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NETWORKS AND FAMILY FIRM PERFORMANCE: SOME EVIDENCE FROM ITALY

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Networks and family firm performance: some evidence from Italy

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Abstract
Using a large sample of Italian small–medium-sized firms, this note analyses the effects of formal inter-firm cooperation on the performance of family firms (FFs). The study is based on the network contract ("*Contratto di rete*") implemented in Italy in 2009. The results show that networks have a positive effect on FFs, while no conclusive evidence is found for non-family firms. Additionally, the advantages for southern FFs and for small firms are considerable.

Keywords: family firms; formal business networks; performance
JEL Codes: G34; L24; L25

1. Introduction

Increasing competitive pressures and technological change oblige firms to be flexible and innovative. Productivity no longer depends only on firms' internal capacity but also relies on their relationships with other firms. Collaborations allow firms to overcome their lack of flexibility, expertise, and financial resources (Meier, 2011), improving their individual performance (Jiang and Li, 2008; Nonaka, 1994). There are several channels through which being part of a network may affect performance: transaction costs, reputation, new market opportunities, exploitation of scale economies, and access to finance (Cisi et al., 2020; Li et al., 2015; Lin and Lin, 2016; Watson, 2011; Zaheer and Bell, 2005). Furthermore, networks facilitate knowledge flows and technological improvements, thereby enhancing innovation (Mazzola et al., 2016; Schott and Jensen, 2016) and internationalization (Musteen et al., 2010; Stoian et al., 2017).

In this context, family firms (FFs) should obtain greater advantages from collaboration given their characteristics – such as their small scale, lack of functional expertise, and low R&D investments – which often hamper the identification of resources and competencies needed to yield new growth opportunities (Aiello et al., 2020; Gomez-Mejia et al., 2010; Sirmon and Hitt, 2003).

Importantly, social capital and a long-term orientation, unique traits of FFs (Gomez-Mejia et al., 2010; Sirmon and Hitt, 2003), put them in a better position to exploit knowledge more effectively and, hence, increase their performance. Social capital refers to the level of trust, reciprocity, and closeness of the interaction between the organizational participants (Nahapiet and Ghoshal, 1998), which creates value by improving the knowledge flows between members (Tsai and Ghoshal, 1998). This exists in all organizations, but FFs promote uniquely "strong" social ties (Arregle et al., 2007; Salvato and Melin, 2008), thereby gaining more than non-family firms from knowledge flows. Additionally, trust facilitates the flow of knowledge more within FFs (Karra et al., 2006; Trevinyo-Rodriguez and Tapies, 2006) as family ties transcend the transactional ties found in unfamiliar entities (Klein et al., 2005; Sonfield and Lussier, 2009; Zahra and Filatotchev, 2004). An implication is that the enhanced flows between members (Sanchez-Famoso & Maseda, 2014) allow FFs to combine existing and new knowledge better than non-family firms. Finally, because of the involvement of several generations in ownership and management, FFs possess more tacit knowledge (Pearson et al., 2008; Sirmon and Hitt, 2003) and thus are likely to enhance their knowledge exploitation (Patel and Fiet, 2011; Zahra et al., 2007). A conclusion from this discussion is that network contracts are expected to have a positive impact on FFs' performance.

From an empirical perspective, the theme of inter-organizational cooperation with specific reference to the impact on FFs' performance has received little attention so far.[1] This is surprising as the omnipresence of FFs is rarely doubted (Xi et al., 2015).

This brief note contributes to the debate on the impact of inter-firm cooperation on FFs' performance by analysing the Italian network policy adopted in 2009, which aims to promote collaboration among firms (the so-called "*Contratti di Rete*"). To test the network–performance *nexus*, this note is based on a new longitudinal dataset obtained by merging two archives, one containing balance sheets of Italian companies (Bureau Van Dijk AIDA) and the other providing details of network contracts signed from 2010 to 2017 (InfoCamere).

The results show that being part of a formal network has a positive impact on FFs' performance. The effect varies according to firm size. We also find that geography matters in determining the role of networks. The work is structured as follows. Section 2 describes the empirical setting, while the results are discussed in Section 3. Section 4 briefly concludes.

[1] Exceptions are Memili et al. (2011) and Pittino and Visintin (2011), which, however, focused on the propensity of FFs to develop inter-firm cooperation.

