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Corporate or Network Governance? The case of the Italian Productive Chains and their scaffolding finance approach.

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ABSTRACT

We investigate and find out the inner differences between stand-alone firms and those participating to Productive Chain Networks (PCNs) as far as ownership and corporate governance characteristics are concerned. PCNs are typical Italian economic realities made of small and medium enterprises (SMEs) which behave like a unique meta-firm. Different clusters are found from an empirical analysis: firms outside PCNs, leaders in PCNs and suppliers participating to PCNs. The clusters differentiate on corporate governance practices and the consequent capability to attract funding from financial institutions. The inner differences in governance structure relate to the underpinnings of the competitive advantage of the chain: the higher the human capital contribution, the more the governance frame diverts from standard managerial models. Our empirical findings show that the typical banks' financing system (i.e. as it stems from Basel II and III rules) prefers to allocate credit to firms with worse corporate governance attributes, since a scaffolding finance approach links to the adopted models of firm's governance when participating to PCNs.

Keywords: Corporate Governance, Firm Boundaries, Productive Chain Networks, Scaffolding Finance
JEL codes: D85, G28, G31, G32, M10, M51

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I. Introduction

Italy is typically thought as the Kingdom of Small and Medium Enterprises (SMEs), with weak and vulnerable capital structures. Their long-term competitive advantage seems to root more into the Entrepreneurial Competences, as crafted by the owner/founder of the firm, than into the efficiency in managing assets. Accordingly, the governance of the Italian firms tends to divert from standard managerial models, given the wider control of the firm given to the Entrepreneur. Direct consequences of this particular model of corporate governance are the biased financial structures of these companies: higher levels of debt-to-equity ratios along with a generalized capital rationing status, as driven by higher agency costs. Nevertheless, these companies demonstrate an unusually high survival ratio which let intuited that such model solutions must have some positive elements.

The high frequency of SMEs, as reported from Italian statistics, is often the consequence of surveys based on the legal status, only, of the firms. Since these firms are separated legal bodies, they are usually thought to be independent as far as the governance relationships are concerned. A more careful transaction analysis approach, however, shows that these companies are less independent than it might appear in the evidence sourced from their legal profile. In fact, according to Mantovani and Daniotti (2012, page 84), there is a wide evidence of business networks which behave as a unique “meta-firm” even if they are made of several legal entities. The inner characteristic of these bodies is the specific contribution provided by each member of the network to its overall competitive advantage. This is made, particularly, through specific capabilities of each member to provide superior efficiency in the use of productive inputs, meanwhile those members are particularly capable to coordinate themselves as components of a unique (larger) firm. Frequently, a “network leader” is selected between them to have a more efficient and cooperative behavior; such a leader is often the gateway for specific market transactions. The final evidence is a productive-chain network (PCN) which behaves like a unique larger (meta)firm, but has, at least, the same flexibility of SMEs as boosted by the higher capability to substitute any of its component without shutting down the PCN itself.

Melting different legal bodies into a unique meta-firm like a PCNs might increase the difficulties of SMEs both in managing governance and in financing the investments. In fact, the above normal agency risk that characterizes entrepreneurial businesses might either explode or drop down given the actual behavior of PCNs and their components of the structure. The lack of a clear legal perimeter of the meta-firm strongly contributes to detect the fair risk of any PCN member. This is why PCNs seems to adopt a “scaffolding” finance approach, usually obtained by delegating the financial managerial function to one of the member firms (Mestroni et al., 2013). Credit allowances are therefore given to the financial leader which intermediates them for the entire PCN and

is called to bear the overall agency risks, as generated by the governance of the members inside the network.

To insulate firms inside PCNs from the stand-alone ones (SA), we adopt Mestroni et al. (2013) methodology. Such an approach let us cluster the firms between leaders (LF) and support members (SF) of the PCN. Standard models to investigate corporate governance characteristics of private firm inside the network (both LF and SF) are adopted to compare results with those for SA. We think this analysis is important because good corporate governance practices assist SMEs in improving their funding capabilities without any rationing. According to Claessen et al. (2002), better corporate frameworks benefit firms through greater access to financing, lower cost of capital, better performance and more favorable treatment of all stakeholders. Donaldson (2003) posits that good corporate governance is important for increasing investor confidence and market liquidity. However, while the literature relates mainly to large managerial corporations, Entrepreneurial Business and SMEs' corporate governance are less investigated, while nothing refers to PCNs and their scaffolding finance.

In this paper, the focus of analysis is on relations existing between the governance of the firms participating to a PCN and their financial performance, including the capability to reap debt capital. We carry on an empirical analysis over a particular geographic area in the North East of Italy, which is made up of three regions: Veneto, Friuli Venezia Giulia and Trentino Alto Adige. The reason of this focus, is a direct consequence of the higher frequency of PCNs along with its economic relevance. In fact, one fourth of the private Italian GDP is produced here, while one fifth of the national population resides there and one third of total national exports originate from there (Cannari et al., 2011).

This paper aims to contribute to fill this gap, by studying the relationship between various corporate governance characteristics with past and future performance as well as with the ability to raise capital. In fact, we believe that corporate governance information can add value to the overall efficiency of the credit allocation system, which in turns contributes to the success of SMEs growth and for PCNs as well. We try to detect whether a set of more qualitative characteristics of the governance (e.g., ownership concentration and structure, CEO duality and board independence, team and board size) are linked to firm performance, its merit of credit (as defined by Mantovani et al., 2013) and finally whether the real banking system considers them in deciding whether or not to give debt financing.

Accordingly, the paper is organized as follows: section 2 presents current literature on the topic; section 3 deploys the empirical evidence emerging from our research effort; section 4 discusses results and concludes. We find that there are differences in ownership and corporate governance characteristics for the three clusters of firms in four out of seven variables studied in this analysis. An interesting result of this paper is that true behaviors of banks prefer governance-inefficient firms, while the

new rating system (i.e. based on persistency of ex-ante performance according to Mantovani et al., 2013) prefers governance-efficient firms.

II. Background Why corporate networks could do it better: a literature review

Modern managerial approaches require a transparent corporate governance arrangement. This is coherent with the classic separation theorem of financial literature. In fact, the governance framework becomes a must when corporate liabilities are intended as contingent claims over corporate assets. The best practices in "corporate finance" are typically coherent with this approach. This is also why researchers concentrate over the links between corporate governance and financial performance.

