they can use more long term debt. This result can be explained by the high cost that finance from suppliers implies (Wilner, 2000; Ng et al, 1999). Both variables have a significant economic impact, since the dependent variable varies between 7.88 per cent and 9.25 per cent when STFIND increase one standard deviation, and between 12.28 per cent and 14.22 per cent when we increase LTDEBT. Therefore, we find a substitution effect between supplier-provided credit and other sources of financing.

In line with the results above, the relationship between PAY and COST is significant and positive. When the cost of other liabilities increase, firms have more

incentive to resort to trade credit, which confirms that this form of financing is a substitute for other external funds.

The need for funding should also affect the demand for trade credit. The results confirm that idea, as we can see in the positive and significant coefficient of the variable PGROWTH. Firms with higher sales growth, and which therefore presumably have more investment opportunities, are willing to use more credit in general, and trade credit in particular, as a source of financing for their growth. In addition, this result also could be explained because suppliers put trust more in firms with more growth opportunities and consequently grant them more credit. This effect is economically significant; an increase in one standard deviation of the variable PGROWTH increases the level of accounts payable, on average, by 5.42 per cent. Similarly, we also find that firms whose sales fall rapidly receive less credit from their suppliers, as indicated by the significant and positive sign of the variable NGROWTH. As with prior variables, the economic impact of this variable is very similar in all the estimations carried out, so a change in a standard deviation in NGROWTH implies that accounts payable change by between 4.48 per cent (column 4) and 4.94 per cent (column 3).

However, although the sign of variable CURRAS is positive as we initially expected, it is not found to be significant. Thus, and in contrast to previous studies (Petersen and Rajan, 1997; Deloof and Jegers, 1999; Niskanen and Niskanen, 2006), we do not find in British small firms empirical support for the idea that firms with more investment in current asset use more credit from their suppliers. In order to analyze this aspect in greater depth we estimate in column 2 the initial model disaggregating the current assets into its specific components. The results are similar, and do not illustrate any significant relationship with the dependent variable. Nevertheless, we must consider that the current assets might not only be financed with trade credit received, but also

with other funds such as a short term and long term debt. Indeed, in this paper we have found a substitution effect between trade credit and other external resources. Moreover, even where the investment in current assets of a firm was high, this does not mean that it can necessarily get more financing from its supplier.

The credit received form suppliers also depends on the macroeconomic factors. Consistent with the previous study of Finnish firms (Niskanen and Niskanen, 2006), growth in Gross Domestic Product (GDP) takes a positive and significant coefficient, indicating that firms use more trade credit when the economic conditions improve. Nevertheless the effect of this variable on PAY is not great. Accounts payable only increase around 1 per cent over their mean value when GDP increases by one standard deviation.

The control variable PURCH is significant and positive. This result was expected because in given credit conditions, the higher the level of purchases made, the higher the trade credit received.

Finally, in columns 3 and 4 of Table 5 we estimated the previous model controlling for industrial effects. In column 3 we introduce the variable IND defined as explained at the beginning of this section, and the results do not change. Similarly, the results do not change in column 4 when we included industry dummies. In fact, none of the industry dummies included is significant.

6. CONCLUSIONS

This paper provides empirical evidence of the determinants of trade credit received in small and medium-sized firms, with the main objective of finding out if decisions about accounts payable follow an adjustment process to a target level. To complete the study, we used a sample of 3,589 British small firms during the period

1997-2001. Using a dynamic panel data model and GMM estimation, we controlled for unobservable heterogeneity and for potential endogenity problems.

The results support the idea that decisions about accounts payable follow a partial adjustment model. This aspect has not been studied previously in the literature, and shows that firms have a target level of accounts payable and their decisions are taken with the aim of achieving this. Moreover, the estimated adjustment coefficients, which are about 0.78, reveal that the adjustment is relatively quick.