2. Data and model specification

This study is based on a panel dataset built by combining information from two sources. The first is InfoCamere, which collects data on the network contracts signed from 2010 onwards. Besides the firm identifier, InfoCamere reports the network name, the partners, and the year in which the network was set up. The second dataset is AIDA (Bureau van Dijk), which provides financial and economic data on firms. The selected sample includes firms with between 0 and 250 employees. If individuals or families record direct ownership of over 50%, then the firms will be classified as FFs (the information is from AIDA). The final panel consists of about 84 thousand firms observed from 2009 to 2017, thereby yielding unbalanced panel data of about 480 thousand observations.[2] The analysis is based on the following model:

$$GMR_{it} = \beta_0 + \beta_1 Net_{it} + \beta_2 Size_{it} + \beta_3 (Net * Size)_{it} + \beta_4 TA_{it} + \beta_5 INT_{it} + \beta_6 (LC_{it}) + \sum_t \gamma_t D_t + a_i + u_{it} \quad [1]$$

As dependent variable, we consider the gross margin ratio (GMR), that is, the value added per unit of revenues at time t, as a measure of firm efficiency. The variable *Net* is a dummy variable identifying the networking status of the *i*-th firm. It gauges the collaboration agreements through which two or more firms exchange information or services, collaborate in specific areas, and manage common activities to improve their performance.[3]

The control variables are as follows: the *Size* effect is gauged by firm sales, which is expressed in logs to control for non-linearity. The term Net*Size aims to determine whether the effect of network membership varies with size. The intensity of physical capital (*TA*, physical assets over sales) and that of immaterial capital (*INT*, immaterial capital over sales) are used to account for the observed heterogeneity in the determinants of firm performance. The variable *LC* refers to the labour unit cost (in constant prices) and is used as a proxy for labour quality. Moreover, year dummies, denoted by D_t, and firm fixed effects are considered. As in Cisi et al. (2020), all the estimations are made by

[2] A data-cleaning procedure is performed. First, firms that became inactive during the period or those involved in liquidation processes are not considered. Second, firm-year observations that have negative value added or fall below the 5th percentile or above the 95th percentile in terms of value added per unit of revenues are excluded. Finally, only geographical areas (Italian regions) and industries (at the two-digit NACE disaggregation) in which at least one network agreement had been signed are considered.

[3] The Italian law (n. 33/2009) states: "Network Contracts comprehend two or more firms in which the owners share together the same project, or economic activities, aiming to implement their innovative and competitive capacity in the market" (Law 33/2009, art. 3). In general, independent firms in a network contract commit themselves to: (a) collaborating for purposes relevant to those firms (e.g., opening to international markets or developing new products); (b) exchanging information and industrial/technological services (linking together firms belonging to different sectors); and (c) sharing one or more economic activities belonging to each individual process (similar to buyer–supplier relationships).

applying a fixed-effect model (the regressors are lagged by 1 year to mitigate the potential endogeneity bias).

Table 1. Descriptive statistics

	(1) Full sample		(2) Family firms		(3) Non-family firms	
	Mean	*Std dev.*	*Mean*	*Std dev.*	*Mean*	*Std dev.*
Gross margin ratio	0.3090	0.1372	0.3126	0.1370	0.2944	0.1370
Network	0.0110	0.1042	0.0100	0.0996	0.0149	0.1212
Size	74.894	14.009	72.446	12.566	84.852	15.122
Physical capital intensity	0.3365	0.8925	0.3431	0.8312	0.3097	11.071
Immaterial capital intensity	0.0379	0.1427	0.0346	0.1123	0.0512	0.2273
Labour cost	103.335	0.5916	102.679	0.6064	106.006	0.4344
N. firms (%)	83639		67916	-81,20%	15723	(18.8%)
Observations	479,737		385,092		94,645	

Source: Authors' elaboration on data from AIDA.

Table 1 reports some descriptive statistics of the variables used in the analysis. What emerges is that FFs constitute 81% of the firms in the sample, thereby replicating the data for the entire Italian manufacturing sector. The gross margin ratio is, on average, slightly higher for FFs than for non-family firms, while the percentage of firms cooperating with other firms is 1.1% for the whole sample, 1% for FFs, and 1.49% for non-family firms. Furthermore, the size is greater for non-family firms than for FFs. The same applies to the cost of labour. Finally, the data indicate that FFs are relatively better endowed with physical and immaterial capital (table 1).