Entrepreneurial finance seems to tell us very a different story. Liabilities appear to be contingent claims over the contribution that the Entrepreneur's capability may give to sustainability of financial performances (Mantovani, 2015). Consequently, the required governance for entrepreneurial businesses may differ from standard models in managerial businesses. This is a direct consequence of the necessity to guarantee to the Entrepreneur a wider control over the business. The risk of misperception over such a diversion is then very high: an entrepreneurial requirement may be intended as a corporate bias.

Mantovani and Daniotti (2012) discover an interesting relationship among manufacturing enterprises within the Treviso² District: for every eight companies, there exists a bigger firm which has access to bank credit and re-distributes it to the supplier. The pool of the 1+7 legal entities tends to act as a unique (larger) firm, being more flexible than a stand-alone company and having the opportunity to substitute/integrate in an easy way any missing requirement by substituting some members participating to the group. Accordingly, the resulting PCN made by these companies is a meta-firm indeed. In fact, it has an economic frame that goes beyond the legal entities composing it, but behaves as a unique economic agent. Inside the framework, bigger companies tend to invest in productive capital, while the smaller ones seem to be more sunk in human capital. Accordingly, the bigger companies usually act as coordinators because of their higher concentration of tangible assets to fund. At the same time, they are also claimed to act as coordinators of the chain against its stakeholders.

² Treviso is a major manufacturing town in the Venetian Area

What about the governance of these cooperating businesses? Can they be run through the governance models as adopted by corporations and/or entrepreneurial business? Is their financial performance impacted by the solutions they tend to adopt? Are credit allowances impacted? These doubts drive the paper to investigate on the gaps existing between stand-alone firms and wider meta-firms as PNCs as far as governance, performance and financial policies are concerned.

A. Corporate Governance and Firm Performance: what about PCNs?

According to the OECD principles (2004), corporate governance refers to the system by which corporations are directed and controlled. The governance structure specifies the distribution of rights and responsibilities among different participants in the corporation (such as the board of directors, managers, shareholders, creditors, auditors, regulators, and other stakeholders) as well as the rules and procedures for making decisions in corporate affairs. Hence, it is natural to expect a link between corporate governance firm characteristics and its performance. Existing literature confirms the presence of a positive association between good corporate governance and firm performance. In fact, there are several studies in the literature, which establish a positive association between corporate governance firm characteristics and firm performance such as Rajan and Zingales, 1998; Brickly et al., 1994; Williams, 2000; Drobetz et al., 2003; Byrd and Hickman, 1992; Hossain et al., 2001; Rosenstein and Wyatt, 1990; Gemmill and Thomas, 2004; Weisbach, 1988.

In this study, we are dealing with Italian private SMEs. Italy is a particular case because the majority of SMEs are family enterprises (Corbetta, 2002), firms in which the majority of the capital is held by one, or few, families. In family firms, the entrepreneur is used to concentrate all responsibilities in his hands and the governance structure may not be considered a relevant issue.

The family might choose either to act mainly as an owner/inspector, leaving the executive power to professional managers, or to act both as owner and leading manager (Dyer, 1989; Daily and Dollinger, 1992; Gersick et al., 1997). In the first case, the Agency Theory (Jensen and Meckling, 1976; Fama and Jensen, 1980) postulates that the separation between ownership and control requires an agency relationship. In family companies, separation of ownership from control arises with fragmented ownership and reduced family member participation in the business (Johannisson and Huse, 2000). Within this framework, it is recommended that: i) the board should be made up mainly from “non-executive” directors, ii) the CEO and the Chairman of the Board should be two different persons, iii) bigger boards are better than smaller ones. In the second case, the Stewardship Theory (Donaldson and Davis, 1991; Davis et al., 1997; Muth and Donaldson, 1998; Doucouliagos, 1994), the goals of the family ownership and the nonfamily managers seem to be aligned, which translates into the following guidelines: i) the involvement of the executive directors increases the effectiveness of the board

activities; ii) the leadership structure is preferable to the separated one; (iii) the size of the board of directors should be small.

Despite the type of framework adopted, according to the OECD Principles of Corporate Governance (2004), an effective corporate governance system can lower the cost of capital and encourage firms to use resources more efficiently, thereby promoting growth. These factors implicitly and explicitly support the belief that better corporate governance will result in higher firm value and more profitable firm performance. Hence, we formulate the first research questions of this study:

RQ1. What kind of distinctive relationships exist between a set of corporate governance and ownership indicators and the historical firm performance (e.g. ROI) in PCN member firms?

There are different ways to measure corporate governance characteristics. We concentrate on the most utilized in the literature, as well as we are limited in our analysis by data availability. The level of Ownership Concentration is well studied in the literature but with no clear conclusion on what constitutes a positive impact on the firm. In fact, according to Berle and Means, 1932; Leech and Leahy, 1991; Prowse, 1992; Agrawal and Knoeber, 1996; and Cho, 1998, it appears that owner controlled firms (where there is one equity holder with a block exceeding 10%) outperform manager controlled firms. Hence, for US and UK data, the empirical evidence is supportive of the hypothesis that large shareholders are active monitors in companies and that direct shareholder monitoring help boost firm performance. However, empirical studies on other countries' datasets (Germany, France, Australia and Japan) arrive at different conclusions. One thing to notice is that US and UK have, in general, lower concentration levels and it could well be that once concentration levels are very high, more monitoring may not improve things. Italy is a country with the highest level of concentration (OECD, 1999).

The Presence of a Manager in the Ownership Structure is another variable that we will study. Its importance goes back to the work of Jensen and Meckling (1976), who suggest that managerial ownership affects the value of a firm, and that of Morck et al. (1988), who think that the stake of managers in firm ownership can act as a mechanism to align the interests of managers and owners, and ultimately affect firm value.

Additionally, we look at Team Size or the number of people involved with the management of the firm. We adjusted these variables based on firm size.

