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Abstract

We provide insights into the macro and microeconomic underpinnings of company profitability developments in Italy. We show that the average ROA (returns on assets) of Italian companies declined slightly between 1993 and 2005 and then contracted sharply during the economic crisis before starting a slow recovery in 2013. While the pattern in Italy before 2009 was very similar to the pattern in Germany; during the crisis it became more similar to the pattern in Spain, with both countries performing relatively worse than Germany and France. This decline appears to be attributable to a fall in productivity, rather than a rise in labour costs. Indeed, notwithstanding the substantial deterioration that began in 2000, unit labour costs (labour costs over value added) in Italy are still lower than in Germany, France and Spain. Within Italy, we document large cross-sectional differences. Micro firms and firms located in the South are tend to exhibit the lowest ROA, while the ROA of firms from the North-West dropped dramatically between the mid-1990s and 2010. Interestingly, firms with the highest innovation intensity (measured by intangibles over total assets) tend not to have the highest ROA, particularly if they are small and operating in low-tech and/or low competition sectors. We interpret our results in terms of 'active' (based on innovation and higher expenditure on intermediate goods and labour) and 'passive' (based on cost control) business models, with the latter exemplified by domestic and usually small-sized and family-owned firms. From this perspective, subsidising innovation could treat the symptom rather than the disease. Instead, medium-to-long term policies should focus on increasing the share of firms with 'active' business models. Our econometric analysis suggests possible instruments: increasing the efficiency of the market for corporate control; reducing the government ownership of firms; increasing the degree of competition in sectors where barriers are still present; and improving the effectiveness of the education system to raise the human capital endowment available to businesses.

JEL Classification: G3; L1; L2; O3.

Keywords: Italy, Corporate profits in IT, Del Gatto, Hassan, Ottaviano, Schivardi, profitability, innovation, demand shock, supply shock, labour market reforms, firm-level study, China.

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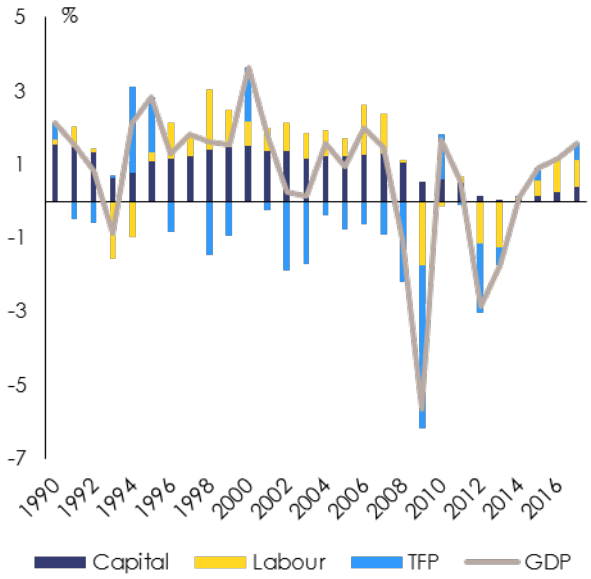
CONTENTS

1. INTRODUCTION

We present macroeconomic evidence on company profitability patterns in Italy, compare them to other EU economies, and provide micro-based analysis on possible drivers.

Explanations for Italy's low economic growth have mostly focused on Total Factor Productivity (TFP), a measure of firms' 'capacity to transform inputs into output'. The TFP contribution to GDP growth in Italy turned negative in the mid-1990s (see Figure 1.1). After the early interpretation based on the Italian model of specialisation, suggested by Faini and Sapir (2005), possible causes for Italy's slow growth have been explored in a number of papers, each highlighting particular aspects. Pellegrino and Zingales (2017) focuses on the inability to respond to Chinese competition and to exploit the ICT revolution, arguably associated with familyism, cronyism and the lack of meritocracy in managerial selection. The negative effects of familyism on manager selection are also studied by Lippi and Schivardi (2014) and Bandiera et al. (2014); while Daveri and Parisi (2015), focus on the age of managers (shown to be, for innovative firms, negatively correlated with productivity growth) and advocate temporary employment contracts as a potential remedy. Michelacci and Schivardi (2013) show that family firms tend to self-select projects with lower risks and lower returns. From a slightly different angle, Gopinath et al. (2015) and Calligaris et al. (2016) stress how increasing misallocation (i.e. inefficient allocation of inputs across firms) negatively affects productivity at the aggregate level.

Figure 1.1: **Contribution of capital, labour and TFP to GDP growth in Italy (1990-2017)**



Source: Own calculation based on The Conference Board (Total Economy Database) data.

Notwithstanding the widespread interest in TFP, an aspect that might usefully contribute to a better understanding of Italy's low GDP growth rate is company profitability, understood as capacity to transform 'assets' into profits (i.e. turnover, net of the cost of intermediates and labour). Profitability measures are informative of the overall performance of firms and are more general indicators than TFP, as changes in profitability mirror shocks in productivity, demand and input costs. This generality can be either an advantage or

a disadvantage. On the one hand, profitability indicators (e.g. Return on Assets) have a straightforward interpretation and can be easily broken down by sales (e.g., Asset Turnover) and input cost effects (e.g., labour costs over assets). On the other hand, generality is a limit when the focus is on productivity in a strict sense. At the same time, it should be noted that, as shown by the growing literature, typical TFP measures mix demand and productivity effects (Foster et al., 2008; Foster et al. 2017; Pozzi and Schivardi, 2016; Forlani et al., 2016; Hottman et al., 2016, among others). In the contest of profitability, separating these effects is more natural. As we argue below, this has important policy implications.