As far as networks are concerned, the number of firms signing an agreement increases over time (the peak is 408 in 2013). At the end of the 2011–2017 period, 1992 firms are involved in networks, the majority of which (1470) are FFs. However, taking into account the incidence of networking, it emerges that the proportion of firms in a network is, on average, 1.45% for FFs and 2.2% for non-family firms (table 2).

Table 2. Number of firms involved in networks

	Full sample				Family firms				Non-family firms			
Year	N. of firms in new networks	Cumulative number of firms in networks		Networking incidence (%) (a)	N. of firms in new networks	Cumulative number of firms in networks		Networking incidence (%)	N. of firms in new networks	Cumulative number of firms in networks		Networking incidence (%)
		Absolute value	%			Absolute value	%			Absolute value	%	
2011	111	111	0,06	0.23	79	79	0,05	0.21	32	32	0,06	0.33
2012	255	366	0,18	0.62	182	261	0,18	0.55	73	105	0,20	0.90
2013	408	774	0,39	1.26	307	568	0,39	1.15	101	206	0,39	1.7
2014	248	1022	0,51	1.58	184	752	0,51	1.45	64	270	0,52	2.14
2015	240	1262	0,63	1.84	175	927	0,63	1.67	65	335	0,64	2.54
2016	362	1624	0,82	2.25	267	1194	0,81	2.04	95	430	0,82	3.12
2017	368	1992	1,00	2.61	276	1470	1,00	2.36	92	522	1,00	3.65

Note: (a) Firms in networks over total firms.

Source: Authors' elaboration on data from InfoCamere.

3. Results

Table 3 reports the results. Column 1 refers to the full sample, while columns 2 and 3 display the estimations for FFs and non-family firms, respectively.

Before discussing the objective of this note, it is worth summarizing the impact of the control variables. Size is negatively related to the gross margin ratio for the full sample and for non-family firms. As far as FFs are concerned, size positively affects individual performance. The result for non-family firms could be driven by the costs of internal coordination, which limit the exploitation of scale economies. This would not occur for FFs (in particular for the smallest FFs) because of their specific characteristics and their dimension (FFs' size is, on average, four times smaller than that of non-family firms). As expected, physical capital and intangible assets exert a positive and significant effect on GMR, and the same applies to the labour cost, suggesting that the quality of human capital fosters firm performance.

Table 3. The effect of networks on firms' GMR.
Panel data estimation (2010–2017)

	(1) Full sample	(2) Family firms	(3) Non-family firms
Network	.0121	.021**	-.0111
	(1.5593)	(2.1822)	(-.7062)
Size	-.0014***	.0012***	-.0058***
	(-4.4374)	(3.2734)	(-8.6775)
Net*size	-.0013	-.0024**	.0013
	(-1.4046)	(-2.044)	(.7512)
Physical capital intensity	.0036***	.0089***	.001***
	(18.9061)	(26.521)	(4.5817)
Immaterial capital intensity	.0103***	.0182***	.004***
	(9.1193)	(10.6979)	(2.7067)
Labour cost	.0283***	.0289***	.0236***
	(89.0754)	(84.9771)	(25.5953)
Constant	.0349***	.0121***	.1022***
	(8.9527)	(2.8621)	(9.3483)
Time	Yes	Yes	Yes
Observations	479737	385092	94645
R-squared	.0383	.0415	.0313