We think it is particularly interesting to study the variable One Manager for the Italian SMEs sector, because it is not uncommon to find this situation and we deem it an important governance characteristic. Team Size and One Manager are related to the literature, which studies the impact of the efforts of an entire team compared to a single person based on the belief that teams are “essential to the specialized work of maintaining the organization in operations (Barnard, 1938; Hambrick, 1989)”

We also look at CEO Duality. Harris and Helfat (1998) support that absence of CEO Duality have a negative impact on firm's performance mostly due to agency problems and the lack of development of a succession plan and of managerial capabilities

According to agency theory (Fama and Jensen, 1983; Shleifer and Vishny, 1997), Board of Directors Independence, that is boards with a majority of non-executive directors reduce agency conflicts because non-executives provide an effective monitoring tool for the board.

Board of Directors Size is adjusted by firm size³. Literature agrees in finding a negative effect of Board Size on firm performance mainly due to negative effects from poor communication and difficult decision-making procedure (Guest, 2009). However, these studies focus on large companies while for SMEs the effect is not so clear. Bennedsen et al (2007) find that also for SMEs the effect is negative.

B. *In the middle of the Market/Hierarchy puzzle: the PCN solution*

The idea of a productive chain network is not new within the theory of the firm. According to Coase (1937) as well as Williamson (1975, 1981), when transacting parties must make relationship-specific investments in an environment of incomplete contracting, it is sometimes better to integrate the transacting parties into a single firm. Given a growing awareness of the efficacy and effectiveness of hybrid organizations, many authors try to re-define firm boundaries, Butler (1982) supports the existence of numerous forms of organizations that mix market and hierarchies solutions, in which the discriminating factors are the levels of communication and collaboration. Nacamulli (1985), instead, supports that firms seek resources control and make no difference whether it is reached through formal firm boundaries enlargement or inter-firms relationships. Alchian and Demesetz (1972) find the origin of hybrids forms of integration in production technology, where output is not the mere sum of different inputs but it needs the combination of shared resources and competencies. According to Rugiadini (1985), if integration depends on shared resources and competencies, a tradeoff between transactional costs (market) and structural costs (hierarchy) must exist. A feed-back correction mechanism, in a context of limited rationality, helps to reduce the costs of integration. However, in an inter-firm collaboration context, it can be implemented only if there is mutual trust (Butler and Carney 1983). Trust, in fact, allows to reduce control costs, avoiding moral hazard (Eccles 1981), and contemporary, it

³ Size criteria elaborated on the base of 96/280/EC: Commission Recommendation of 3 April 1996 concerning the definition of small and medium-sized enterprises

facilitates the know-how transmission and sharing (Teece 1980). Such elements determine the optimal firm boundaries that, as authors say, can be enlarged also through inter-firm collaboration. Integration among the firms in the same chain production, is an example of market and hierarchy's mechanism mix with specific investments, shared resources, feed-back mechanisms and mutual trust built in long-term relationships.

In this context of uncertainty for the definition of the optimal firm boundaries, it is very important to identify aggregates of smaller and larger firms and study their performance and risk characteristics (Rugiadini, 1985; Porter and van der Linde, 1995; Garzella, 2000; Broglia Giuggi, 2001; Cainelli and Iacobucci 2011).

Mestroni et al. (2013) propose a methodology to identify the PCNs aggregations and their components. Figures 1 and 2 (Mestroni et al., 2013) represent the different financial activities of a Leader Firm (Scaffolding Finance) and a Stand Alone firm (Corporate Finance).

Figure 1: Typical corporate investments and financing of a Stand Alone firm (SA).

Financial relations in the case of a Stand-Alone firm that does not present significant collaborative relationships among its supply chain. The firm funds (equity and debt resources) only to finance its business (investments and working capital). Where, Net Financial Resources = Equity + Net Debt

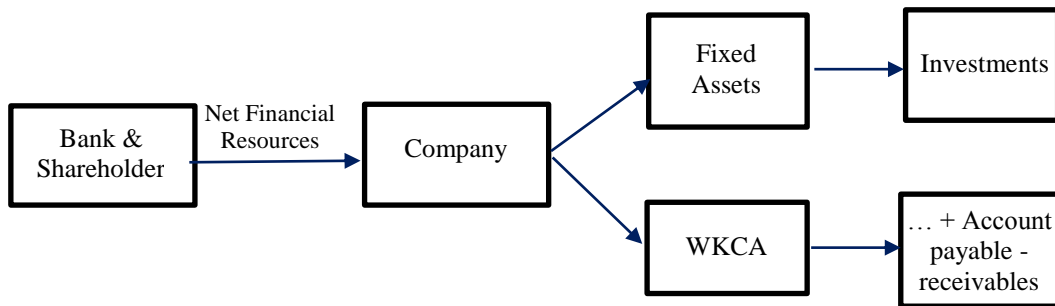


Figure 2: Scaffolding finance relations for a Leader firm (LF) heading a collaborative PCN.

Financial relationships among a Leader Firm and its supply chain network. The Leader Firm collects financial resources (equity and debt resources) to support both its own business (investments and working capital) and the cash needs of its productive chain. The Leader Firm finances the productive chain by using favorable conditions in

commercial transaction, instead of financial transactions, which generate above normal working capital intensity and added financial needs to Supporter Firm.