We start by providing a comprehensive description of the evolution of company profitability in Italy since the early nineties, distinguishing by sector, size and geographical location. This analysis reveals that the ROA (returns on assets) of Italian companies declined slightly between 1993 and 2005 and contracted sharply during the economic crisis before starting to recover slowly in 2013. While the pattern in Italy before 2009 was very similar to the pattern in Germany; it then became more similar to the pattern observed in Spain, with both countries performing relatively worse than Germany and France. [The return on assets of] micro firms and firms from the North-West dropped drammatically between the mid-1990s and 2010.

Next, we propose a break-down of ROA into sales over assets, labour costs over assets, and intermediates costs over assets. We show that the decline in ROA can be traced back to a decline in the ability of firms to generate sales, rather than to rising labour costs. Indeed, notwithstanding the substantial deterioration starting in 2000, unit labour costs in Italy (labour cost over value added) are still lower than in Germany, France and Spain.

We then study the relative role of demand (mark-ups, quality, etc.) and efficiency (i.e. TFP) shocks in determining firm profitability. We do so by relying on the approach suggested by Pozzi and Schivardi (2016), showing that both demand and productivity factors are important. Hence, company profits can be stimulated not only through improvements in efficiency, but also, and possibly especially, by making products more appealing.

Finally, we perform econometric analysis aimed at identifying markers of profitability. Interestingly, we find that firms with the highest innovation intensity are typically not those with the highest ROA. This evidence is, to the best of our knowledge, new: while the typical prescription is to increase the technological content of products, our results point to the fact that firms investing in technology (as measured by the possibly imperfect measure of intangibles) are not necessarily those doing better. This is particularly true for SMEs, that is for the 'weaker' part of the company population, which seems less able to take full advantage of technological progress.

We interpret the overall results of our analysis in terms the existence of two production and business models: 'active' and 'passive'. Companies with 'active' business models tend to be more focussed on innovation and value creation, tend to be bigger and more internationally active, employ a more educated workforce, spend more on intermediates and labour, and tend to have higher sales and greater profitability. Companies with a 'passive' models, by contrast, tend to focus on cost control, are typically more domestic, are usually small-sized and family-owned, and may be losing profits as they struggle to reduce costs in the face of falling revenue productivity. A productive system traditionally specialised in low-tech activities and heavily reliant on SMEs finds it hard to keep up with the pace of technological innovation not only because it invests little in innovation activity, but also because these features limit the returns to innovation, even when firms do engage in them. This view is fully consistent with the firm-level trends recently reported by OECD (2015b), which shows that the productivity growth of the most productive firms globally has remained robust in the 21st century, while the gap between high productivity firms and the rest has risen.

These arguments cast serious doubt on what is arguably the most common policy tool used to accelerate the structural transformation of Italy's productive system: subsidies for innovation. A more difficult, but conceivably more promising policy goal is to overcome the structural features that make (many) Italian firms incapable of taking full advantage of innovation, thereby increasing the share of firms that are capable to embrace the 'active' model' relative to those stuck in the 'passive model'. Our firm-level econometric analysis of the 'markers' of profitability highlights some possible instruments: increasing the efficiency of the market for corporate control; reducing government ownership of firms; increasing the degree of competition in sectors in where barriers are still present; and improving the effectiveness of the education system to raise the human capital endowment available to businesses.

The paper is organised as follows. Section 2 presents a brief literature review. Section 3 reports a summary of the relevant reforms during the period of interest, with particular emphasis on labour market and product market reforms. Section 4 formally describes the profitability measures on which the analysis is based. Sections 5 presents cross-country evidence on the evolution of profitability and its main components. Section 6 focuses on Italy, providing a detailed analysis of the evolution of company profitability, using data of limited liability firms and distinguishing between sector, size and geographic groups. It performs an in-depth analysis of the role of intangible capital. Section 7 reports the econometric results at the firm-level, analysing the relationship between profitability and a set of key explanatory variables (markers) in Italy: corporate ownership/control and governance; finance; workforce composition; internationalisation; and cronyism. Section 8 focuses on disentangling the demand-driven and productivity-driven dynamics of profitability. Section 9 concludes and draws policy implications.

2. LITERATURE REVIEW

In this section we provide a brief overview of the relevant literature for this project. Our study addresses the performance of Italian firms disentangling productivity from profitability, trying to identify the determinants of the latter. Thus, the related literature ranges from works focused on the relationship between firm productivity and firm performance to studies dealing with the identification of the firm-level effects of idiosyncratic demand shocks and to firm level evolution of markups.