Our results also indicate that the availability of alternative financial resources leads to reduced financing from suppliers. Larger firms use less credit from suppliers since they can go to other sources of financing as a consequence of their trade capacity and reputation. Moreover, UK SMEs that have higher level of short term financial debt or long term debt, and at lower cost, use less financing from suppliers. Finally, consistent with the financial hierarchicy established in the Pecking Order Theory, firms favour internal financing over external financing, since firms reduce level of accounts payable when they have more capacity to generate internal funds. All these results show that decisions about trade credit depend on the ability of the firm to obtain other forms of funding, and confirm a substitution effect between supplier-provided credit and other sources of financing.

We also find that firms use more trade credit when they have more growth opportunities. This confirms that firms use trade credit as a particular way to finance their growth in sales. Similarly, firms whose sales decrease quickly have lower levels of accounts payable. However, our results do not provide empirical evidence for the possible effects that the age or investment in current assets could have on the level of trade credit received.

Finally, these sorts of decisions are affected by the economic environment. We find that the level of accounts payable climbs when the Gross Domestic Product growth increases. However, the effect is not very relevant in terms of economic impact.

REFERENCES

Antov, D. S. and Atanasova, C. V., 2007, Trade Credit Financing: How Expensive Is It Really', SSRN *Working Paper Series*.

Arellano, M. and S. Bond,1991, Some Tests of Specification for Panel Data: Monte Carlo Evidence and An Application to Employment Equations, *Review of Economics Studies* 58, 277-297.

Berger, A. N. and G. F. Udell, 1998, The Economics of Small Business Finance: the Roles of Private Equity and Debt Markets in the Financial Growth Cycle, *Journal of Banking and Finance* 22, 613-673.

Burkart, M. and Ellingsen, T., 2004. In-Kind Finance: A Theory of Trade Credit, *American Economic Review* 94 (3), 569-590.

Cuñat, V., 2007, Trade Credit: Suppliers as Debt Collectors and Insurance Providers, *Review of Financial Studies* 20, 491-527.

Danielson, M. G. and J. A. Scott, 2004, Bank Loan Availability and Trade Credit Demand, *The Financial Review* 39, 579-600.

Deloof, M. and M. Jegers, 1996, Trade Credit, Product Quality, and Intragroup Trade: Some European Evidence, *Financial Management* 25, 33-43.

Deloof, M. and M. Jegers, 1999, Trade Credit, Corporate Groups, and the Financing of Belgian Firms, *Journal of Business Finance and Accounting* 26, 945-966.

Elliehausen, G. E. and J. D. Wolken, 1993, The Demand for Trade Credit: An Investigation of Motives for Trade Credit Use by Small Businesses, Working Paper (The Federal Reserve Board).

Emery, G. W, 1987, An Optimal Financial Response to Variable Demand, *Journal of Financial and Quantitative Analysis* 22, 209-225.

Ferris, J. S., 1981, A Transactions Theory of Trade Credit Use, *Quarterly Journal of Economics* 94, 243-270.

Fisman, L. and I. Love, 2003, Trade Credit, Financial Intermediary Development, and Industry Growth, *Journal of Finance* 58, 353-374.

Ge, Y. and J. Qiu, 2007, Financial Development, Bank Discrimination and Trade Credit, *Journal of Banking and Finance* 31, 513-530.

Hsiao, C., 1985, Benefits and Limitations of Panel Data, *Econometrics Review* 4, 121-174.

Holmes, S. and P. Kent, 1991, An Empiric Analysis of the Financial Structure of Small and Large Australian Manufacturing Enterprises, *Journal of Small Business Finance* 1, 141-154.

Huyghebaert, N., 2006, On the Determinants and Dynamics of Trade Credit Use: Empirical Evidence from Business Start-ups, *Journal of Business Finance and Accounting* 33, 305-328.

Huyghebaert, N., L. Van de Gucht, and C. Van Hulle, 2007, The Choice between Bank Debt and Trade Credit in Business Start-ups, *Small Business Economics*, Forthcoming.

