Economics Bulletin

Volume 35, Issue 1

Extra Profits in the Healthcare Factoring Industry: Evidence from Panel Data Analysis

Carlo Migliardo
University of Messina - Department of Economics (SEAM)

Antonio Fabio Forgione
University of Messina - Department of Economics (SEAM)

Abstract

This paper aims at investigating the presence of extra profits for the factoring companies operating with health sector credits. Using a panel data sample representative of Italian factoring companies, the analysis also examines, along with other factors, the determinants of corporate financial performance relating to capital structures and management. Among the main results, it was shown that these Italian intermediaries act within a context which is a far from being a perfectly competitive market structure. Finally, it was found that financial structure, productivity index, and risk components have a significant impact on corporate profitability.

We are grateful to the anonymous Referee and the Editor of this Journal for their corrections, comments and suggestions on a previous version of this paper. All errors are our own.

Citation: Carlo Migliardo and Antonio Fabio Forgione, (2015) "Extra Profits in the Healthcare Factoring Industry: Evidence from Panel Data Analysis", *Economics Bulletin*, Volume 35, Issue 1, pages 322-337

Contact: Carlo Migliardo - cmigliardo@unime.it, Antonio Fabio Forgione - fforgione@unime.it.

Submitted: July 03, 2014. **Published:** March 11, 2015.

1. Introduction

In recent decades, the studies on corporate financial performance have grown considerably. In this paper, we investigate the potential determinants of financial performance in factoring companies.

The paper contributes to the empirical literature on corporate profitability in two ways. Firstly, it belongs to the limited number of studies analyzing the implications of firm-specific determinants of the profitability of financial intermediaries (e.g. Athanasoglou et al. 2008; Berger, 1995; Berger and Bonaccorsi di Patti, 2006; Lee and Li; 2012). In particular, this is the first study that investigates this issue with regard to Italian factoring companies by resorting to cutting-edge econometric methodology for the estimation of panel data models, such as the system GMM estimator. Indeed, we are the first to explore the relationship between profitability and capital structure, efficiency ratios, and credit risk for this category of financial institutions by using this econometric methodology.[1] Also, our longitudinal data enable us to conduct an analysis that reduces the individual heterogeneity regarding firms of different size, which improves the robustness of the econometric results. Finally, as is well known in empirical literature, panel data analyses over-perform time series or cross-section analyses, because they are able to control individual heterogeneity.[2]

Secondly, we consider the likelihood of the presence of extra profits in the business area of the factorization of health credits: these extra profits emerge from the Italian National Health Service (henceforth: INHS) receivables. In particular, the presence of excess profits would indicate the presence of imperfect competition in the financing of current assets of the Italian health authorities (INHS operators) This imperfect competition is indeed largely due to the systematic practice of deferred payment to suppliers by the INHS. [3]

Indeed, in Italy the pay out of commercial credits, from the private as well as from and public sector, occurs with endemic delay. The refund of credits claimed by INHS procurements is particularly critical, accounting, on its own, for half of the whole of credit claimed on the Public Administration, with an average delay of 278 days.[4] For these reasons, the Italian factoring industry is the second most important in the world and the first in terms of GDP.[5]

[Table 1 HERE]

The layout of the paper is as follows: section 2 defines the data and analyzes the sample representativeness; section 3 introduces the framework of our study by describing the Italian factoring companies through an analysis of diverse accounting ratios; section 4 describes the econometric specification and research design; empirical results are presented in section 5; section 6 contains the conclusions.

2. Data Analysis

The sample used for this empirical analysis is derived from the financial statements of companies specializing in factoring activities. The panel includes a total of 70 observations from 10 Italian companies covering the period 2006–2012.[6] More specifically, the dataset considers only specialized Italian companies, that is companies operating exclusively (or mainly) in the factoring sector and that have not been affected by significant changes in their

[1] Ferretti and Vezzani (1992) performed a regression estimation in order to analyze the determinants of the profitability of Italian leasing and factoring companies. They found an inverse correlation between profits and firm size, especially with regard to financial services. Factoring companies connected to banks are less profitable than ones strictly linked to industrial

[2] See Cameron and Trivedi (2011) for other advantages the panel data offer.

[3] As the referee has rightly pointed out, there are several possible explanations about these extra profits: this could be due to the inefficiencies in the INHS. Also, it could be due to corruption, kickbacks, costs of entry, and the like.

[4] 170 days is the overall average for the whole public sector.
http://www.sanita.ilsole24ore.com/art/imprese/2013-06-05/debiti-sanita-pagaintanto-ritardi-083006.php?uuid=Ab9msE2H

[5] The table 1 reports total factoring volume on the GDP, showing that, until 2003, Italy was the first country in the world for factoring turnover share on GDP, after that it becomes the second most important country.

[6] The period under consideration allows us to cover several complete business cycles.

corporate structure in the period 2006-2012. Even if a causal relationship between profitability and corporate structure change is likely to exist, in the case of Italy factoring services are usually supplied by specialized companies consolidated in banking groups. During the sample period we took into consideration, no company has modified its corporate structure.

Furthermore, in Italy there is an financial intermediary specialized exclusively in anticipation of healthcare receivables, and, in addition, there are several companies, banking or captive, that operate exclusively in the field of factoring receivables and advance credit to many economic sectors. In the end, our sample is constituted by 9 specialized factoring companies compared with this financial intermediary (benchmark).

[Table 2 HERE]

In addition, we conduct a t-test (table 2) on the null hypothesis of equality between the sample mean and the whole universal mean, in order to verify the representativeness of our sample (10 companies, i.e. 32% of the whole factoring industry) with respect to the reference population constituted by a total of 31 intermediaries (banks and specialized companies) belonging to Assifact.

Of the two t-tests performed, the one on the intermediate margin on total assets and the other on factoring turnover, neither rejects the null hypothesis and, as a consequence, our sample is sufficiently representative of the Italian factoring industry. [7]

3. The Factoring Industry and our Benchmark: Preliminary Analysis of Certain Ratios

In this section we compare some financial ratios of the sample and of factoring benchmark as related to the main aspects of corporate structure. The first coverage ratios are indexes that establish the relationship between assets and liabilities (table 3 and table 4, nos. 1-4), and provide information about the relationship between sources and uses.

[Table 3-4 HERE]

Results of the first three indicators show that factoring benchmark's capitalization is much higher than the industry average, and grows steadily over the years, driven by profitability. The same result is achieved if the comparison is made between equity and receivables while the ratio of intermediation (no. 4) is greater than that of the sector, indicating high investment opportunities in the health sector.