The first bulk of literature focuses on firm selection and market share reallocation. Both the empirical (i.e. Bernard and Jensen, 1999; Aw, Chung and Roberts, 2000; Clerides et al., 1998; Pavcnik, 2002, Bernard, Jensen and Schott 2006) and theoretical contributions (Bernard et al., 2003; Melitz, 2003; Ottaviano and Melitz, 2004) has brought to the forefront the idea that a large part of the aggregate output differentials across countries can be traced back to an inefficient allocation of resources across firms. The methodological implementation of this idea of resource "misallocation" (Hsieh and Klenow, 2009; Olley and Pakes, 1996; Bartelsman, Haltiwanger and Scarpetta, 2013) has inspired a growing literature aimed at quantifying the extent of this phenomenon in given countries (e.g. Garcia-Santana et al., 2015; Gopinath et al. 2015; Dias et al., 2014; Bellone and Mallen-Pisano, 2013; Crespo and Segura-Cayuela, 2014; Chen and Irarrazabal, 2014; Bollard et al., 2013; Calligaris et al., 2016), trying to quantify the gains from eliminating/reducing the extent of misallocation. The general conclusion reached by these studies is that aggregate productivity losses associated to misallocation are substantial and that, as a consequence, eliminating or reducing the within-industry distortions (to be thought of as firm-specific

“wedges" or “implicit taxes") is a key policy issue in order to improve the performance of countries. Some work has also been towards a better understanding of the drivers of productivity dispersion - e.g. Asker et al., 2016; Calligaris et al., 2016 (see Hopenhayn, 2014 for a review).

Regarding the second strand of related literature, the key issue is how to disentangle between productivity and demand effects in profitability analysis. Methodological contributions in this respect are provided in a few papers taking advantage of the chance to separately observe producer-level quantities and prices. Foster, Haltiwanger and Syverson (2008) highlight the importance of separating the effects of technical efficiency and demand on firm survival, showing that the main determinant of the selection process is not productivity, but profitability. Foster, Grim, Haltiwanger and Wolf (2017) stress the distinction between revenue-based (i.e.TFPR) and quantity-based (i.e. TFPQ) measures of productivity. In their empirical analysis, carried out on plant-level U.S. manufacturing data, firm survival is linked to a composition of idiosyncratic demand shift, TFPQ and input price. Pozzi and Schivardi (2016) separately identify demand and productivity shocks in a panel of Italian firms showing that, though mostly neglected in the literature, heterogeneity in demand is an important determinant of output growth. They argue that this result is not driven by the presence of measurement errors, being reasonably linked to the presence of adjustment costs to shocks. This finding is similar to the one reported by Asker et al. (2016) but is focused on demand-driven, rather than technology-driven, misallocation. Forlani, Martin, Mion and Muûls (2016) rely on model-based measures of productivity, demand shocks and markups to show that, in a panel of Belgian manufacturing firms, demand shocks display at least as much variability across firms as productivity shocks. Moreover, productivity shocks are shown to be negatively correlated with demand shocks and both are found to be substantial. This suggests the existence of a trade-off between the quality of a firm’s products and their production cost, as suggested by Ackerberg et al. (2007). Hottman, Redding and Weinstein (2016) highlight that most part of TFPR reflects differences in appeal (e.g., quality or taste), rather than costs, and that demand heterogeneity (associated to quality and/or taste variation) is the main determinant of differences in firms’ performance. Depending on the specification considered, they find that 50-70% of the variance in firm size can be attributed to differences in firm appeal, about 20-25% to differences in product scope, and less than 25% to cost. The above findings have important implications for the analysis of corporate profits. If the main causes of the drop in profits are on the productivity side, then issues of firms organisation, ICT adoption, managerial efficiency, modern manufacturing techniques - in two words, process innovation - are key, and this call into question government policies. If demand is the predominant component, one needs to think more in terms of product development and international competitors - in short, product innovation. This calls into question issues like managerial practices, entrepreneurial abilities or work attitudes, which are much less under the direct control of the policy authority.

There is also a recent debate on “rising market power” in the US. De Loecker and Eeckhout (2017) look at the evolution of firm markups in the US economy since the Fifties and find that, after thirty years of general stability, in 1980 they started to rise from 18% above marginal cost to 67% now. As their analysis does not reveal any clear sectoral pattern, they conclude that most of the increase is due to an increase within industry concentrated in high markup firms. They go on to show that the increase in average market power (and thus profitability) associated with higher markups can be held responsible for some of the most important macroeconomic developments of the last thirty year, including the decreases in labor share, capital share, low skill wages, labor force participation, labor flows and migration rates as well as for the slowdown in aggregate output. In the same vein, Jones and Philippon (2016) and Gutierrez and Philippon (2016, 2017) argue that less competition and more concentration (traditional or due to common ownership) may explain why, since the early 2000s, investment is weak relative to measures of profitability and valuation. Dottling, Gutiérrez and Philippon

(2017) study the determninants of low corporate investments in the US and in Europe. They conclude that in the US they are due to the increase in firms' market power, while in Europe they are explained by cyclical conditions. In fact, they argue that the US have been characterised by a increased concentration and decreased anti-trust enforcement, while concentration has been stable or even declining, product market regulation have decreased and anti-trust regulation has increased in Europe. As theory predicts, this confirms that regulators face a trade-off between product market competition and firms profitability. At the same time, it suggests that granting firms more market power and therefore higher profits does not lead to higher investments.