Where, Net Financial Resources = Equity + Net Debt

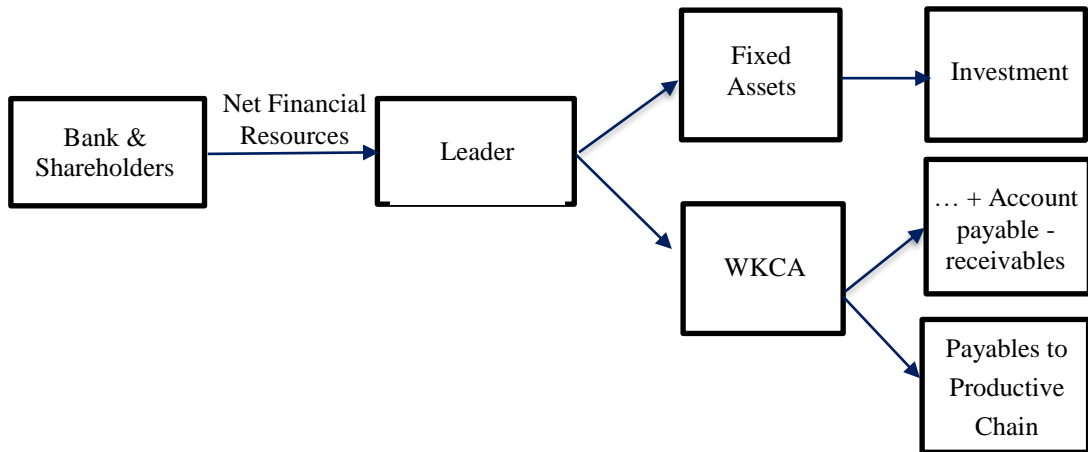


Figure 1 depicts a stand-alone firm (SA), which uses financial resources for its corporate needs, only. On the other hand, (Figure 2) leading firms (LF) intermediate financial resources for the entire chain network and allocate them into the PCN using the working capital, since commercial relationships to the supporter members of the chain (SF) are the most controllable allocative solution. The main differences between leader firms (LF) and stand-alone ones (SA) is the dimension and economic composition of invested assets. LF presents strong relations to its suppliers and anticipates payments to the production chain, by financing supporting firms. These additional assets are registered by the LF increase in assets value as generated by current advances. Based on this concepts, Mestroni et al. (2013) proposes to identify PCNs by comparing the capital intensity of the firms and its breakdown as far as working capital and fixed asset intensity are concerned. A control is made by comparing the absolute level of the two capital intensities and their relative level, in order to separate firms with inefficient working capital management from the LF. In fact, while the greater is the absolute working capital intensity, the higher is the probability to identify a PCN leader if and only if the relative

working capital is also higher⁴. This approach to PCNs supports our second research question:

RQ2. Are there significant differences in the corporate governance and ownership concentration between firms inside and outside a PCN?

C. Measuring The merit of credit in "Corporate" and "Scaffolding" Finance

Mestroni et al. (2013) delved deeper in the above relationship and verified it over a larger geographic region: the Tri-Veneto (Venetia Area). They found out that a scaffolding finance relationship exists indeed, and confirm the necessity for banks to determine the merit of credit based on the overall network instead than focusing on single entities included in the network. The resulting financial behavior is truly new, sometimes opposite to the more traditional prescriptions of corporate finance theory. The company receiving new funding is valuated for the performance of the PCN they are leading (or are included); corporate specific indicator may be uncorrelated with the overall banking capital flows to the firm.

Following Mantovani et al. (2013), who show that the merit of credit is not correctly analyzed and priced within the banks' financing system, we try to extend the investigation of the merit of credit determinants introducing qualitative factors such as corporate governance indicators and focusing on the different actors inside the Productive Chain Network. Indeed, the third research question is:

RQ3. Which relationship exists between the corporate governance and ownership indicators and bank credit allowances decisions to firms being inside and outside Production Chain Network?

The Basel compliant rating systems are criticized about their true capability to drive toward a more efficient allocation of the banking allowances. This is why we investigate whether the governance set can be more related to the results of a more efficient method to rate ex-ante the corporate performances. We decided to recur to the Integrated Rating method as proposed in Mantovani et al. (2014). This methodology sets the rating according to the spread between long-term persistent company ROI [P(ROI)] and its threshold level [T(ROI)]. T(ROI) is estimated as the risk-adjusted expected return

⁴ When the relative intensity of working capital (i.e. working capital/fixed assets) is normal and the absolute level of the intensity (working capital/Revenues) is above normal the entire invested capital is inflated, signaling a lower efficiency in managing corporate investments

recurring to the Integrated Rating methodology, an original evolution of the certainty equivalent equilibrium context (Lintner, 1965) and applied in a long-term persistency confidence framework as adopted in the calculation of the T-Ratio (Mantovani, 2015).

To detect such the link to corporate governance characteristics of the different actors inside the Productive Chain Network, we search for an answer to this last research question:

RQ4. Are corporate governance and ownership indicators impacting over the long-term sustainability of corporate performance of entities involved into a Production Chain Network?

III. The Empirical Evidence

We sourced the same sample as in Mestroni et al. (2013), thus recurring to ORBIS database (edited by Bureau van Dijk). The sample includes 4'975 manufacturing firms⁵ (NACE industry codes from 13 to 32), incorporated in the three North-Eastern Regions of Italy (i.e. “Veneto”, “Friuli Venezia-Giulia” and “Trentino Alto-Adige”). The sample is selected according to firms having financial reports data for every year from 2006 to 2012. According to Mestroni et al. (2013), we use the 6-years financial reports data to divide the sample into three clusters: 1'108 Stand Alone firms; 548 Leader Firms; 3'319 Supporter Firms. The ratio of the PCN firms (LF + SF = 3'867) versus the LF (548) is 7.05, i.e. fairly next to the empirical results by Mantovani and Daniotti (2012) for the Treviso District only. We investigate relations among the governance variables and three indexes:

- Operating Return On Productive Capital (Eq.1) as measure of operative performance;

$$ROI_t = \frac{EBIT_t}{(FIAS_t + WKCA_t + FIAS_{t-1} + WKCA_{t-1})/2} \quad (1)$$

- Absolute Indebtedness (Eq.2) as proxy of banks credit preferences

$$\text{Absolute Indebtedness} = \frac{DEB}{OPRE_t} = \frac{[(NFP_t^* + NFP_{t-1}^*) / 2]}{OPRE_t} \quad (2)$$

Where,

⁵ According to Mantovani and Daniotti (2012), the creation of synergies, which is central in a Production Chain Network, is mostly relevant in the manufacturing sector

NFP = Net Financial Debt = Short Term Financial Debt + Long Term Financial Debt – Cash (and cash equivalents)

EBIT = Earnings before interest and taxes

FIAS = Fixed Assets

WKCA = Operating Working Capital = Debtors + Inventory - Creditors

OPRE = Operating Revenue

- the true merit of credit as proxied by the Integrated Rating Score, i.e. the spread between the P(ROI) and the T(ROI) as above (Mantovani et al., 2014).

To detect the critical elements of the governance structure, we investigate the following ownership control and corporate governance indicators based on data availability:

1) BvD (Bureau van Dijk) Independence Indicator, which classifies firms based on the level of ownership concentration.

