Physica A xx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Physica A

journal homepage: www.elsevier.com/locate/physa

Communities detection as a tool to assess a reform of the Italian interlocking directorship network

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HIGHLIGHTS

- We apply community detection techniques to ascertain the effect of a 2011 reform on the Italian directorship network.
- We find a decreased number of interlocking directorships in 2012 with respect to 2009.
- However, the reduction takes place mainly at the periphery of the network whereas the network core is stable: the most connected companies keep their strategic position.
- We claim that continuity in ownership is possibly the source of the partial success of this reform.

ARTICLE INFO

Article history:
Received 28 December 2015
Received in revised form 21 July 2016
Available online xxxx

Keywords:
Interlocking directorships
Community detection
Social networks
Corporate governance

ABSTRACT

Interlocking directorships are important communication channels among companies and may have anticompetitive effect. A corporate governance reform was introduced in 2011 to prevent interlocking directorships in the financial sector. We apply community detection techniques to the analysis of the networks in 2009 and 2012 to ascertain the effect of such reform on the Italian directorship network. We find that, although the number of interlocking directorships decreases in 2012, the reduction takes place mainly at the periphery of the network. The network core is stable, allowing the most connected companies to keep their strategic position.

1. Introduction

The Italian corporate governance system features large ownership concentration and the presence of control-enhancing mechanisms in a way that is conducive to controlling shareholders' dominance at the expenses of minority shareholders. At director level, the Italian corporate governance system is characterized by the widespread recourse to interlocking directorships (directors sitting in more than one board at the same time, ID thereafter). A number of reforms have been implemented over the last 15 years to open up the market for corporate control and to protect minorities. The latest addition to this wave of reforms was a new law provision in 2011: article 36 of the "Save Italy" Law ruled out interlocking directorships within the financial industry, effective from 2012.

The purpose of this paper is to assess which effects this reform had on ID. Using the instruments of network analysis, we compare the network before (2009) and after (2012) the reform. We find that after this regulation the concentration of

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http://dx.doi.org/10.1016/j.physa.2016.08.029
0378-4371/

Please cite this article in press as: C. Drago, R. Ricciuti, Communities detection as a tool to assess a reform of the Italian interlocking directorship network, Physica A (2016), http://dx.doi.org/10.1016/j.physa.2016.08.029

the Italian network of companies decreased only slightly. The companies at the center of the director network managed to reduce their links with the periphery while keeping their strategic connections. Therefore, the law has not been effective in delivering its aim of dispersing the ID network.

During the past decades, many scholars provided theories to explain the presence of ID on the board of directors. From an economic point of view, ID is important because it can increase collusion among different companies whose directors sit in their respective boards, reducing welfare for consumers [1]. ID may also reduce the effectiveness of 'busy' board members sitting in several boards, therefore diminishing their ability to check the chief executive officer' decisions, exposing the companies to high risks [2]. Statistical mechanics has been applied several times to the analysis of the Italian corporate governance and ownership [3–7].

Several methods have been proposed to detect communities in a network, yielding different results [8]. Following [9,10], it is possible to distinguish them in traditional methodologies (hierarchical clustering, partitioned clustering, and graph partitioning and spectral clustering), and divisive algorithms [11]. There are also many methods based on the optimization of the modularity.[1] The advantage of modularity-based methods is that they allow us to choose the number of communities with an objective matrix [11]. In fact, there is the assumption that a very good partition is associated with a high value of modularity [9,12].[2]

This work is organized as follows: Section 2 presents corporate governance reforms, with a focus on the one undertaken in 2011, then we introduce the dataset and the methodologies used (both in Section 3). We show the results in Section 4, and Section 5 concludes.

2. Corporate governance reforms

During the last 15 years the Italian capitalism has undergone a deep reform process, pointing towards a corporate governance model based on the Anglo-American form [14,15]. The Italian capitalism has been characterized by the presence of cross shareholdings, pyramidal groups and ID. Santella et al. [16] and Drago et al. [17] provide evidence that Italian capitalism was characterized by the use of the cross-financial participation by the "industrial families". In both cases, cross-financial participation was typically associated with a thick interlocking directorship structure. Rinaldi and Vasta [18] consider the historical relevance of ID in the inter-war period, focusing on the capacity of the "big linkers" to stabilize the system. Within this framework, Dyck and Zingales [19] claim that in Italy there is a relation between high private benefits of control and lower levels of investor protection. To protect the minority rights and to enforce these rights, various reforms of corporate governance have been enacted:

1. The Legislative Decree n. 58/1998 (the so called "Draghi Law"),
2. The self-regulation code by the Italian Stock Exchange,
3. The Law n. 366/2001;
4. The Legislative Decree n. 6/2003 and the law 262/2005 (the so called "Law of Savings");
5. The interlocking directorship reform in 2011 ("Save Italy" Decree).

Article 36 "prohibition of interlocking" is in the "Save Italy" decree. It began as a decree law no. 201/2011, published in Official Gazette of December 6, 2011. This decree was converted into law n. 214/2011 published in the Official Gazette of December 27, 2011. By provision of the law (see Art. 36 paragraph 2b) the calculation of the term of 120 days runs from December 27, 2011. Therefore, a director of a bank or insurance company who had an assignment incompatible should have exercised the choice (option) between one of the two (or more) positions by April 27, 2012 otherwise losing the appointments.

The effects of the Law were in place when the data for our study was collected (December 31, 2012). Therefore, it is legitimate comparing 2012–2009 to check whether the provision was effective in reducing ID in the financial sector.[3]

3. Data and methods

To detect the global changes of the network data structure before and after the reforms (see Ref. [20]), the data analysis is divided in two parts. First, we graphically analyze the networks and we compute the structural indicators for both years 2009 and 2012. Second, applying the Newman–Girvan algorithm, we identify the communities in these years and we compute the transitions between different communities.[4]

Data were collected among listed companies by considering the board of directors for each firm at 31/12. Only the management board is considered for the few companies that have the two-tier system.[5] We use the board composition

[1] The modularity measures the capacity for a network to be divided into different modules (defined communities).

[2] Other methods include greedy techniques, the simulated annealing and the extremal optimization, spectral algorithms like random walk [13] and those based on blockmodeling [9].

[3] This cannot exclude a similar pattern in the non-financial sectors, but if this exists, it should be slower given the three-year appointment of the boards of directors, whereas the art. 36 rule will change the composition of the board during its term.

[4] Software used are Ucinet [21], Netdraw [22] and programming language R [23].

[5] Members of the Statutory Board of Auditors are also not considered.

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