Intrum Justitia, 2007, *European Payment Guide*, http://europeanpayment.com/

Kremp, E., Stöss, E. and D. Gerdesmeier 1999, Estimation of a Debt Function: Evidence from French and German Firm Panel Data, in: A. Sauvé and M. Scheuer, eds., *Corporate Finance in Germany and France: a Joint Research Project of the Deutsche Bundesbank and the Banque de France*, (Deutsche Bundesbank and Banque de France),139-194.

Long, M. S., I. B. Malitz, and S. A. Ravid, 1993, Trade Credit, Quality Guarantees, and Product Marketability, *Financial Management* 22, 117-127.

Morris, J. R., 1976, On the Corporate Debt Maturity Strategies, *Journal of Finance* 31, 29-37.

Myers, S. C., 1977, Determinants of Corporate Borrowing, *Journal of Financial Economics* 5, 147-175.

Myers, S. C. and N. S. Majluf, 1984, Corporate Financing and Investment Decisions when Firms Have Information that Investors Do Not Have, *Journal of Financial Economics* 20, 293-315.

Nadiri, M. I., 1969. The Determinants of Trade Credit in the U.S. Totla Manufacturing Sector, *Econometrica* 37 (3), 408-423.

Ng, C. K., J. K. Smith, and R. L. Smith, 1999, Evidence on the Determinants of Credit Terms Used in Interfirm Trade, *Journal of Finance* 54, 1109-1129.

Niskanen, J. and M. Niskanen, 2006, The Determinants of Corporate Trade Credit Polices in a Bank-dominated Financial Environment: the Case of Finnish Small Firms, *European Financial Management* 12, 81-102.

Ozkan, A, 2001, Determinants of Capital Structure and Adjustment to Long Run Target: Evidence from UK Company Panel Data, *Journal of Business Finance and Accounting* 28, 175-198.

Petersen, M. and R. Rajan, 1997, Trade Credit: Theories and Evidence, *Review of Financial Studies* 10, 661-691.

Peel, M. J., N. Wilson, and C. Howorth, 2000, Late Payment and Credit Management in the Small Firm Sector: Some Empirical Evidence, *International Small Business Journal* 18, 17-37.

Pike, R., N. S. Cheng, K. Cravens, and D. Lamminmaki, 2005, Trade Credits Terms: Asymmetric Information and Price Discrimination Evidence from Three Continents, *Journal of Business Finance and Accounting* 32, 197-236.

Schwartz, R., 1974, An Economic Model of Trade Credit, *Journal of Finance and Quantitative Analysis* 9, 643-657.

Smith, J. K., 1987, Trade Credit and Informational Asymmetry, *Journal of Finance* 42, 863-872.

Summers, B. and N. Wilson, 2002, An empirical Investigation of Trade Credit Demand, *International Journal of Economics of Business* 9, 257-270.

Wilner, B. S., 2000, The Exploitation of Relationships in Financial Distress: The Case of Trade Credit, *Journal of Finance* 55, 153-178.

Wilson, N. and B. Summers, 2002, Trade Credit Terms Offered by Small Firms: Survey Evidence and Empirical Analysis, *Journal of Business Finance and Accounting* 29, 317-351.

Table 1: Trade credit received by year and sector
Trade credit received is calculated as the ratio of accounts payable over assets. We present the p-value of an ANOVA in order to test whether mean values for industry are different.