2) Presence of a manager in the ownership structure. This variable is constructed as a dummy, where the value equals 1 if there is a manager in the ownership structure. We hypothesize that in terms of good governance practices, the presence of a manager in the ownership structure is indication of better governance quality.

3) Team Size, that is the number of people involved with the management of the firm. We adjusted this variable based on firm size. We hypothesize that in terms of good governance practices, the bigger the team size, the better the governance level.

4) One Manager. This variable is constructed as a dummy, where the value equals 1 if the company is managed by only one person. We think this variable is particularly interesting to study for the Italian SMEs sector, because it is not uncommon to find this situation and we hypothesize that in terms of governance, it is not a high-quality characteristic for a firm to be managed by only one person.

5) CEO Duality. This variable is constructed as a dummy, where the value equals 1 if the CEO is also the Chairman of the Board.

6) Board of Directors Independence Indicator. This variable is constructed as a dummy, where the value equals 1 if there are two or more managers in the Board of Directors.

7) Board of Directors Size. This variable is adjusted by firm size⁶. We hypothesize that smaller Board of Director Size is an indication of better corporate governance.

⁶ Size criteria elaborated on the base of 96/280/EC: Commission Recommendation of 3 April 1996 concerning the definition of small and medium-sized enterprises.

Data on the above seven variables is available for the year 2012 only.

Table 1 shows some descriptive statistics of these indicators for the final sample of analysis.

Table 1: Corporate governance variables and balance sheet data for the entire sample

Balance Sheet Variables	N	Average	Median	Std. Dev.	1Quart	3Quart
Panel A. Stand Alone						
ROI%2007	1108	11%	8%	17%	5%	14%
ROI%2008	1108	-18%	6%	874%	2%	11%
ROI%2009	1108	3%	3%	11%	-1%	7%
ROI%2010	1108	4%	4%	11%	0%	7%
ROI%2011	1108	5%	4%	12%	1%	8%
ROI%2012	1108	4%	3%	15%	-1%	7%
DEB/OPRE %2007	1105	21%	20%	31%	1%	37%
DEB/OPRE %2008	1106	22%	21%	38%	1%	39%
DEB/OPRE %2009	1106	27%	22%	55%	0%	49%
DEB/OPRE %2010	1106	29%	20%	193%	0%	44%
DEB/OPRE %2011	1107	25%	22%	43%	0%	45%
DEB/OPRE %2012	1104	29%	25%	82%	0%	49%
ROI -T_ROI	1071	-1%	1%	87%	-1%	3%
Panel B. Supplier Firms						
ROI%2007	3319	28%	16%	226%	8%	32%
ROI%2008	3319	17%	12%	338%	5%	27%
ROI%2009	3319	21%	7%	430%	1%	19%
ROI%2010	3319	18%	9%	92%	3%	21%
ROI%2011	3319	23%	9%	333%	4%	21%
ROI%2012	3319	13%	7%	159%	2%	19%
DEB/OPRE %2007	3308	8%	4%	24%	-5%	18%
DEB/OPRE %2008	3305	8%	4%	26%	-5%	19%
DEB/OPRE %2009	3305	8%	3%	31%	-7%	22%
DEB/OPRE %2010	3313	7%	2%	65%	-7%	19%
DEB/OPRE %2011	3313	14%	3%	418%	-7%	19%
DEB/OPRE %2012	3308	8%	4%	55%	-8%	21%
ROI -T_ROI	3131	2%	-1%	94%	-5%	4%
Panel C. Leader Firms						
ROI%2007	548	14%	10%	23%	6%	18%
ROI%2008	548	11%	8%	13%	5%	14%
ROI%2009	548	6%	5%	12%	1%	10%
ROI%2010	548	7%	6%	11%	3%	11%
ROI%2011	548	7%	6%	12%	2%	11%
ROI%2012	548	7%	5%	16%	2%	10%
DEB/OPRE %2007	547	24%	20%	23%	10%	31%
DEB/OPRE %2008	547	26%	21%	23%	11%	34%
DEB/OPRE %2009	547	32%	24%	30%	14%	39%
DEB/OPRE %2010	548	30%	23%	31%	13%	37%
DEB/OPRE %2011	548	30%	23%	29%	13%	37%
DEB/OPRE %2012	547	32%	25%	33%	12%	39%
ROI -T_ROI	543	2%	1%	8%	-1%	3%

According to Table 1, Supplier Firms deploy the highest average ROI over the period, while Leader Firms stand in the middle and Stand Alone ones have the lowest average ROI. The Stand-alone subset is also the one including firms with a negative ROI during the year of the great financial crisis (i.e. 2008). Such an evidence seems to be coherent with the hypothesis of higher investment in human capital by suppliers' firms (since the numerator is driven by human capital productivity while the denominator do not include investments on the human capital). Moreover, stand-alone firm performance seems to lack the benefits of network participation.

In terms of leverage, Leader firms are those showing the highest average amount of debt over the period of analysis, followed by Stand Alone firms and finally by Supplier firms. This is consistent with the literature about scaffolding finance (e.g. Mestroni et al., 2013), stating that the financial leader distributes credit allowances through the working capital.

Finally, as per the merit of credit (i.e. the spread between P(ROI) and T(ROI) according to Mantovani et al., 2014), we find out that Leader firms have both the highest average and median levels, followed by Supplier firms and finally by Stand Alone firms. Even this evidence is coherent with the scaffolding finance approach: the higher merit of credit is to be used by the Leader to provide financial resources for the entire network survival.

When looking at corporate governance variables, we observe that Leader Firms has the highest presence of "One Manager" and the lowest "Team Size" and, at the same time, they present the highest presence in terms of "Manager in the Ownership Structure", the lowest number of "non-executive" directors (Board of Directors Independence) but the highest presence of CEO Duality. Differently, Supplier Firms have the lowest presence of characteristics for "One Manager" and higher "Team Size", while Stand Alone firms have the lowest presence of "Manager in the Ownership Structure", the highest number of "non-executive" directors (Board of Directors Independence) but the lowest presence of "CEO Duality".