There is a lively debate on the causes of the Italian economic stagnation. The explanations focus on two main potential causes. The first one is an inefficient public sector, which negatively affects firms performance (Gratton et al., 2017). The second, closer to the subject of our analysis, focuses on shortcomings of the productive sector. Two recent papers focus on the hypothesis that Italian firms have a series of features that prevents them from taking full advantage of the ICT revolution. Pellegrino and Zingales (2017) empirically test several hypotheses for the Italian slowdown, concluding that the most likely cause is the "familism and cronyism" of Italian firms. Schivardi and Schmitz (2018) focus on the quality of managerial practices of Southern European firms. They show that the lower quality of management reduces the benefits from ICT, slowing down technology adoption and inducing lower productivity gains when adopting, compared to firms in countries with better managerial practices. An important implication of their analysis is that adoption subsidies do not improve the situation, as they focus on the symptom rather than the disease: only an improvement in managerial quality can allow firms to fully reap the benefits of the ICT revolution. We will return to this idea when discussing the policy implications of our analysis.

3. MAJOR REFORMS

Labour Market

Some major reforms of the labour market took place in the period under consideration.

In 1993, after the abolition of the so called scala mobile in 1992, the 'Protocollo Ciampi-Giugni' introduced the principle of decentralised negotiation in wage bargaining, aimed at linking workers' compensation to firms' economic results in terms of productivity and profitability.

Then, the Treu Law was introduced in 1997 (law 196/97) with the aim to make the Italian labour market more flexible. The main novelty of the Treu Law consisted in the introduction of temporary contracts and in the creation of Temporary Work Agencies (job centers were privatised and decentralised). The Treu Package also modified the discipline of fixed-term contracts, modified the regulation related to employment in the research sector and increased from 22 to 24 the age limit for apprenticeship contracts.

The Biagi Law, introduced in 2003 (law 30/03), created new contractual forms and renovated some existing ones, mainly affecting the subordinated workers.

In general, the increased flexibility achieved in the nineties through the introduction of different types of fixed-term contracts was not accompanied by changes in firing costs for permanent job contracts. This generated a high degree of segmentation in permanent and fixed-term workers (see Sestito and Viviano, 2016).

Thus, reducing the extent of segmentation in permanent and fixed-term workers was the primary goal in the post-crisis years. This objective inspired two main reforms.

The first one was the Fornero Law (law 92/2012), which introduced two additional forms of temporary employment and increased entry and exit flexibility, by relaxing employment protection rules on permanent contracts, notably limiting the possibility of reinstatement following unfair dismissal.[1]

The second reform was the Jobs Act (Law 183/2014), which implemented a large revision of the unemployment benefit system (a generous permanent hiring subsidy was introduced) and further increased exit flexibility by lowering firing costs and making them less uncertain. Moreover, the reform decided that workers judged to be unfairly dismissed for objective reasons were no longer eligible for reinstatement, with firms providing monetary compensation instead. By increasing predictability this lowers the effective costs of dismissal. To re-balance job protection, a standard contract with employment protection increasing with tenure was introduced in early 2015. A basic level of protection for the first two years was introduced, after which the level of compensation for unfair dismissal was increases up to a maximum of 24 month's wages. Such contractual arrangements were supposed to benefit both the employer and the employee, by facilitating more job creation for those with little professional experience while paving the way to more stable professional careers (see OECD, 2015a).

[1] The 2012 reform reshaped incentives to hire on fixed-term contacts; no justification was required for first fixed-term contracts not exceeding one year (see OECD, 2015a).

Assessing the effects of such reforms on firms profitability is difficult, as they were economy-wide so that it is hard to find a proper counterfactual. In fact, other major reforms were passed in the same years and, since 2008, the Italian economy has gone through the worst recession of its peacetime history.

Product Market And Administrative Burden

Also product markets were directly or indirectly affected by a number of measures, generally aimed at strengthening the degree of competition and to foster entrepreneurship.

First of all, until to the Euro adoption, consolidating the public finance (both debt and deficit) in order to fulfil the Maastricht criteria was the main policy issue. This induced a series of measures encompassing both extraordinary taxation (i.e., the so-called "Eurotassa") and cuts in public spending. After a slightly increasing trend in budget deficit until 2005, the fiscal policy turned into restrictive. However, the efforts to reduce the fiscal imbalances resumed in 2009, when the national economy was hit by the economic crisis. After the anti-cyclical expansionary measures adopted soon after the crisis (2008 and 2009), another important restrictive phase started with the Governo Monti.