	1997	1998	1999	2000	2001	1997-2001
Agriculture	0.1134	0.1154	0.1207	0.1334	0.1192	0.1204
Mining	0.1064	0.1094	0.1071	0.119	0.11	0.1104
Manufacturing	0.1891	0.1798	0.1777	0.1794	0.1724	0.1797
Construction	0.2921	0.2887	0.2856	0.2942	0.2889	0.2899
Retail trade	0.2033	0.207	0.2083	0.2036	0.2085	0.2061
Wholesale trade	0.2408	0.2283	0.2251	0.2216	0.2144	0.226
Transport and public services	0.1532	0.15	0.1554	0.1483	0.142	0.1498
Services	0.1562	0.1541	0.1508	0.1441	0.1399	0.149
Total	*0.1987*	*0.1929*	*0.1913*	*0.1901*	*0.185*	
P-value	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	

Table 2: Summary Statistics
PAY_{it} is calculates as accounts payable over assets, SALES are the sales in thousands of pounds; AGE the age of the company; CFLOW is calculated as net profits plus depreciation to sales; STFIND is the ratio short-term financial debt to assets, LTDEBT is the ratio long-term debt to assets; FCOST is the ratio of financial expenses over total debt minus accounts payable; PGROWTH and NGROWTH are the positive and negative sales growth, respectively; CURRAS is measure as the investment in current assets divided to assets; CASH as the cash holdings over assets; RECEIV as the accounts receivable over assets, INVENT as the investment in inventories over assets; GDP is the gross domestic product growth for UK and PURCH the purchases over assets.

	Mean	Std. Dev.	Perc. 10	Median	Perc. 90
PAY	0.1915	0.1438	0.0355	0.1604	0.3922
SALES	5970.26	4321.54	1558.53	4876.84	12045.35
AGE	24.8844	18.0012	8	20	51
CFLOW	0.1009	0.2477	0.0109	0.0883	0.2082
STFIND	0.175	0.1586	0.0157	0.1321	0.4014
LTDEBT	0.1103	0.1362	0	0.0571	0.2964
FCOST	0.0384	0.0275	0.0043	0.0356	0.0747
PGROWTH	0.1503	0.2197	0	0.0865	0.3707
NGROWTH	-0.033	0.0761	-0.1243	0	0
CURRAS	0.6528	0.2408	0.2986	0.6972	0.9312
CASH	0.0822	0.1223	0.0001	0.0264	0.2495
RECEIV	0.283	0.1854	0.0295	0.2753	0.5325
INVENT	0.1805	0.1631	0.0052	0.1432	0.4104
GDP	0.031	0.0052	0.023	0.031	0.039
PURCH	1.4961	0.9299	0.5397	1.284	2.7435

Table 3: Correlation Matrix

PAY_{it} is calculates as accounts payable over assets, SIZE is the logarithm of the sales, LAGE is the logarithm of (1+age); CFLOW is calculated as net profits plus depreciation to sales; STFIND is the ratio short-term financial debt to assets, LTDEBT is the ratio long-term debt to assets; FCOST is the ratio of financial expenses over total debt minus accounts payable; PGROWTH and NGROWTH are the positive and negative sales growth, respectively; CURRAS is measured as the investment in current assets divided to assets; CASH as the cash holdings over assets; RECEIV as the accounts receivable over assets, INVENT as the investment in inventories over assets; GDP is the gross domestic product growth for UK and PURCH the purchases over assets.