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To answer to the **first research question**, we compare ownership and corporate governance indicators for the three subgroups identified inside our sample: Stand Alone (SA) firms, Leader (LF) firms and Supplier (SF) firms. To evaluate whether there are significant differences among the three clusters we perform a t-test of differences. Table 2 summarizes these characteristics and by mean of a test of differences, identifies the statistically significant differences among the three clusters.

Table 2: t Test of Mean Difference

A comparison of differences in means and variances for corporate governance variables among firms organized in three clusters (SA, LF, SF). The analysis is performed by mean of a t-test of difference with unequal variance.

	SA		LF		SF		SA-LF		SA-SF		LF-SF	
	Mean	Variance	Mean	Variance	Mean	Variance	TEST.T (mean)	TEST.F (variance)	TEST.T (mean)	TEST.F (variance)	TEST.T (mean)	TEST.F (variance)
Board Independence	0,33	0,47	0,31	0,46	0,32	0,47	0,20	0,67	0,19	0,62	0,39	0,91
CEO Duality	0,36	0,48	0,35	0,48	0,35	0,48	0,40	0,93	0,23	0,77	0,39	0,90
Ownership Concentration	2,96	1,25	2,91	1,25	2,91	1,26	0,22	0,98	0,10	0,62	0,46	0,69
Presence of Manager among Shareholders	0,69	0,38	0,75	0,35	0,71	0,38	0,00***	0,04	0,05**	0,94	0,01***	0,02
Only One Manager	0,29	0,45	0,32	0,47	0,28	0,45	0,10	0,43	0,28	0,67	0,03**	0,22
Team Size	0,65	0,73	0,64	0,74	0,66	0,78	0,42	0,54	0,27	0,00	0,26	0,13
Board of Director Size	1,61	0,99	1,62	1,04	1,70	1,05	0,46	0,17	0,01***	0,01	0,04	0,69

5% significant, * 1% significant

As Table 2 shows, we do not find statistically significant differences between the three groups in three out of seven corporate governance indicators: Board Independence, CEO Duality and Team Size. Differently, we find that, in terms of Ownership Concentration, there are significant differences between the Stand Alone and Supplier firms, where SA firms have higher ownership concentration. Also, we find significant differences among the three groups of firms for the Presence of Manager among Shareholders variable, with LF firms having the highest representation of this characteristic. In terms of “One Manager,” there are significant differences between SA and LF and between LF and SF, with again LF firms having the highest representation of this characteristic. Finally, in terms of Board of Directors Size, there are significant differences between SA and SF and between LF and SF, with SF being the group with the highest board size adjusted value.

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In order to answer **research question two**, we perform a series of multivariate cross section regressions to investigate the type of relationship between ownership and corporate governance indicators and historical performance, which, in this case, is proxied by ROI in the year 2012. The reason why we limit it to only one year is due to

data availability, three control variables were considered in running the regression: cost of employees, total assets and firm age⁷.

Table 3 shows the regressions output for the three firm clusters under analysis. We find a significant relationship between historical performance and three out of seven governance indicators. Specifically, for LF firms we find a positive correlation between Team Size and past performance while a negative one with the Only One Manager variable. Differently, for SA firms we find a negative relationship between Team Size and past performance while a positive one with Board Size.

Table 3: Regression Statistics for historical performance and governance characteristics

Results from estimating OLS regression models of the determinants of historical firm performance. The dependent variable is ROI for the year 2012 while the independent variables are corporate governance variables as defined in section 4 (research methodology) and three control variables (cost of employees, total assets and firm age). The table reports the constant value, the coefficient values for each control variables whereas the second to last column is indicative of the coefficient value for each corporate governance variable (reported on each line of the table). Finally, the last column is the value of the R-squared for each regression.

Dependent Variable: ROI 2012

LF

Independent Variables	constant	cost of employees	total asset	age	coefficient	Adj R-squared
Board Independence	- 0,24	0,00	- 0,00	- 0,00	0,02	0,02
t-test	- 7,62	1,93	- 2,25	- 2,75	0,94	
CEO Duality	- 0,24	0,00	- 0,00	- 0,00	0,01	0,03
t-test	- 7,36	2,02	- 2,29	- 2,77	0,40	
Ownership Concentration	- 0,27	0,00	- 0,00	- 0,00	0,01	0,01
t-test	- 5,89	2,80	- 2,57	- 1,73	0,52	
Presence of Manager among Shareholders	- 0,30	0,00	- 0,00	- 0,00	0,01	0,01
t-test	- 7,03	2,75	- 2,76	- 1,51	0,29	
Only one Manager	- 0,26	0,00	- 0,00	- 0,00	-0,06**	0,02
t-test	- 8,45	2,60	- 2,75	- 1,89	2,25	
Team Size	- 0,30	0,00	- 0,00	- 0,00	0,02***	0,01
t-test	- 10,24	2,67	- 2,67	- 10,24		
Board of Directors Size	- 0,28	0,00	- 0,00	- 0,00	0,02	0,03
t-test	- 5,97	2,34	- 2,38	- 2,68	1,31	

⁷ A fourth variable, total sales, was considered as a control variable but discarded due to multi-collinearity

SF

Independent Variables	constant	cost of employees	total asset	age	coefficient	Adj R-squared
Board Independence	0,14 -	0,00 -	0,00	0,00 -	0,01 -	0,00
	1,88 -	0,11 -	0,19	0,18 -	0,14	
CEO Duality	0,16 -	0,00 -	0,00	0,00 -	0,05 -	0,00
	2,12 -	0,12 -	0,19	0,17 -	0,88	
Ownership Concentration	0,18 -	0,00 -	0,00	0,00 -	0,02 -	0,00
	1,90 -	0,13 -	0,07	0,22 -	0,95	
Presence of Manager among Shareholders	0,07 -	0,00 -	0,00	0,00	0,05 -	0,00
	0,81 -	0,12 -	0,03	0,31	0,68	
Only one Manager	0,14 -	0,00 -	0,00	0,00 -	0,07 -	0,00
	1,99 -	0,16 -	0,15	0,17 -	1,02	
Team Size	0,09 -	0,00 -	0,00	0,00	0,04 -	0,00
	1,33 -	0,21 -	0,21 -	0,21	1,33	
Board of Directors Size	0,08 -	0,00 -	0,00	0,00	0,03 -	0,00
	0,70 -	0,10 -	0,14	0,25	0,78	