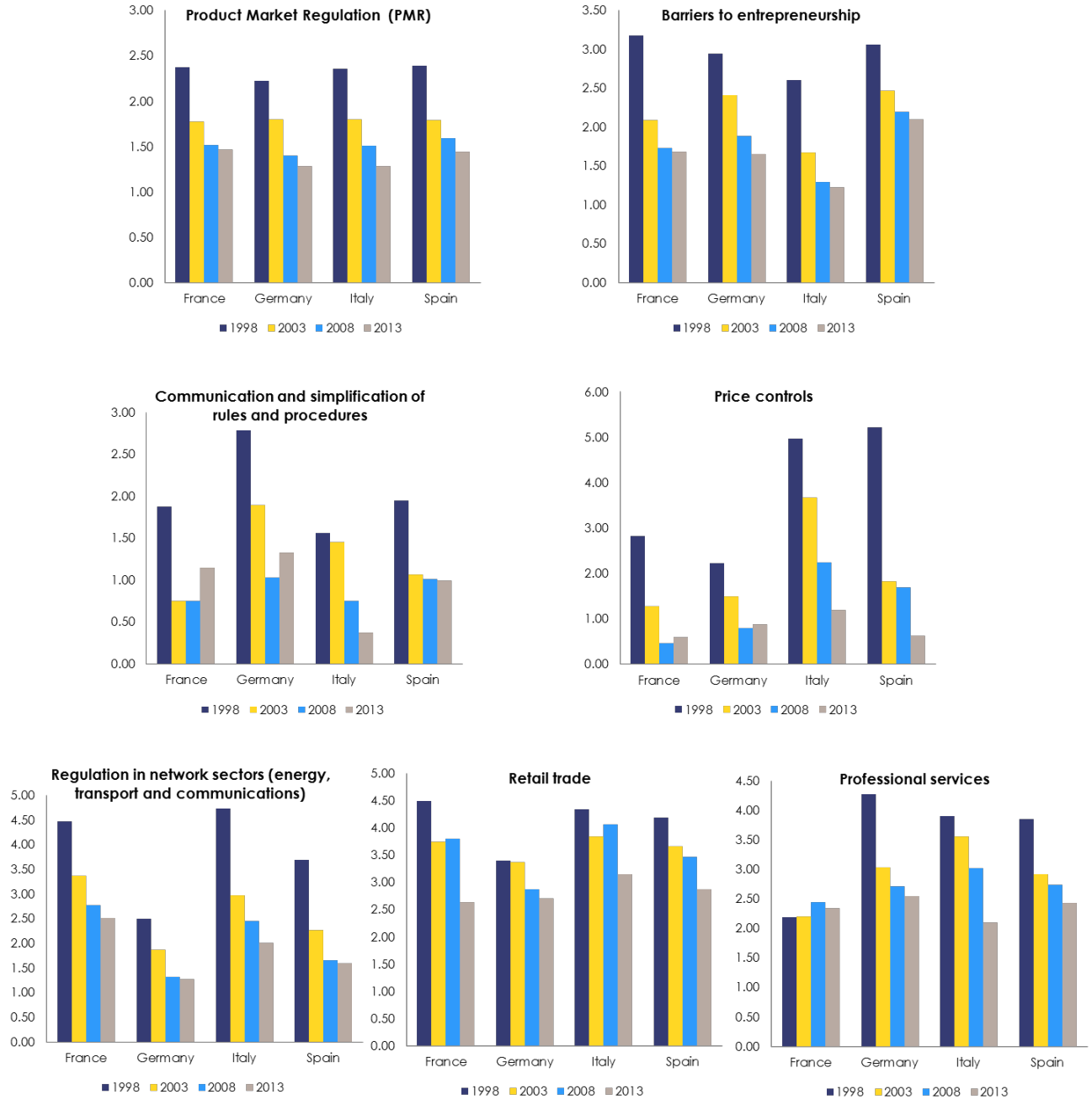
To counterbalance the potentially negative effect on firm profitability, associated with the combined action of economic recession and additional restrictive measures, Mario Monti's government adopted, in 2012, the ACE – "Aiuto alla Crescita Economica" (Aid to Economic Growth), aimed at stimulating firms' capitalisation through reducing the tax advantage of debt. This was achieved by applying a lower (i.e., notional) tax rate to the equity invested into the company. By ensuring the deduction of both interest expenses and the imputed income of equity capital, ACE was thought of to reduce (or even eliminate) the tax advantage of financed debt and to encourage a company to retain profit or issue new equity (see, e.g., Arachi et al., 2012).

A number of measures aimed at reducing product market regulation and promoting competition was introduced by December 2011 (through a series of omnibus decrees). As summarised by the 2013 OECD survey on the Italian economy (OECD, 2013), the broad intervention areas include: i) strengthening the powers of the Competition Authority; ii) more competition in public transport, with a new independent regulator; iii) bringing water services into the regulatory structure for utilities; iv) separating network ownership from production and supply in the gas industry; v) further deregulation in some professional services and the retail sector; vi) further simplification of administrative procedures for businesses and individuals; vii) increasing the average size of judicial districts and developing specialised commercial courts.

Intuition on the extent of progress in product market regulation induced by these policy measures can be gained through the change in the OECD product market regulation (PMR) indicators[2]. Figure 3.1 reports a selection of indicators that can be of particular interest to our study. Overall, we see an important improvement from 1998 to 2013. The comprehensive index is now lower than Germany, France and Spain. The reduction in the barriers to entrepreneurship is the main responsible for this improvement. In particular, the gain in terms of 'communication and simplification of rules and procedures' was substantial, as well as in 'administrative burdens for corporations'. Relatively high remain the barriers in the service sector and the statal presence in business enterprises and operations.