The ratios from nos. 5 to 14 are aimed at illustrating the company's profitability. The per unit profitability of invested funds for the company observed – considering no. 5 (net profit) but not no. 6 (operating profit before extraordinary items and tax items) – is always significantly higher than that of the industry.

The different configurations of per unit profitability of the total funds invested (nos. 7, 8, and 9) confirm that the company profitability is higher than that of the industry average. A careful reading of the three indexes suggests that increased corporate profitability has its origin in best performance in money management: ratios nos. 8 and 9 are higher than no. 7, since the denominator includes operating costs and those costs arising from the risk portfolio. Index no. 10 confirms that the weight of services component is lower than the purely credit component, and indeed the weight of commission income for our factoring benchmark appears to be relatively limited.

Ratios nos. 11 and 12 are raw "price" indexes but allow, if use with caution, an assessment of the strategies adopted by factoring companies in the two areas of their activities and of their contribution to overall profitability. The weight of the fee income (ratio no. 11) charged to customers is lower for the our factoring benchmark. The spread (ratio no. 12), namely the

[7] Factoring turnover is the gross flow of receivables transferred by firms to the factoring company. The results of the first three indicators show a capitalization of our factoring benchmark much higher than the industry average, growing steadily over the years, as will be seen, driven by profitability.

unit margin of credit intermediation, is of greater importance for the company under observation as it explains most of the differences in income highlighted by the specific ratios calculated and commented on above. [8]

The indexes of the third group (nos. 13 to 19) express the company's ability to control cost structures and the use of resources and thus express the operational efficiency of intermediaries. The indicators suggest that operating costs and losses/provisions on loans impact more heavily on the net interest income of our factoring benchmark, and the same can be said for the percentage of fixed costs on total operating costs. The cost/income ratio confirms this indication, highlighting the company's ability to deal with phases of low economy without compromising profitability. The last group of four indicators show that the average volumes of credit processed by companies in the sector, maintaining the same resources and costs, seem to be higher than our factoring benchmark. Consequently, the abovementioned indicators appear to show a longer average life of receivables factored by the company than those factored by the factoring industry.

The last group of ratios (nos. 20 to 24) measures the credit risk of the factoring company's loan portfolio.[9] The results of our analysis tell that the set of impaired assets, namely non-performing loans over the loan portfolio, even net of reserves, are modest for the whole sector, although they have been growing in recent years. As for our factoring benchmark, values are always lower than market values. A comparison of the abovementioned items with equity, however, is satisfactory in terms of performance only for our intermediary benchmark.

4. Empirical Model

4.1 Econometric Methods and Variables

In order to evaluate the various aspects of corporate profitability, we conduct an empirical analysis using an econometric model that relates corporate performance to a set of explanatory variables, including corporate productivity, risk measures, and capital structure. More specifically, following previous empirical literature on the estimation of the performance of intermediary institutions (e.g., Berger and Humphrey, 1997; Berger and Bonaccorsi, 2006; Athanasoglou *et al.*, 2008; Hoque *et al.,* 2013), we specify a panel equation that aims to capture the factors potentially relevant in determining the firm's performance. The specification of the model is the following:

$$\pi_{i,t} = \beta_0 + \beta_1 Credit_{i,t} + \beta_2 Hfact_{i,t} + \beta_3 Leverage_{i,t} + \beta_5 Nploan_{i,t} + \beta_6 Eff_{i,t} + \beta_7 Prod_{i,t} + \beta_8 Risk_{i,t} + u_{i,t}, \quad (1)$$

$$u_{i,t} = v_i + e_{it}$$

The dependent variable π stands for corporate profitability. As for previous studies on the determinants of financial institutions' profitability, they focus on return on assets, on return on equity, and on the net interest margin. Therefore, we use three different proxies for this variable of interest (corporate performance). The three alternative dependent variables are *ROA*, *ROE*, and *PROFIT*, and they are all continuous ones.

In our model there are three alternatives to measure corporate profitability and efficiency, namely *ROA*, *ROE*, and *PROFIT*.[10] *ROA* reflects average return on total gross assets and it is calculated on the basis of earnings with respect to the company's assets, consisting of both debt and equity; therefore, ROA indicates the return offered to all the financial stakeholders in the companies. ROE is the return available to shareholders after considering tax and other

[8] The spread is calculated as a difference between interest income per unit (relative to total assets) and interest expense per unit (on interest-bearing liabilities).

[9] In general, these indexes reflect the ability of the intermediary to allocate credit efficiently, selecting only reliable customers and adequately diversified credits.

[10] Both ROA and ROE ratios reveal how well a company utilizes its financing and assets to create income.

claimants. Finally, PROFIT is calculated by adopting a specific indicator of corporate performance for intermediary institutions as interest income divided by total assets. Although the first two ratios can be considered as good general indicators of profitability, they may, however, be "altered" by extraordinary capital operations, e.g. either expanding debt or making a buy-back of shares to modify ROE. For these reasons, in order to examine the robustness of our empirical findings, we have used three alternative ratios as financial performance variables.

The determinants of corporate profitability are represented by the following regressors:

Credit is the ratio between loans and total debt burden, i.e. the intermediation ratio. It captures the ability to convert deposits into loans. The higher is the intermediation ratio, the lower are bank costs and higher are investment opportunities, and it denotes a positive impact on corporate performance. However, this effect may be non-monotonic: indeed, if the ratio becomes excessively high, it generates greater risk and may jeopardize bank profits. Additionally, the level of capital adequacy imposed by central banks influences this ratio directly (e.g. Basel II imposes a lower threshold) and indirectly (a too low value of the credit ratio may generate an early warning for the Monetary Authorities as well as for stakeholders).

Hfact is a dummy variable equal to one for the financial intermediary specialized exclusively in anticipation of healthcare receivables, whereas it equals zero for the other factoring companies. In this way, we capture the extra profits of the accounts receivable from the health sector with respect to factoring industry.

Eff represents the ratio turnover/credits, an indirect measure of duration of factoring receivables.

This ratio is an important indicator of factor financial performance, because it expresses how efficiently a company uses its assets. A high account receivable turnover ratio denotes profitable credit policies, because a high debtors turnover ratio indicates that a company operates with a strong liquidity position. On the contrary, a low ratio implies that cash from debtors is not collected quickly, and therefore the company should re-assess its credit policies so as to improve the timely collection of receivables (Weygandt *et al*. 1996).