	PAY	**SIZE**	**LAGE**	**LAGE^2**	**CFLOW**	**STFIND**	**LTDEBT**	**FCOST**
SIZE	0.2159***	1						
LAGE	-0.0601***	0.1259***	1					
LAGE^2	-0.0622***	0.1202***	0.9895***	1				
CFLOW	-0.0458***	-0.0177**	-0.0562***	-0.0568***	1			
STFIND	-0.1936***	0.0601***	-0.0304***	-0.0319***	-0.0936***	1		
LTDEBT	-0.2418***	-0.1393***	-0.1183***	-0.1107***	0.0116	-0.131***	1	
FCOST	0.0498***	-0.0642***	-0.0254***	-0.0193***	-0.0501***	0.0244***	0.3038***	1
PGROWTH	0.0949***	0.0603***	-0.1648***	-0.1523***	0.0623***	-0.0126*	-0.0085	-0.0614***
NGROWTH	0.0365***	0.0617***	-0.0371***	-0.0332***	0.0752***	-0.0449***	0.0495***	0.0238***
CURRAS	0.3838***	0.2546***	-0.0584***	-0.0659***	-0.0111	0.0588***	-0.5271***	-0.3157***
CASH	-0.0512***	-0.0268***	-0.0334***	-0.0386***	0.0682***	-0.213***	-0.1676***	-0.3232***
RECEIV	0.395***	0.1403***	-0.0808***	-0.0892***	0.0126*	0.0409***	-0.3095***	-0.1404***
INVENT	0.1671***	0.219***	0.0555***	0.0643***	-0.072***	0.1492***	-0.2034***	0.0757***
GDP	0.0149**	-0.0389***	-0.0388***	-0.034***	0.018**	-0.0026	0.0117	0.0348***
PURCH	0.4995***	0.3174***	-0.0406***	-0.0395***	-0.0351***	-0.0109	-0.257***	0.0121

Table 3: Correlation Matrix (Continued)

	PGROWTH	NGROWTH	CURRAS	CASH	RECEIV	INVENT	GDP	PURCH
PGROWTH	1							
NGROWTH	0.297***	1						
CURRAS	0.0737***	-0.05***	1					
CASH	0.0515***	-0.0241***	0.2837***	1				
RECEIV	0.0949***	0.031***	0.5379***	-0.0952***	1			
INVENT	-0.0468***	-0.0148*	0.387***	-0.1763***	-0.1102***	1		
GDP	0.0138*	0.0185**	-0.0035	-0.0112	0.013*	0.006	1	
PURCH	0.1053***	0.0444***	0.3805***	-0.017**	0.2748***	0.2786***	-0.0013	1

***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table 4: Firms characteristics by PAY quartiles

PAY_{it} is calculates as accounts payable over assets, SIZE is the logarithm of the sales, LAGE is the logarithm of (1+age); CFLOW is calculated as net profits plus depreciation to sales; STFIND is the ratio short-term financial debt to assets, LTDEBT is the ratio long-term debt to assets; FCOST is the ratio of financial expenses over total debt minus accounts payable; PGROWTH and NGROWTH are the positive and negative sales growth, respectively; CURRAS is measured as the investment in current assets divided to assets; CASH as the cash holdings over assets; RECEIV as the accounts receivable over assets, INVENT as the investment in inventories over assets; and PURCH the purchases over assets. t statistic for a difference of means tests between the fourth quartile and the first one in the last column.

	1er Quartile	**2nd Quartile**	**3rd Quartile**	**4th Quartile**	**t**
	(0 a 0.0861)	(0.0757 a 0.1680)	(0.1539 a 0.2765)	(0.2546 a 0.8774)	
SIZE	8.5998	8.8761	8.9335	9.0978	29.773
LAGE	3.0053	3.1079	3.0457	2.9683	-2.578
CFLOW	0.1035	0.1154	0.1044	0.0804	-11.014
STFIND	0.2045	0.1906	0.1738	0.1314	-21.882
LTDEBT	0.1543	0.1177	0.1054	0.0642	-30.313
FCOST	0.0368	0.0366	0.0404	0.0401	5.571
PGROWTH	0.1364	0.1366	0.1500	0.1785	8.451
NGROWTH	-0.0374	-0.0342	-0.0314	-0.0294	4.843
CURRAS	0.5314	0.6238	0.6755	0.7801	48.668
CASH	0.0995	0.0840	0.0705	0.0751	-9.088
RECEIV	0.1822	0.2550	0.3123	0.3827	51.467
INVENT	0.1332	0.1755	0.1960	0.2175	24.235
PURCH	1.0185	1.2661	1.5341	2.1645	60.696