SA

Independent Variables	constant	cost of employees	total asset	age	coefficient	Adj R-squared
Board Independence	0,08	0,00	0,00 -	0,00 -	0,00	0,01
	5,16	0,59	0,30 -	3,28 -	0,15	
CEO Duality	0,07	0,00	0,00 -	0,00	0,01	0,01
	4,86	0,62	0,25 -	3,30	0,46	
Ownership Concentration	0,08	0,00	0,00 -	0,00 -	0,00	0,02
	5,68	0,99	0,05 -	4,85 -	0,53	
Presence of Manager among Shareholders	0,06	0,00	0,00 -	0,00	0,02	0,01
	4,10	0,88	0,22 -	4,09	1,30	
Only one Manager	0,08	0,00	0,00 -	0,00 -	0,01	0,01
	6,76	0,64	0,06 -	4,16 -	1,34	
Team Size	0,07	0,00	0,00 -	0,00	-0,00***	0,01
	6,47	0,72	0,72	0,72	6,47	
Board of Directors Size	0,03	0,00	0,00 -	0,00	0,02***	0,02
	1,53	0,72	0,55 -	3,10	2,48	

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Research question three aims to investigate the type of relationship among banks financing decisions and ownership and governance indicators. Results of regression analysis are presented in Table 4. We observe that there is a significant relationship in four out of seven governance indicators: Presence of Manager among Shareholders has a negative relationship with financing in SF firms, Only One Manager has a positive relationship for both LF and SA firms while Board Size and Team Size have a negative relationship with financing in all three clusters.

Table 4: Regression Statistics for banks financing and governance/ownership characteristics

Results from estimating OLS regression models of the determinants of financing from the banking system. The dependent variable is DEB/OPRE for the year 2012 while the independent variables are corporate governance variables as defined in section 4 (research methodology) and three control variables (cost of employees, total assets and firm age). The table reports the constant value, the coefficient values for each control variables whereas the second to last column is indicative of the coefficient value for each corporate governance variable (reported on each line of the table). Finally, the last column is the value of the R-squared for each regression.

Dependent Variable: DEBT\OPRE 2012

LF

Independent Variables	constant	cost of employees	total asset age	coefficient	Adj R-squared
Board Independence	0,24 - 7,62 -	0,00 1,93	0,00 2,25	0,00 - 2,75 -	0,02 0,94
CEO Duality	0,24 - 7,36 -	0,00 2,02	0,00 2,29	0,00 - 2,77 -	0,01 0,40
Ownership Concentration	0,27 - 5,89 -	0,00 2,80	0,00 2,57	0,00 1,73	0,01 0,52
Presence of Manager among Shareholders	0,30 - 7,03 -	0,00 2,75	0,00 2,76	0,00 - 1,51 -	0,01 0,29
Only one Manager	0,26 - 8,45 -	0,00 2,60	0,00 2,75	0,00 1,89	0,06 2,25
Team Size	0,30 - 10,24 -	0,00 2,67	0,00 2,67	0,00 2,67	-0,02*** 10,24
Board of Directors Size	0,28 - 5,97 -	0,00 2,34	0,00 2,38	0,00 - 2,68 -	0,02 1,31

SF

Independent Variables	constant	cost of employees	total asset age	coefficient	Adj R-squared
Board Independence	0,12 - 4,13 -	0,00 1,15	0,00 1,50	0,00 2,20	0,03 1,14
CEO Duality	0,12 - 3,90 -	0,00 1,16	0,00 1,54	0,00 2,14	0,03 1,29
Ownership Concentration	0,08 - 2,59 -	0,00 1,28	0,00 1,66	0,00 1,86	0,01 1,43
Presence of Manager among Shareholders	0,16 - 5,28 -	0,00 1,33	0,00 1,46	0,00 2,02	-0,06*** 2,23
Only one Manager	0,12 - 5,02 -	0,00 1,26	0,00 1,70	0,00 2,00	0,01 0,67
Team Size	0,12 - 4,99 -	0,00 1,23	0,00 1,23	0,00 1,23	-0,00*** 4,99
Board of Directors Size	0,19 - 4,36 -	0,00 1,21	0,00 1,44	0,00 2,29	-0,02* 1,65

SA

Independent Variables	constant	cost of employees	total asset	age	coefficient	Adj R-squared
Board Independence	0,25 -	0,00	0,00	0,00 -	0,05	0,00
	5,64 -	0,78	0,28	0,53 -	1,35	
CEO Duality	0,22 -	0,00	0,00	0,00 -	0,02 -	0,00
	4,89 -	0,77	0,15	0,44 -	0,66	
Ownership Concentration	0,23 -	0,00	0,00 -	0,00 -	0,03 -	0,00
	2,66 -	1,37	0,65 -	0,00 -	1,32	
Presence of Manager among Shareholders	0,22 -	0,00	0,00 -	0,00 -	0,12*	0,00
	2,73 -	1,14	0,96 -	0,08 -	1,65	
Only one Manager	0,24 -	0,00	0,00	0,00 -	0,18***	0,01
	3,80 -	1,14	0,88	0,13 -	3,12	
Team Size	0,36 -	0,00	0,00 -	0,00 -	-0,10***	0,01
	5,77 -	1,42 -	1,42 -	1,42 -	5,77	
Board of Directors Size	0,48 -	0,00 -	0,00 -	0,00 -	-0,11***	0,03
	7,28 -	1,08 -	0,29 -	0,10 -	4,85	

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Finally, we analyze the relationship between the merit of credit, proxied by the difference between ROI and T_ROI, which is a prototype of an integrated rating system developed by Mantovani et al. (2013), and the firms' governance and ownership characteristics (i.e. **research question #4**). Table 5 shows the results of regression analysis. Four governance variables have statistically significant relationships with the merit of credit (ex-ante performance) variable. Specifically, both SA and LF have a negative relationship between Only One Manager and ex ante performance. While, all three clusters have a positive relationship with Team Size. Additionally, SA have a positive relationship with Board Size while SF have a positive relationship with the Presence of Manager among Shareholders.