Nploan is the relative non-performing loan ratio/total credits, a measure of firm specific risk. It indicates the risk management intermediaries' ability to allocate credits in an efficient way by selecting the quality of customers, and properly apportioning the factoring receivables. In normal conditions, an increased exposure to credit risk will correspond to a decrease of corporate profits, therefore we should expect an inverse relationship with corporate financial performance. In this regard, empirical literature (eg. Carvallo and Kasman, 2005; Casu and Girardone, 2004; Yldirim, 2002) has shown a negative relationship between bank efficiency and a higher share of non-performing loans.

Prod is the operative income/net intermediation margin, i.e. an indirect cost-income ratio, a measure of corporate operational efficiency. It measures the relative effects of operational costs on net banking income and therefore it reflects the share of the result of core business absorbed by operating costs.[11]

The lower the value of this indicator, the higher the incidence of operating costs, thus we expect to have a positive relationship between the former and the corporate financial performance.

Risk is the standard deviation over time of the company's return on equity. It is a control variable that measures the standard deviation of ROE over the six-year period for each firm. According to the classic risk-return trade-off arguments, riskier firms, i.e. firms with higher performance volatility, should generate greater expected return. However, several empirical studies (Berger and Bonaccorsi, 2006; Zeitun and Tian, 2007; Lee and Li, 2012; Norvaisiene,

[11] In the context of our analysis, the ratio includes impairments on loans, but such impairments can be considered relatively small and negligible.

2012) have found a negative effect of risk on corporate profitability: the authors have justified this finding as the result of higher operating risk, which implies a higher probability of financial distress and higher bankruptcy costs that impact negatively on the corporate performance.

Leverage is a determinant that captures the influence of corporate capital structure on corporate profitability and is measured as the ratio of financial debt to total assets. Generally, corporate governance models predict that leverage influences agency costs and, consequently, positively affects corporate profitability (Harris and Raviv, 1990; Myers, 2001). Moreover, a further expansion of financial debt may produce significant agency costs caused by eventual external funding and so it may determine risk shifting;[12] similarly, a reduced effort to control risk may result in higher expected costs of financial distress, default, or liquidation. These agency costs result in higher interest payments for companies in order to remunerate debt holders for their expected losses. In this regard, several empirical analyses (e.g. Dermerguc-Kunt and Huizinga, 1999 Berger and Bonaccorsi, 2006) have shown non-linear effects of leverage on bank performance, as it was found that a higher leverage is positively associated with bank profits, although at a very high leverage that relationship reverts to negative.

Finally, the equation (1) also includes the constant term β_0 and $u_{i,t}$ which is the disturbance component containing v_i the unobserved firm-specific effect and $\varepsilon_{i,t}$ the idiosyncratic error.

Corporate profits may be persistent over time because of impediments to market competition and/or barriers to entry. In this regard, following the previous literature, the System GMM has been estimated via a dynamic specification that contains the lagged dependent variable. [13]

Hence, the equation (1) augmented with lagged profitability index is:

$$\pi_{i,t} = \beta_0 + \gamma\pi_{i,t-1} + \beta_1 Credit_{i,t} + \beta_2 farmfact_{i,t} + \beta_3 Leverage_{i,t} + \beta_5 Nploan_{i,t} + \beta_6 Eff_{i,t} + \beta_7 Prod_{i,t} + \beta_8 Risk_{i,t} + u_{i,t}, \quad (2)$$

$$u_{i,t} = v_i + e_{it}$$

Where γ is the speed of adjustment to equilibrium. A value close to 0 indicates a competitive market, while a value close to 1– i.e. a very slow adjustment – implies that the industry is poorly competitive.

Table 5 shows the variables employed in the model, their definition, expected effect, and summary descriptive statistics.

[Table 5 HERE]

From Table 5, we can derive some interesting clues. Firstly, for the Italian companies specialized in factoring activities included in the sample, average return on equity is about 12.39%, while the average return on assets as a whole is 1.41%. Also, for these financial ratios there is no universal benchmark value, and they should be assessed with regard to sector and time period. Lastly, PROFIT − the variable that represents the net intermediate margin on total assets − appears to be the most volatile profitability indicator, but it is also the one with the intermediate average yearly return (1,86%).

4.2 Econometrics Methodology

In our empirical analysis, we address the following issues regarding identification of the model. Firstly, we estimate the Equation (1) (section 3.1) by using traditional econometric methods such as Ordinary Least Square, Random Effect Model, and Generalized Least Square. Therefore, at this stage, by applying the Chow test, we examine the presence of

[12] The agency costs of debt are usually explained in terms of asset substitution or risk-shifting. The latent conflict between debt claimants and equity is such that shareholders expropriate wealth from bondholders by investing in new projects that are riskier than those currently held in the company's portfolio. In this case, shareholders acquire most of the gains (i.e., when high-risk projects pay off), while bondholders suffer most of the cost (Jensen and Meckling, 1976; Fama and Miller, 1972).

[13] As in Berger *et al.* (2000) and Athanasoglou *et al.* (2008).

unobserved heterogeneity that makes pooled regression results heavily biased. In our case, the Chow test in all instances rejects the null hypothesis. Secondly, through the Hausman test, we try to assess, whether the individual effects are fixed or random. The results of the Hausman test suggest adopting random effects for all three specifications.

However, within our study, the above models might produce biased and inconsistent results, particularly for the dynamic specification in Equation (2) section 3.1, because of the potential issue of endogeneity that will determine biased coefficients and standard errors. In order to deal with this issue concerning the biasedness and inconsistency affecting the standard models that we applied in the Equation (1), we decided to follow empirical literature, in particular Blundell and Bond (1998) that overcomes the issues caused by endogeneity by employing lagged and differenced values of the explanatory variables as internal instruments.[14] Also, the System GMM Estimator developed for dynamic panel models is robust and able to control for reverse causality, simultaneity bias, and possible omitted variables; at the same time, it also controls individual and time specific effects.

We also conducted a series of panel unit root tests developed by Levin *et al.* (2002), which assumes that all series of the panel are non-stationary. The null hypothesis is rejected for all variables except for *leverage* and *Eff*. However, given that none of the three alternative dependent variables is stationary, the probabilities of obtaining spurious estimations are low. Furthermore, the System GMM Estimator exploits an assumption about the initial conditions in order to obtain moment conditions that are still useful even for persistent series, (Bond *et al.* 2001). Hence, we address these econometric issues by using a two-step System GMM technique (Arellano and Bover, 1995; Blundell and Bond, 1998) that jointly estimates a regression of Equation (2) in differences with regression in levels, using lagged levels as instruments for the regression in differences and lagged differences as instruments for the regression in levels. This methodology addresses the weak instrument issue that occurs from adopting lagged levels of persistent explanatory variables as instruments for the regression in differences (Blundell and Bond, 1998).[15] Moreover, as recommended by empirical literature, all GMM estimations adopt the Windmeijer (2005) correction procedure for the estimation of standard errors.