Table 5: Determinants of Accounts Payable

PAY_{it} is calculates as accounts payable over assets, SIZE is the logarithm of the sales, LAGE is the logarithm of (1+age); CFLOW is calculated as net profits plus depreciation to sales; STFIND is the ratio short-term financial debt to assets, LTDEBT is the ratio long-term debt to assets; FCOST is the ratio of financial expenses over total debt minus accounts payable; PGROWTH and NGROWTH are the positive and negative sales growth, respectively; CURRAS is measured as the investment in current assets divided to assets; CASH as the cash holdings over assets; RECEIV as the accounts receivable over assets, INVENT as the investment in inventories over assets; GDP is the gross domestic product growth for UK and PURCH the purchases over assets. IND control for industry effects. All estimations have been carried out using the 2-stage GMM estimator.

	1	**2**	**3**	**4**
PAY_{t-1}	0.2151***	0.2216***	0.2183***	0.2182***
	(7.02)	(7.48)	(7.19)	(6.9)
SIZE	-0.0394***	-0.0401***	-0.0388***	-0.0436***
	(-3.3)	(-3.43)	(-3.26)	(-3.05)
LAGE	0.0552	0.0405	0.0627	0.0569
	(1.14)	(0.83)	(1.32)	(1.15)
$LAGE^2$	-0.0158	-0.0112	-0.0183	-0.0147
	(-1.09)	(-0.77)	(-1.28)	(-0.99)
CFLOW	-0.0778*	-0.0976**	-0.0855*	-0.0734
	(-1.67)	(-1.96)	(-1.78)	(-1.57)
STFIND	-0.0808**	-0.0870**	-0.0842**	-0.0743**
	(-2.19)	(-2.4)	(-2.28)	(-2.01)
LTDEBT	-0.1410***	-0.1556***	-0.1368***	-0.1350***
	(-5.04)	(-5.55)	(-4.85)	(-4.74)
FCOST	0.3643***	0.4497***	0.3641***	0.3635***
	(2.72)	(3.36)	(2.72)	(2.65)
PGROWTH	0.0379***	0.0305**	0.0361**	0.0432***
	(2.67)	(2.25)	(2.55)	(2.86)
NGROWTH	0.0945**	0.0918**	0.0972**	0.0882**
	(2.32)	(2.26)	(2.4)	(2.06)
CURRAS	0.0355	-	-	0.0403
	(0.72)	-	-	(0.79)
CASH	-	0.0360	-	-
	-	(0.73)	-	-
RECEIV	-	0.0654	-	-
	-	(1.24)	-	-
INVENT	-	-0.0914	-	-
	-	(-1.46)	-	-
IND	-	-	0.0725	-
	-	-	(1.42)	-
GDP	0.3087***	0.2603***	0.3034***	0.3309***
	(4.6)	(3.79)	(4.59)	(4.64)
PURCH	0.0341**	0.0277**	0.0322**	0.0440***
	(2.29)	(2.09)	(2.22)	(2.77)
Agriculture	-	-	-	-0.0014
	-	-	-	(-0.42)
Manufacturing	-	-	-	-0.0018
	-	-	-	(-0.65)
Construction	-	-	-	0.0025
	-	-	-	(0.78)

Table 5: Determinants of Accounts Payable (Continued)

Retail	-	-	-	0.0017
	-	-	-	(0.56)
Wholesale	-	-	-	-0.0003
	-	-	-	(-0.09)
Transport_etc	-	-	-	-0.0010
	-	-	-	(-0.34)
Services	-	-	-	-0.0008
	-	-	-	(-0.29)
C	0.0045***	0.0038**	0.0046***	0.0052
	(2.6)	(2.03)	(2.66)	(1.58)
m_2	0.32	0.46	0.38	0.35
Sargan Test	73.55 (60)	74.69 (70)	72.92 (60)	72.77 (60)
Observations	10746	10746	10746	10746

z statistic in brackets.

***, ** and * indicate coefficient is significant at the 1%, 5% and 10% level, respectively.

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.