[2] PMR is a comprehensive and internationally-comparable set of indicators measuring the degree of competition in particular areas of the product market where competition is viable. The indicators, available only for the years 1998, 2003, 2008 and 2013, are consistent across time and countries. Further details are in Koske et al. (2015). The data used in this report have been last updated in March 2013.

Figure 3.1: **Patterns of Product Market Regulation: different countries**

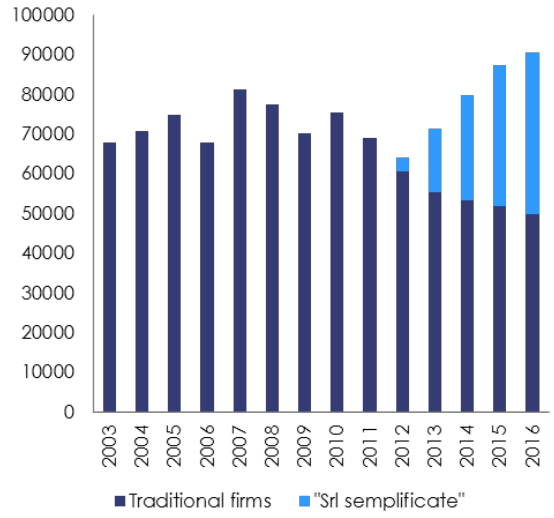


Source: our calculation on OECD data

In recent years, a growing awareness has emerged in the Italian policy debate about the importance of a favorable environment for setting up a firm in general, and for innovative firms in particular. This translated into a series of reforms. The law 1/2012 (Decreto Liberalizzazioni) introduced the "Srl Semplificata" (simplified limited liability companies) to stimulate entrepreneurship. The "Srl semplificata" is a legal form of firm incorporation with very simple and cheap registration procedures and low capital requirements. Registration costs are in fact close to zero and the equity required by law can be as low as 1 euro. The reform has been widely

used by Italian entrepreneurs. Figure 3.2 shows that "Srl Semplificata" as a percentage of total new firms has been rising constantly since 2012.

Figure 3.2: **Number of new firms, by legal form**



Source: Rapporto CERVED PMI 2016.

In 2012, the "Growth decree" introduced the notion of an "Innovative startup". The goal was the creation of a legal framework that could stimulate the development of innovative startups along the life cycle, including subsidies to start the firm, a specific labor code that allowed employees to take an equity stake in the company, and fiscal incentives that should help innovative firms to access external finance. To be classified as an innovative startup, a firm must be less than four years old, incorporated in Italy, have less than 5 million of sales, not yet paid out dividends, and have an innovative activity as its core business. This is defined either in terms of R&D expenditure (at least 15% of sales), or of highly qualified workers (at least one third with a Ph.D. or two thirds with a master), or of owning patents or registered software. As of April 2018, there were 9,072 firms registered as innovative startups. In 2015, a similar framework was created for innovative SMEs, that is, small and medium enterprises satisfying similar criteria, but without any age limit. As of April 2018, there were 770 registered innovative SMEs.

Although at the margin of our time span, it is worth mentioning that the Italian government adopted 2015 (in the 'Legge di Stabilità') two measures for supporting firms investment in R&D: i) an R&D tax credit; and ii) a 'patent box' regime. The tax credit regime offers a 25% (higher in some cases) incremental-based tax credit that can be used to offset tax and social contributions liabilities, which means that even loss-making firms might benefit from the incentives. This is important to avoid favouring firms in a profit making position at the expense of firms making losses as is often the case for young dynamic firms. The patent box regime allows companies to benefit from lower effective tax rates (13.75% as of 2017) on profits derived from intellectual assets (e.g., copyrights; patents; trademarks), with the aim of stimulating the location of intellectual assets currently held abroad, thus avoiding base erosion and profit shifting through transfer pricing practices, and more generally supporting investment in R&D.