In order to evaluate the validity of our system GMM estimations, we ran and reported two common tests that confirm the null hypotheses. As the first test is the Arellano–Bond test (1991) for second-order autocorrelation in the first difference residuals confirms the absence of second-order autocorrelation in the transformed idiosyncratic errors, hence the GMM Estimator is not inconsistent. The second is the Hansen test for over-identifying restrictions, which strongly confirms the soundness of the imposed over-identifying moment conditions and consequently the validity of the instruments used. In particular, the Sargan-Hansen test indicates that the "lagged dependent" variable should be modeled as endogenous, the *Prod* variable as predetermined, while the other explicative variables are better modeled as strictly exogenous variables. [16]

Furthermore, our econometric model takes into account Roodman's recommendation (2009) concerning excessive "proliferation" in the number of instruments that may cause over-fitting of the endogenous variables and could bias the specification tests of the joint validity of instruments. Therefore, we evaluated the robustness of our GMM results by forcefully cutting

[14] In the system GMM estimator, the endogenous explanatory variables are instrumented with their lags in such a way that the instruments are uncorrelated to the disturbance.

[15] We are aware that the system GMM estimator has some critical aspects, as shown by Roodman (2009), regarding instrument proliferation. For this reason, we also used alternative methods, such as OLS, GLS and Random effects estimators, which confirm the robustness of the results.

[16] Sargan (1958) and Hansen (1982). We have run this test several times with the same model, treating the independent variables alternatively as strictly exogenous and/or as predetermined and/or as endogenous.

the numbers of instruments[17] by reducing lag length.[18]
In sum, after controlling for the potential endogenenity problem, the System GMM estimations are robust and consistent.

5. Results

In this section, we comment on our main results shown in tables 6, 7, and 8 and also discuss the robustness checks (tables 9 and 10) for the hypothesis tests. We conducted our inference analysis by recurring to several specifications and methods. Ultimately, all the results are robust, but – as it was argued in section 4 – the System GMM Estimator should produce more efficient and consistent coefficients.

[TABLE 6, 7, 8, ABOUT HERE]

Generally speaking, all the estimated equations denote the presence of some robust regularity among the several specifications and alternative profitability ratios used, and show fairly stable coefficients. The goodness of the fit model is reasonable, as the R squared overall ranges from 74% to 84%.[19]

[TABLE 9, 10 ABOUT HERE]

Turning to the explicative variables, as we expected *Hfact* dummy is always positive and statistically significant, confirming our assumption on the presence of extra profits in the health sector for the benchmark factoring company's stakeholders, and in particular for their shareholders. At mean, the financial performance of this intermediary is 2% higher than that of the industry.
In support of this hypothesis and in general, the coefficient of lagged dependent variable (γ) is positive and highly significant for ROE. This seems to confirm that the factoring industry tends to segment the market by creating market niches, so that it operates in monopolistic competition. This result might imply that these Italian intermediaries act in a context which is a far from being a perfectly competitive market structure.[20]
On average, the coefficient of the *leverage* variable is positive and highly significant related to the proxy (ROA and PROFIT). An expansion in the debt ratio of 1% determines an increase in corporate returns, at mean, of 8%. In general terms, this positive relation is typical for intermediaries; but in the context of our analysis, for factoring companies, it is even more so, because they are less subject to credit risk. Indeed, the maturity of loans is typically very

[17] We estimate the model using the "collapse option" for the instruments, which specifies that xtabond2 should create one instrument for each variable and lag distance, rather than creating one for each time period, variable, and lag distance. In small samples, the collapse option can attenuate the bias that arises as the number of instruments climbs toward the number of observations. When in higher number, the instruments tend to overfit the instrumented variables and bias the results toward those of OLS/GLS. (Roodman 2009b)
[18] As recommended by Roodman (2009a) the number of instruments used in a dynamic GMM estimator should be relatively low and lower than the number of observations. In our analysis we use 13-15 instruments, a number that is relatively smaller than our sample consisting of 60 observations. The "optimal" number of instruments has been achieved by using the restriction of three lags for the predetermined variables and by using only the second lag for the endogenous. Also, it must be noted that only equations in level have been adopted. Finally, we have estimated the model by further reducing the number of instruments; however, these further reductions worsen the diagnostic tests (specifically, they resulted in a lower Sargan p-value), indicating that the number of instruments we have selected should be fairly "optimal".
[19] Given the high value of the R square index and the multicollinearity problem that may arise, we report (in table 9) the variance inflation factor test and the relative tolerance values, a widely used measure of the degree of multi-collinearity of the **i**th independent variable with the other independent variables in a regression model. Rules of thumb for values of VIF have been found in literature (e.g. Marquardt 1970; Neter et al. 1989; Menard, 1995, among others), such as the rule of 4, rule of 10, etc. When VIF exceeds these values, multicollinearity is a serious problem and consequently the results of the econometric analysis are largely biased. In our analysis, the VIF coefficients are all well below these thresholds (medium value of 2.06) and confirm the absence of the multicollinearity problem in our study. Furthermore, as O'Brien (2007) has shown, those thresholds need to be interpreted in the context of other factors that influence the stability of the estimates. Therefore, in table 10 we report the correlation matrix of coefficients of regress model; the table also shows low correlation coefficients among the explicative variables.
[20] Conversely, the persistence of profits is not significant for the PROFIT and ROA variables, as these ratios are not full indicators of profitability such as the ROE.

short-run and, at the same time, the factoring operation occurs with the selection of the less risky loans in terms of creditworthiness. In sum, an increase in debt ratio, associated with a positive net interest margin, improves corporate financial performance. On the contrary, the coefficient of the leverage variable is negative and significant for ROE: a 1% increase in the debt ratio determines, at the sample mean, a dramatic 25% reduction in corporate returns. This indicates that capital structure may be heavily skewed toward financial debt. There are several possible theoretical explanations for our findings. In literature, such an inverse relationship between corporate value (ROE) and leverage is justified by the pecking order theory (Myers and Majluf, 1984).[21] According to this theory, companies finance their investments firstly from internal resources, i.e. profitable firms use their primary earnings; then, once endogenous funds are used up, companies turn to debt financing. Lastly, they opt for a share capital increase as a final source of funding. This hierarchy of financing sources is due to several principal reasons: firstly, the asymmetric information presence in the financial markets, which increases the cost of issuing equity;[22] secondly, old shareholders tend to limit share issues in order to retain control of the company, given that factoring companies in Italy are held by banks which expand their supply; thirdly, the internal financing strategy allows cost-saving transactions. In sum, profitable companies use less leverage and, in so doing, produce a higher corporate value that will be positively correlated with corporate performance and negatively linked with debt. Therefore, the results of this study are consistent with the pecking order theory. Alternatively, the leverage affects negatively the ROE when the operative spread is negative, that is, when it constitutes a cost of debt capital higher than operating income.