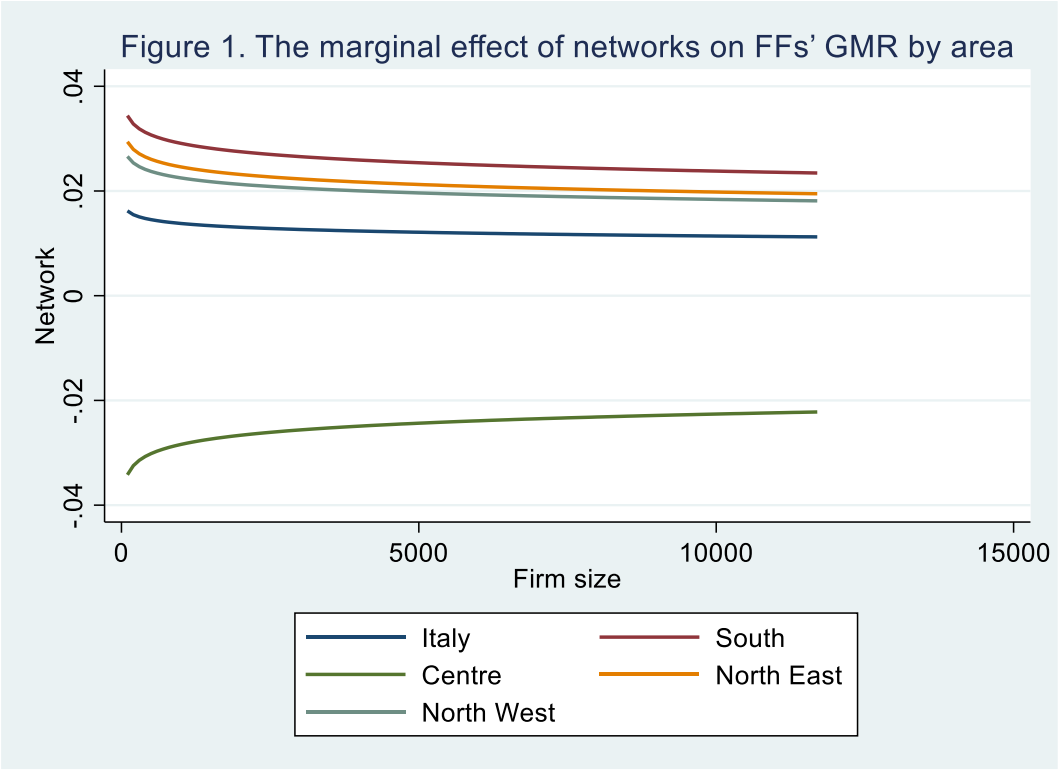
T-values are in parentheses.
**** p<.01, ** p<.05, * p<.1.*

The role of network contracts is not significant when considering the whole sample of firms. Although our empirical setting differs from others, this result contrasts with the literature that tests the relationship between formal business networks and performance (Burlina, 2020; Caragliu et al.,

2019; Cisi et al., 2020; Schoonjans et al., 2013). However, the family business literature suggests that ownership matters in obtaining advantages from external collaboration (for an exhaustive review, see Bigliardi and Galati, 2018). Along this line of reasoning, we split the sample into two groups and find that being part of a network is positive and significant for FFs but not for their non-family counterparts. After jointing a network, FFs' gross margin ratio increases, on average, by 0.021. FFs' improved performance might be explained by the uniquely "strong" social ties (Arregle et al., 2007; Carney, 2005; Dyer, 2006; Salvato and Melin, 2008) that allow family businesses to combine better existing tacit knowledge with new knowledge (Sanchez-Famoso & Maseda, 2014).

Furthermore, size is of particular interest for external interactions as inter-firm collaboration may compensate for the scant internal resources of small firms. Based on this argument, we expect that the role of networking varies according to firm size. The negative and significant coefficient associated with Net*Size confirms this expectation, signalling that the effect of networking is strong for small firms and decreases with size (the marginal effect of networks is 0.021–0.0024 ln (Size)).

Figure 1 displays the results obtained by analysing the impact of networking on performance by region and with different values of firm size to account for geographical heterogeneity, which is relevant in Italy. Family firms are grouped into four areas, south, centre, north east, and north west, and the estimations are repeated region by region. As expected, the network–performance nexus differs from one area to another. The largest impact refers to FFs operating in the less developed regions of Italy, that is, the south. Being part of a network is also a source of gains for FFs operating in northern regions, while a negative link is found for the centre of Italy, although this effect tends to decrease as companies' size increases. A tentative explanation for these outcomes is that southern FFs decide to enter networks to avoid isolation, thereby compensating for the costs of being active in a less favourable environment. It also emerges that northern FFs use network contracts to reinforce the pre-existing economic links due to industrial development.



4. Concluding remarks

This note presents an analysis of the role played by business networking, focusing on FFs. It is found that an external network is an important intangible asset for FFs as it enables them to enhance their performance. This is because FFs' unique traits (social capital and long-term orientation) facilitate the acquisition of knowledge, skills, and resources.

As the massive presence of firms managed by a family is often used to explain the path of Italian productivity (Baltrunaite et al., 2019; Brandolini and Bugamelli, 2009), the implication that can be drawn from this note is as follows: without radical changes in ownership and management, networks help firms to overcome some of the issues of being family controlled. Indeed, not assuming the formation of new legal entities, networks preserve the familiar identity of small companies and, at the same time, grant them the competitive and scale advantages of being large.

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