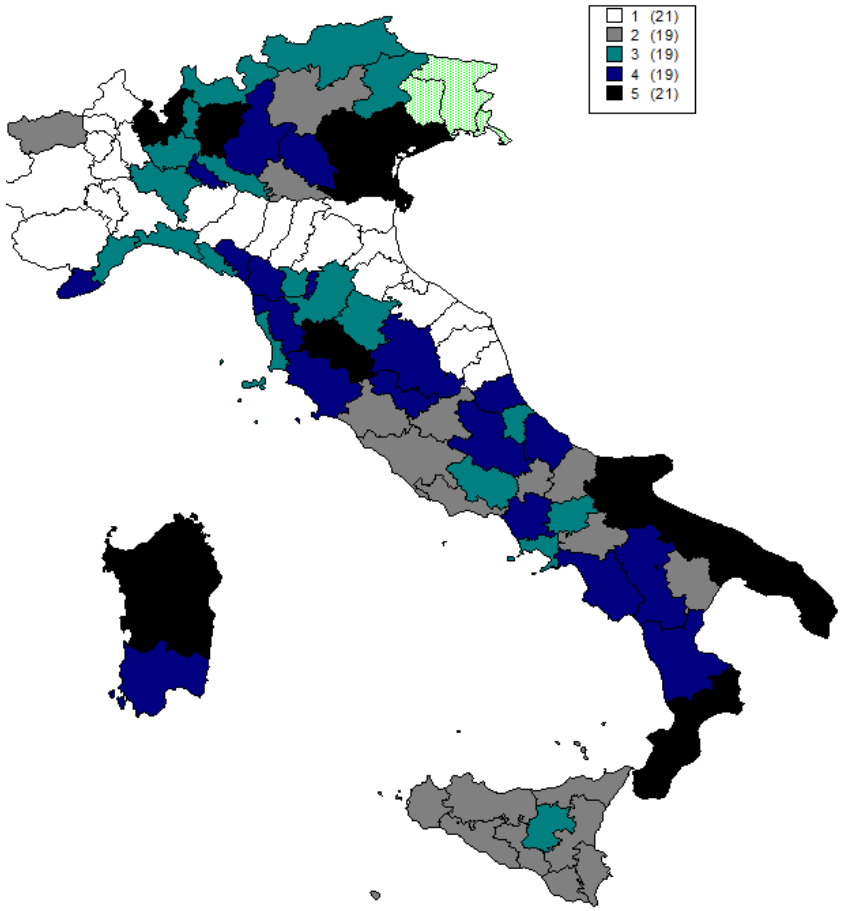
Theoretically, increased product market competition can have contrasting effects on firms profitability. Under the assumption that stronger competitive pressures increase productivity, both fostering firms selection and increasing incentives to innovate, a more competitive environment brings about a stronger, and possibly more profitable, corporate sector. On the other hand, more competition means lower margins and therefore lower profits: in fact, in the limit of the perfectly competitive settings, all increases in efficiency are passed over to consumers in the form of lower prices. In general, it seems likely that this second effect dominates the first one. The evaluation of the reform of the retail sector in Italy performed by Schivardi and Viviano (2011) and briefly summarised in the box below, confirms this conjecture: lower entry barriers for large outlets generated higher productivity, more employment and innovation, lower prices and lower profits for incumbent firms.

Box 1. COMPETITION AND PROFITABILITY: THE EFFECTS OF THE 1998 REFORM OF THE RETAIL TRADE SECTOR

Retail trade employs a sizable share of the workforce – around 10 per cent – in all industrialised countries. In addition, all citizens buy the services provided by retailers. Understanding the determinants of the sectoral performance of retail trade is therefore very relevant from a policy viewpoint. This is particularly important today, given the dramatic structural change that the sector has been undergoing over the last 2-3 decades, a period in which large outlets have progressively increased their market share at the expense of smaller stores. This trend has fuelled a heated policy debate. Based on urban planning considerations and to protect small, traditional stores, retail trade has indeed being subject to substantial regulation in all European countries, often in the form of entry restrictions for large outlets. It is then important to understand the economic consequences of such regulation on firm performance and, in particular, on profitability.

Schivardi and Viviano (2011) perform a general assessment of the effects of entry barriers for large outlets on sectoral performance in Italy. The Italian retail sector, which had a prevalence of traditional small stores, underwent a major regulatory change in 1998. A central feature of this reform is that it delegates the regulation of entry of medium and large stores to local authorities. As it turns out, local authorities chose very different approaches to entry regulation: in particular, most regions established stringent ceilings to the expansion of medium and large stores. This constitutes an interesting policy setting, as it allows to compare the sectoral performance across provinces with different degree of entry restrictions. By looking at regional regulations, they construct a measure of entry barrier as the ratio between the local population and the entry ceilings for medium and large stores: the higher this value, the more stringent the entry regulation. Figure 3.3 plots the stringency of barrier to entry for Italian provinces.

Figure 3.3: **Population over additional floor space for large outlets**



Source: Schivardi and Viviano (2011).

This reform can be used to compare retail trade firms performance at the local level before and after 2000, the year in which local regulations came into effect. The results show that entry barriers play a substantial role. In particular, large stores in the area at the 75th percentile of the barrier distribution recorded higher margins by about 8% with respect to those in the area at the 25th percentile. The same exercise for productivity implies a difference of about 3%. A stringent regulation depresses investments in ICT, curtails employment and increases labour costs in large stores. Finally, consistently with lower margins and higher productivity, prices of goods in the ”food and beverages’ retail sub-sector – the segment with the greatest presence of large stores – are higher the more stringent the entry regulation. These results suggest that pro-competitive regulation enhances sectoral performance in terms of productivity and investments and benefits consumers through lower prices. The only “losers" are incumbents, who witness a decrease in profitability. These results are confirmed by other studies on the regulation of retail trade in other countries (Bertrand and Kramarz, 2002; Viviano, 2008; Sadun, 2008; Griffith and Harmgart, 2008; Schaumans and Verboven 2008: see Pozzi and Schivardi (2016b) for a recent survey).