Finally, to further examine the causality between leverage and profit measures, we run a Granger causality test which confirms that lagged leverage ratios tend to predict higher future profits in terms of ROA and Profit, while for ROE we cannot reject the null hypothesis and, therefore, leverage does not "Granger-cause" Return on Equity. Hence, this latter finding can be interpreted in an inverse way, i.e. an increase in the ROE ratio raises corporate capitalization and at the same time reduces the debt ratio.

The productivity proxy appears to be the most important factor to explain profitability in terms of ROE: as we have predicted, it is shown to be larger when the productivity rate (*Prod*) is positive. This suggests that in terms of operational efficiency, higher productivity generates profits that are partly directed to corporate returns. This positive impact is consistent with earlier studies that use the same proxy variable (e.g. Casu and Girardone, 2004) and with other empirical studies adopting other variables such as operating costs to total assets (e.g. Ataullah *et al*. 2004; Athanasoglou *et al*. 2008).

Turning to the impact of risk (*risk*) and specific credit risk (*Nploan*), in contrast with previous studies (e.g. Bonaccorsi and Berger, 2006; Lee and Li, 2012), the estimated coefficients to capture the contribution of risk (volatility of ROE) to corporate performance are positive and almost always statistically significant, except for *Profit*. In other words, riskier companies present more profits than safer firms. Also, the positive correlation is more than proportional for the return on equity ratio and a 1% increase in profit volatility determines an increase in profits of 5% for ROA: that is to say, volatility of earnings requires greater corporate returns. This finding can be ascribed to the standard risk-return trade-off relationship, according to which, companies with higher variability in operating income are expected to have higher

[21] The pecking order theory of capital structure is a theory stating that, all other things being equal, companies seeking to finance a new project or product have a hierarchy of preferred financing options that progresses from the most to the least preferred.

[22] Issuing new equity leads to a decline in a company's stock price, because, perceiving that managers consider the company to be overvalued, investors usually monetize this overvaluation. As a consequence, the company's value decreases, while the cost of external financing increases.

returns. However, for ROE, the empirical findings are not univocally robust, nor they are necessarily statistically insignificant.
Meanwhile, the other measure of risk, namely the Non-performing loan ratio (*Nploan*), is found to have a negligible impact and is not significantly related to any performance measures. This implies that Italian factoring companies accurately handle credit risk management by selecting only risk-free loans.
Finally, all estimated equations show that the effects of both the ratio turnover to credit (*Eff*) and credit to onerous debt (*Credit*) on profitability appear not to be important in any regression. This entails that both duration and size of credits does not affect corporate financial performance. An explanation for these results may be that these ratios are more important in the context of bank intermediary performance analysis, while in the context of our analysis of factoring they are less important, as factoring operations are less risky than the loans granted. In addition, differently from banks, factoring intermediaries do not finance themselves by collecting from bank deposits at sight. This implies that they are less subject to liquidity constraint and that consequently their cash management is easier and does not negatively affect profitability.

6. Concluding Remarks

This paper investigates the profitability determinants of what is – in terms of GDP – the most important factoring industry in the world. Three financial variables – ROA, ROE and Profit – are used to measure corporate financial performance over the period 2006-2012. Our research constitute a further contribution to the extensive literature on the financial performance of intermediaries and several concluding remarks can be drawn from our empirical findings.
First of all, they confirm that the factoring industry is far from being a full competitive environment and this is particularly so for the health sector. Given the available information, we cannot impute why and from where these extra profits originate. In order to explain subnormal profits, there are several reasons such as, barriers to entry, collusive agreements, niche markets, with ensuing monopoly rents. A further reason could be the systematic delay of INHS receivables payments that generates a high volume of factor activities and, consequently, of high profits. The Public Administration's delay in payments has a negative impact on the suppliers that operate in the health sector, and they recoup these costs by increasing the price for procurements.
Furthermore, corporate returns tend to persist over time, providing support for the hypothesis that the market structure in which the intermediaries operate takes the form of monopolistic competition rather than that of perfect competition.
Moreover, our results confirm earlier empirical analysis as well as theoretical studies (agency costs theory and pecking order theory), which show that higher leverage is associated with higher profits. However, this relationship is not robust across all the estimations. Besides, our empirical findings provide support for rejecting the hypothesis of perfect substitutability between internal and external financing. Finally, our empirical evidence seems to imply that profit efficient factoring companies have a high risk-return profile.
In conclusion, our analysis focuses on micro-evidence and therefore, we find significant determinants of profitability at the micro level. However, given the huge size of the Italian public healthcare debt, our results do not necessary imply non-negligible effects on the macro-level. Therefore, potential extensions of the present study might consist in an investigation into the costs of this inefficiency for the collectivity and/or an evaluation of our results within a macroeconomic framework such as DSGE models.

References

Arellano, M. and O. Bover (1995) "Another look at the instrumental variable estimation of error-components models". *Journal of Econometrics*, **68**, 29-52.

Ataullah, A., Cockerill, T. and H. Le (2004) "Financial liberalization and bank efficiency: a comparative analysis of India and Pakistan". *Applied Economics*, **36**(17), 1915-1924.

Athanasoglou, P.P., Brissimis, S.N. and M.D. Delis (2008) "Bank-specific, industry-specific and macroeconomic determinants of bank profitability". *Journal of International Financial Markets, Institutions and Money,* **18**(2), 121-136.

Berger, A.N. (1995) "The relationship between capital and earnings in banking". *Journal of Money, Credit and Banking*, **27**(2), 432-456.

Berger, A.N. and D.B. Humphrey (1997) "Efficiency of financial institutions: International survey and directions for future research". *European Journal of Operational Research*, **98**(2), 175-212.

Berger, A.N. and E. Bonaccorsi di Patti (2006) "Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry". *Journal of Banking & Finance*, **30**, 1065-1102.

Blundell, R. and S. Bond (1998) "Initial conditions and moment restrictions in dynamic panel data models", *Journal of Econometrics,* **87**, 115-143.

Bond, R., Hoeffler, A. and J. Temple (2001) "GMM Estimation of Empirical Growth Models", *CEPR Discussion Paper*, No. 3048.

Cameron, C., and P.K. Trivedi (2011) *Microeconometric, Methods and Application*, Cambridge University Press (Virtual Publishing): Cambridge.