Table 5: Regression Statistics for ex-ante performance and governance characteristics

This table reports results from estimating OLS regression models of the determinants of ex ante firm performance (merit of credit). The dependent variable is ROI – T_ROI while the independent variables are corporate governance variables as defined in section 4 (research methodology) and three control variables (cost of employees, total assets and firm age).

Dependent Variable: Rating

LF

Independent Variables	constant	cost of employees	total asset	age	coefficient	Adj R-squared
Board Independence	- 0,24	0,00	- 0,00	- 0,00	0,02	0,02
	- 7,62	1,93	- 2,25	- 2,75	0,94	
CEO Duality	- 0,24	0,00	- 0,00	- 0,00	0,01	0,03
	- 7,36	2,02	- 2,29	- 2,77	0,40	
Ownership Concentration	- 0,27	0,00	- 0,00	- 0,00	0,01	0,01
	- 5,89	2,80	- 2,57	- 1,73	0,52	
Presence of Manager among Shareholders	- 0,30	0,00	- 0,00	- 0,00	0,01	0,01
	- 7,03	2,75	- 2,76	- 1,51	0,29	
Only one Manager	- 0,26	0,00	- 0,00	- 0,00	-0,06***	0,02
	- 8,45	2,60	- 2,75	- 1,89	2,25	
Team Size	- 0,30	0,00	- 0,00	- 0,00	0,02***	0,01
	- 10,24	2,67	2,67	2,67	10,24	
Board of Directors Size	- 0,28	0,00	- 0,00	- 0,00	0,02	0,03
	- 5,97	2,34	- 2,38	- 2,68	1,31	

SF

Independent Variables	constant	cost of employees	total asset	age	coefficient	Adj R-squared
Board Independence	- 0,12	0,00	- 0,00	0,00	- 0,03	0,00
	- 4,13	1,15	- 1,50	2,20	1,14	
CEO Duality	- 0,12	0,00	- 0,00	0,00	- 0,03	0,00
	- 3,90	1,16	- 1,54	2,14	1,29	
Ownership Concentration	- 0,08	0,00	- 0,00	0,00	- 0,01	0,00
	- 2,59	1,28	- 1,66	1,86	1,43	
Presence of Manager among Shareholders	- 0,16	0,00	- 0,00	0,00	0,06***	0,00
	- 5,28	1,33	- 1,46	2,02	2,23	
Only one Manager	- 0,12	0,00	- 0,00	0,00	0,01	0,00
	- 5,02	1,26	- 1,70	2,00	0,67	
Team Size	- 0,12	0,00	- 0,00	0,00	0,00***	0,00
	- 4,99	1,23	1,23	1,23	4,99	
Board of Directors Size	- 0,19	0,00	- 0,00	0,00	0,02*	0,00
	- 4,36	1,21	- 1,44	2,29	1,65	

SA

Independent Variables	constant	cost of employees	total asset	age	coefficient	Adj R-squared
Board Independence	- 0,25	0,00	- 0,00	- 0,00	0,05	0,00
	- 5,64	0,78	- 0,28	- 0,53	1,35	
CEO Duality	- 0,22	0,00	- 0,00	- 0,00	- 0,02	0,00
	- 4,89	0,77	- 0,15	- 0,44	0,66	
Ownership Concentration	- 0,23	0,00	- 0,00	0,00	- 0,03	0,00
	- 2,66	1,37	- 0,65	0,00	1,32	
Presence of Manager among Shareholders	- 0,22	0,00	- 0,00	0,00	-0,12*	0,00
	- 2,73	1,14	- 0,96	0,08	1,65	
Only one Manager	- 0,24	0,00	- 0,00	- 0,00	-0,18***	0,01
	- 3,80	1,14	- 0,88	- 0,13	3,12	
Team Size	- 0,36	0,00	- 0,00	0,00	0,10***	0,01
	- 5,77	1,42	1,42	1,42	5,77	
Board of Directors Size	- 0,48	0,00	0,00	- 0,00	0,11***	0,03
	- 7,28	1,08	0,29	- 0,10	4,85	

IV. Discussion and conclusions

In this paper, we investigate and find out interesting differences in terms of ownership and governance characteristics between three groups of firms (SA, LF, and SF) with high density of Productive Chain Networks, as defined by Mestroni et al. (2013) that it is the prosecution of prior work by Basilico et al. (2014).

The main results we have reached are the following:

i. The three groups of firms have statistically significant differences in terms of “Presence of Manager among “Shareholders” and in terms of “Only One Manager” variables. Leader firms result as those having more managers among shareholders but are also those with the highest presence of an “Only One Manager” structure. This is congruent with the result by Basilico et al. (2014), which found that banks seem to prefer this structure when financing firms. In fact, it is confirmed by regression analysis (Table 3), where we find that higher amount of debt is related to the presence of “Only One Manger” in both SA and LF, which are firms directly financed by banks in a Supply Chain Network.

ii. It appears that banks prefer to finance firms with worst governance characteristics, mostly in the case of SA and LF, which are directly financed by banks. In fact, the empirical evidence shows that firms with lower Board Independence, lower CEO Duality, lower Ownership Concentration, presence of One Manager as well as smaller Team and Board size, receive the highest amount of debt. Differently the integrated rating system, prefers the opposite situation, i.e. firms with less presence of One Manager, bigger Team and Board Size.

The above evidence may have two possible explanations according to Corporate Finance approach and with Entrepreneurial Finance theory. In relation to the first approach, it seems to demonstrate the inefficiencies of widely used (i.e. Basel compliant) credit allowance procedures; in fact, governance-inefficient companies are funded. On the other hand, an Entrepreneurial Finance system might suggest that the above evidence supports the impact of the entrepreneurial behavior over the merit of credit. Initial evidence of this second explanation is given by the positive relationship between the control variable “cost of employees” and both past and ex-ante performance. The fact that “cost of labor” is a driver of performance confirms that human capital is a determinant of the competitive advantage along with the Entrepreneurial Competences. This topic is worthy further investigation which will be object of future research. Productive Chains seem to allow the adoption of an entrepreneurial approach even in complex organizations (i.e. the meta-firms), which might lead to long term improvements of the return-to-risk ratio of the chain as a whole.

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