Carvallo, O. and A. Kasman (2005) "Cost efficiency in the Latin American and Caribbean banking systems". *International financial Financial Markets, Institutions and Money*, **15**, 55-72.

Casu, B. and C. Girardone (2004) "Financial conglomeration: Efficiency, productivity and strategic drive". *Applied Financial Economics*, **14**, 687-696.

Claver, E., Molina, J. and J. Tarí (2002) "Firm and industry effects on firm profitability: A Spanish empirical analysis". *European Management Journal,* **20**(3), 321-328.

Demirguc, A. and H. Huizinga (1999) "Determinants of commercial bank interest margins and profitability: Some international evidence". *World Bank Economic Review*, **13**(2), 379-408.

Fama, E. and M. Miller (1972) *The theory of finance*, Holt, Rinehart and Winston: New York.

Ferretti, R. and P. Vezzani (1992) "Cost efficiency and profitability in leasing and factoring. The Italian case". University College of North Wales, *Research Papers in Banking and Finance*, No. 2.

Fiordelisi, F. and P. Molyneux (2004) "Efficiency in the factoring industry", *Applied Economics*, vol. **36**(9) 947-959.

Hansen, L.P. (1982) "Large sample properties of Generalized Method of Moments Estimators", *Econometrica*, **50**, 1029-1054.

Harris, M. and A. Raviv (1990) "Capital structure and the informational role of debt". *Journal of Finance*, **45**, 321-349.

Hoque, M.Z., Islam, M.R. and M. N. Azam (2013) "Board committee meetings and firm

financial performance: An investigation of Australian companies". *International Review of Finance*, **13**(4), 503-528.

Jensen, M. and W.H. Meckling (1976) "Theory of the firm: Managerial behavior, agency costs and ownership structure". *Journal of Financial Economics,* **3**(4), 305-360.

Lee, B.S. and M.Y.L. Li (2012) "Diversification and risk-adjusted performance: A quantile regression approach". *Journal of Banking and Finance*, **36**, 2157-2173.

Levin, A., Lin, C.F, and C.S.J. Chu (2002) "Unit root tests in panel data: Asymptotic and finite-sample properties". *Journal of Econometrics*, **108**, 1-24.

Marquardt, D.W. (1970) "Generalized inverses, ridge regression, biased linear estimation, and nonlinear estimation". *Technometrics*, **12**, 591– 256.

Menard, S. (1995) *Applied Logistic regression analysis*. Sage University Series on Quantitative Applications in the Social Sciences.

Neter, J., Wasserman, W. and M.H. Kutner (1989) *Applied linear regression models*. Homewood, IL: Irwin.

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*, **13**(2), 187–221.

Myers, S.C. (2001) "Capital structure" *Journal of Economic Perspectives,* **15**(2), 81-102.

Norvaisiene, R. (2012) "The impact of capital structure on the performance efficiency of Baltic listed companies". *Inzinerine Ekonomika-Engineering Economics*, **23**(5), 505-516.

O'Brien, R.M. (2007) "A caution regarding rules of thumb for variance inflation factors". *International Journal of Methodology*, **41**(5), 673-690.

Roodman, D. (2009a) "A Note on the theme of too many instruments". *Oxford Bulletin of Economics and Statistics*, **71**(1), 135-158.

Roodman, D. (2009b) "How to Do xtabond2: An introduction to "Difference" and "System" GMM in Stata". *Stata Journal* , **9**(1), 86-136.

Sargan, J.D. (1958) "The Estimation of economic relationships using Instrumental Variables", *Econometrica*, **26**, 393-415.

Weygandt, J. J., Kieso, D. E., and W. G. Kell (1996) *Accounting Principles* (4th ed.), Wiley & Sons: New York.

Windmeijer, F. (2005) "A finite sample correction for the variance of linear efficient two-step GMM estimators". *Journal of Econometrics*, **126**, 25-51.

Yildirim, C. (2002) "Evolution of banking efficinecy within an unstable macroeconomic enviroment: The case of Turkish commercial banks. *Applied Economics*, **34**, 2289-2301.

Zeitun, R. and G.G. Tian (2007) "Capital structure and corporate performance: evidence from Jordan". *Australasian Accounting Business and Financial Journal*, **1**(4), 40-61.

Appendix

Table 1. Total Factoring Volume to GDP (%)

	Euro area	France	Germany	Italy	United Kingdom	United States	World
1994	1.8085	1.637	0.521	4.044	3.802	0.783	0.554
1995	1.832	1.877	0.494	4.224	3.892	0.715	0.606
1996	1.9155	2.153	0.67	4.33	4.526	0.738	0.7235
1997	2.5295	3	0.972	6.699	6.719	0.922	0.8935
1998	3.533	3.533	1.093	7.271	6.772	0.936	0.9375
1999	3.659	3.659	0.943	7.315	6.883	0.945	0.984
2000	3.675	3.675	1.157	9.257	7.8	0.956	1.153
2001	3.994	4.548	1.403	9.998	8.342	0.89	1.236
2002	4.824	4.871	1.575	11.553	10.273	0.899	1.103
2003	4.857	5.102	1.807	10.93	10.829	0.905	1.517
2004	5.2035	5.367	2.235	9.422	11.339	0.932	2.007
2005	4.6495	4.922	2.354	7.341	12.192	0.88	1.83
2006	5.51	5.849	3.273	8.478	13.387	0.947	1.833
2007	6.099	6.876	3.904	8.43	14.804	1.01	2.4275
2008	6.255	6.727	4.13	7.836	10.007	0.987	2.077
2009	6.423	6.996	4.173	8.419	12.809	0.906	1.906
2010	6.958	7.942	5.257	9.292	13.266	0.871	2.0315
2011	6.7585	8.155	5.71	10.329	14.299	0.902	2.376

Source: our elaboration on World Bank data (Factors Chain International)

Table 2. T-test on the Intermediate Margin over Total Assets and Turnover

Dataset	Our sample	Population
Sample size	10	31
	Intermediate Margin over Total Assets	
Mean	3.37%	3.12%
Standard deviation	1.52%	1.58%
T	0.4389	
P-value	0.66	
	Factoring Turnover	
Mean	10.867.899	5.461.004
Dev. Standard	16.259.786	10.859.372
T	1.21	
P-value	0.23	

Note: Degree of freedom n. 39. The null hypothesis (i.e. an insignificant difference between the sample mean and the population mean) can be accepted.

Table 3. Financial Ratios of the Sample

	Ratios	2006	2007	2008	2009	2010	2011	2012	Average
1	Capital/Total Assets	5.32%	5.42%	4.89%	4.92%	4.64%	4.36%	4.51%	4.87%
2	Capital/Bearing Assets	5.37%	5.47%	4.95%	4.98%	4.70%	4.41%	4.56%	4.92%
3	Capital/Loans	5.39%	5.47%	4.95%	5.08%	4.86%	4.67%	5.33%	5.11%
4	Loans/Liabilities Burden	107%	108%	106%	104%	102%	99%	90%	102.29%
5	Net Profit/Capital	12.54%	12.89%	14.85%	13.78%	13.17%	12.04%	17.63%	13.84%
6	Operating Profit/Capital	21.92%	21.75%	22.82%	21.32%	20.76%	19.61%	27.81%	22.28%
7	Operating Profit /Total Assets	1.17%	1.18%	1.12%	1.05%	0.96%	0.85%	1.25%	1.08%
8	Net Banking Income/Total Assets	1.12%	0.95%	1.03%	1.12%	0.99%	0.95%	1.49%	1.09%
9	Net Interest Income /Total Assets	1.12%	0.95%	1.03%	1.12%	0.99%	0.95%	1.49%	1.09%
10	Net Banking Income / Net Interest Income	2.28	2.18	2.03	2.02	2.03	2.07	1.65	203.71%
11	Fee Income/Turnover	1.62%	1.29%	1.21%	1.32%	1.21%	1.23%	1.30%	1.31%
12	Spread	1.34%	1.19%	1.36%	1.25%	1.05%	1.07%	1.61%	1.27%
13	Operating Profit/ Net Banking Income	45.52%	56.85%	53.43%	46.10%	48.04%	43.54%	50.79%	49.18%
14	Administrative Cost and Depreciation/ Operating Cost	98.15%	118.38%	121.14%	124.39%	118.44%	124.34%	125.68%	118.65%
15	Cost/Income	37.21%	32.86%	30.93%	26.44%	27.09%	26.04%	19.34%	28.56%
16	Turnover/Employees (€/1000)	52.887	51.173	55.683	56.241	66.017	74.924	77.840	62.109.29
17	Loans/ Employees (€/1000)	13.868	16.707	18.109	18.852	21.659	21.583	21.902	18.954.29
18	Turnover/ Administrative Cost And Depreciation	402.5	376.04	387.96	386.23	452.57	509.17	500.74	430.74
19	Loans/ Administrative Cost And Depreciation	105.54	122.77	126.17	129.47	148.48	146.67	140.9	131.43
20	Gross Impaired Loans/Loans	4.68%	3.71%	4.78%	4.70%	5.48%	4.63%	6.70%	4.95%
21	Net Impaired Loans/Loans	2.88%	2.34%	3.54%	3.37%	4.34%	3.32%	5.05%	3.55%
22	Net Impaired Loans /Capital	53.47%	42.77%	71.53%	66.32%	89.25%	71.02%	94.66%	69.86%
23	Net Impaired Loans / Gross Impaired Loans	61.55%	63.06%	74.14%	71.67%	79.07%	71.75%	75.33%	70.94%
24	Gross Non-Performing Loans/Loans	2.10%	2.05%	1.80%	2.33%	2.84%	3.66%	6.32%	3.01%

Source: our elaboration on companies' financial statements.

Table 4. Financial Ratios of our Factoring Benchmark

	Ratios	2006	2007	2008	2009	2010	2011	2012
1	Capital/Total Assets	8.35%	9.06%	8.69%	10.50%	11.91%	12.10%	17.07%
2	Capital/Bearing Assets	8.57%	9.29%	8.89%	10.75%	12.28%	12.55%	17.80%
3	Capital/Loans	8.58%	9.30%	8.89%	10.75%	12.29%	12.55%	17.80%
4	Loans/Liabilities Burden	109%	111%	112%	113%	116%	114%	123%
5	Net Profit/Capital	14.97%	16.48%	17.72%	23.37%	26.07%	19.90%	23.63%
6	Operating Profit/Capital	25.08%	26.69%	27.53%	35.35%	39.34%	30.34%	35.91%
7	Operating Profit/Total Assets	2.09%	2.42%	2.39%	3.71%	4.69%	3.67%	6.13%
8	Net Banking Income/Total Assets	3.10%	3.96%	3.96%	5.05%	5.92%	4.79%	7.77%
9	Net Interest Income/Total Assets	2.37%	3.22%	3.72%	4.37%	4.93%	4.12%	7.23%
10	Net Banking Income/Net Interest Income	1.31	1.23	1.07	1.16	1.2	1.16	1.08
11	Fee Income/Turnover	0.67%	0.77%	0.65%	0.67%	0.70%	0.72%	0.75%
12	Spread	2.01%	2.71%	3.09%	3.99%	4.41%	3.51%	6.23%
13	Operating Profit/ Net Banking Income	67.48%	61.04%	60.36%	73.48%	79.14%	76.67%	78.89%
14	Administrative Cost And Depreciation/Operating Cost	74.88%	113.64%	113.19%	102.81%	108.31%	123.39%	119.00%
15	Cost/Income (On Operating Cost)	53.04%	27.64%	27.43%	26.64%	22.93%	24.34%	21.54%
16	Turnover/Employees (€/1000)	33.734	33.043	30.920	25.675	26.506	21.579	16.725
17	Loans/ Employees (€/1000)	24.261	22.463	23.863	22.140	20.527	16.943	13.154
18	Turnover/Administrative Cost and Depreciation	109.81	115.14	102.88	81.84	85.14	85.4	61.21
19	Loans/ Administrative Cost and Depreciation	78.98	78.27	79.4	70.57	65.93	67.05	48.14
20	Gross Impaired Loans/Loans	0.09%	0.58%	1.43%	1.48%	0.74%	1.48%	1.88%
21	Net Impaired Loans/Loans	0.09%	0.22%	0.72%	0.78%	0.25%	1.17%	1.71%
22	Net Impaired Loans/Capital	1.07%	2.41%	8.14%	7.27%	2.02%	9.32%	9.62%
23	Net Impaired Loans/Gross Impaired Loans	100.00%	38.54%	50.67%	52.83%	33.64%	78.96%	90.91%
24	Gross Non-Performing Loans/Loans	0%	0.47%	1.06%	0.93%	0.49%	1.06%	1.05%

Source: our elaboration on our factoring reference financial statements.

Table 5. Definitions, Notations, and the Expected Effect of the Explanatory Variables of Model on Corporate Profitability

Variables	Definition	Expected Effect	Mean	s. d.	Min	Min
Endogenous Variables						
ROE	Return on Equity		0.1239	-0.074	-0.76	0.37
Profit	Interest Rate Margin Divided by Total Assets		0.0186	0.0114	-0.17	0.06
ROA	Return on Total Assets		0.0141	0.0108	0.01	0.07
Explanatory Variables						
Hfact	Dummy for the Benchmark Factoring Company	Positive	0.01	0.3021	0	1
Eff	Turnover to Credit	Positive	3.2643	1.3770	1.15	8.65
Leverage	Financial Debt to Total Assets	Negative	0.0893	0.0526	0.02	0.25
Risk	St. Deviation over Time of the Firm's Return on Equity	Positive	0.0496	0.0232	0.02	0.10
Credit	Credit to Passivity	Positive	1.0912	0.1504	0.37	1.34
Prod	Operative Income to Intermediate Margin	Positive	0.4471	0.2021	-0.51	0.79
Nploan	Non-Performing Loan to Credits	Negative	0.0376	0.0382	0	0.17
Number of observations	70					
No. of Firms	10					

Source: our elaboration on the companies' financial statements. The data are averages from annual observations referring to 2006-2012.

Table 6. OLS, Fixed Effect and System GMM for the Profitability Variable (Profit)

Variables	OLS	Random-Effect	System GMM
Hfact	0.0184***	0.0184***	0.0212***
	(0.00)	(0.00)	(0.00)
Eff	-0.0009	-0.0076	-0.0084
	(0.00)	(0.00)	(0.00)
Credit	0.0179*	0.0147	0.0185
	(0.001)	(0.01)	(0.01)
Leverage	0.0987***	0.1066***	0.0795***
	(0.02)	(0.028)	(0.02)
Prod	0.0118***	0.0124***	0.0103***
	(0.00)	(0.00)	(0.00)
Risk	0.0241	0.0221	0.0302
	(0.003)	(0.04)	(0.06)
Nploan	-0.0234	0.0170	-0.0405
	(0.004)	(0.005)	(0.09)
Constant	-0.0157	-0.0135	-0.0017
	(0.01)	(0.01)	(0.01)
LAGGED PROFIT			0.0949
			(0.15)
R^2	0.769	0.7680	
AR(1)			z= -1.96
			p-value=0.05
AR(2)			z=0.83
			p-value=0.41
Hansen-test			$\chi^2(6)$=6.34
			p-value=0.38
Sargan-test			$\chi^2(6)$=9.74
			p-value=0.14
Number of obs	70	70	*60*
N of group	10	10	10
Number of instruments			*15*

Note: Statistically significant at the *10%. **5% and ***1% level. Robust standard errors in parentheses.

Table 7. OLS, Fixed Effect and System GMM for the Profitability Variable (ROA)

Variables	OLS	Random-effect	System GMM
Hfact	0.0120***	0.011***	0.0148***
	(0.00)	(0.00)	(0.00)
Eff	0.0002	0.000	0.0002
	(0.000)	(0.00)	(0.00)
Credit	0.003	0.0043	-0.0008
	(0.01)	(0.01)	(0.00)
Leverage	0.0763***	0.0833**	0.0741***
	(0.01)	(0.04)	(0.02)
Prod	0.0381***	0.0376***	0.0362***
	(0.00)	(0.00)	(0.00)
Risk	0.0529***	0.0465*	0.0518***
	(0.02)	(0.03)	(0.02)
Nploan	0.0005	-0.0054	0.0017
	(0.02)	(0.02)	(0.03)
Constant	-0.0149**	-0.0184*	-0.0129**
	(0.00)	(0.01)	(0.01)
Lagged ROA			0.0022
			(0.05)
R^2	0.8441	0.8391	
AR(1)			*z*= -0.89
			p-value=0.37
Ar(2)			*z*=-0.19
			p-value=0.85
Hansen-test			$\chi^2(6)$=1.66
			p-value=0.94
Sargan test			$\chi^2(6)$=4.41
			p-value=0.62
Number of obs	70	70	*60*
N of group	10	10	10
Number of instruments			*15*

Note: Statistically significant at the *10%. **5% and ***1% level. Robust standard errors in parentheses.

Table 8. OLS, Fixed Effect and System GMM for the Profitability Variable (ROE)

Variables	OLS	Random-effect	System GMM
Hfact	0.0293*	0.032	0.0421**
	(0.01)	(0.02)	(0.02)
Eff	-0.0039	-0.032	-0.0023
	(0.00)	(0.01)	(0.00)
Credit	-0.0503	-0.0663**	-0.0646**
	(0.05)	(0.03)	(0.03)
Leverage	-0.3553**	-0.3774	-0.2093*
	(0.15)	(0.29)	(0.12)
Prod	0.2487***	0.2429***	0.1726***
	(0.05)	(0.05)	(0.04)
Risk	0.5327*	0.5499**	0.0585
	(0.35)	(0.27)	(0.23)
Nploan	0.1595	0.0929	0.1225
	(0.17)	(0.11)	(0.19)
Constant	0.0768	0.0979*	0.1054*
	(0.05)	(0.04)	(0.06)
Lagged ROE			0.1985***
			(0.07)
R^2	0.7383	0.7370	
AR(1)			*z*= -1.46
			p-value=0.14
Ar(2)			*z*=-1.03
			p-value=0.30
Hansen-test			$\chi^2(4)$=3.21
			p-value=0.52
Sargan test			$\chi^2(4)$=5.11
			p-value=0.28
Number of obs	70	70	*60*
N of group	10	10	10
Number of instruments			*13*

Note: Statistically significant at the *10%. **5% and ***1% level. Robust standard errors in parentheses.

Table 9. Centered Variance Inflation Factors (Vifs) for the Independent Variables Specified in the Linear Regression Model

Variable	VIF	1/VIF
Hfact	2.04	0.490855
Eff	2.11	0.474958
Leverage	2.12	0.472063
Risk	1.11	0.902441
Credit	2.74	0.365407
Prod	1.67	0.598900
Nploan	2.62	0.381692
Mean VIF	2.06	

Table 10. Correlation Matrix of Coefficients of Regress Model

E(V)	Hfact	EFF	Risk	Credit	Leverage	PROD	Nploan	Constant
Hfact	1.00							
Eff	0.4996	1.00						
Risk	0.2356	0.0793	1.00					
Credit	-0.2017	-0.5479	0.0043	1.00				
Leverage	-0.3199	0.0349	-0.2508	-0.4842	1.00			
Prod	-0.4133	-0.1100	-0.0998	0.2268	0.1302	1.00		
Nploan	0.0184	-0.3353	0.1046	0.6779	-0.5465	0.3199	1.00	
_Constant	0.1399	0.2967	-0.1658	-0.8997	0.3778	-0.4783	-0.7142	1.00