4. PROFITABILITY MEASURES: A CONCEPTUAL FRAMEWORK

While profits can be broadly defined as the difference between turnover, cost of intermediates, and labor costs, a range of indictors can be used to compare profitability across companies, time, and different steps of the financial statement. In this preliminary report, we focus on Return on Assets – ROA –, defined as EBIT (Earnings Before Interest and Taxes) over total assets. ROA measures the average return on the capital immobilised by the firm, without distinguishing between its sources (debt vs. equity). As such, it is a measure of profitability of the overall capital stock of corporations.

EBIT is obtained by subtracting from revenues the costs of labor and intermediate goods and services purchased by the firm, as well as depreciation and amortisation (i.e., $ROA = \frac{EBIT}{Assets} = \frac{Sales}{Assets} - \frac{LaborCost}{Assets} - \frac{Intermediates}{Assets}$). We therefore also look at ROA's main components: sales on assets (i.e., Asset turnover), which measures the capacity of capital invested to produce revenue; labor costs over assets and intermediates costs over assets. This will allow us to decompose the overall variation in ROA in revenue *versus* cost components. In other words, we are interested in understanding whether a given decline in profitability has to be traced back to a drop in sales or, eventually, to increasing production costs (i.e., labor and intermediate goods).

Finally, we consider Unit Labor Cost – ULC –, defined as labor cost over value added. ULC represents an important indicator of competitiveness, as when the cost of labor grows more than productivity, then firms loose competitiveness, resulting in losses in market share and in drops in profitability.

Notice that a decreasing ratio of labor costs to assets can be either evidence of capital deepening (increasing K/L ratio due, e.g., to the adoption of more capital intensive technologies) or decreasing wages. It might also mask a diversion of resources away from the company towards external providers of intermediate goods and services (i.e., outsourcing) or increasing costs of imported intermediates. ULC measure the share of labor costs on value added, that is, sales net of the contribution of intermediates (i.e., $ULC = \frac{LaborCost}{ValueAdded} = [\frac{Sales}{LabourCost} - \frac{Intermediates}{LabourCost}]^{-1}$). When ULC increase, the share of value added that goes to remunerate labor increases, therefore leading to a decrease in profits rate.

Whenever possible, the benchmark aggregate analysis is also presented at different levels of sectoral, dimensional and geographic breakdown, as well as by clustering the firms on the basis of their innovation activity. Namely, we consider: four macro-sectors based on the ATECO 2002 classification (i.e., Manufacturing, Construction, Utilities, and Services)[3], four size classes based on firms' sales (i.e., micro, small, medium and large)[4], four geographic areas (i.e., North-West, North-East, Center and South)[5]. Finally, we split firms

[3] The 'Utilities' sector includes 'electricity' and 'gas and water'. The 'Services' aggregation includes 'wholesale and retail trade', 'hotel and restaurants', 'transport', 'storage and communication', 'real estate activities', 'professional, scientific and technical activities', 'support service activities', 'health and social work', and 'other services'. We exclude agriculture, because limited liability firms are arguably a small share of overall production of this sector, mining, due to the small number of firms operating in this sector and 'financial intermediation'.

[4] We use the European Commission classification of firms according to their turnover. 'Micro' are firms with a turnover ≤2m Euros, 'small' ≤10m Euros, 'medium' ≤50m Euros, 'big' >50m Euros. (See http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition/index_en.htm)

[5] We use the ISTAT (National institute of Statistics) classification of macro-areas. "Northwest" includes the regions Liguria, Lombardy, Piedmont and Aosta Valley; "Northeast" includes Emilia-Romagna, Friuli-Venezia Giulia, Trentino-South Tyrol and Veneto; "Centre"

according to the intensity in innovation activities. In the absence of balance sheets information on R&D expenses and other innovation indicators, we consider three groups based on the ratio of (book value) intangible assets to total assets: those with no intangible assets at all ('No intang'), those with a value of intangible over total assets positive but below the 70th percentile of the distribution in each year ('Low intang') and those with a value above that ('High intang'). Intangible assets comprise R&D expenses, patents, goodwill, trademarks etc. As such, they are broadly related to the notion of innovation.

To understand how the evolution of ROA and ULC we are going to document should be interpreted, it is useful to provide a simple conceptual framework firmly grounded in the literature on misallocation and market power discussed in Section 2. Following Calligaris et al (2016), consider firm i in sector s facing facing demand with constant elasticity $\sigma > 1$ and technology captured by the constant-return-to-scale Cobb-Douglas production function

$$Y_{si} = A_{si}K_{si}^{\alpha_s}L_{si}^{1-\alpha_s}, \alpha_s \in (0,1) \quad (1)$$

where Y_{si} is output, A_{si} is TFP, K_{si} is capital input and L_{si} is labor input. The firm faces two types of frictions. First, to sell a unit of output, the firm has to produce $1/(1-\tau_{si}^{Y})$ units, where τ_{si}^{Y} is an 'output distortion' creating a gap between quantity produced Y_{si} and quantity sold $(1-\tau_{si}^{Y})Y_{si}$ at delivered price P_{si}. Second, to usefully employ a unit of capital, the firm has to hire $(1+\tau_{si}^{K})$ units, where τ_{si}^{K} is a 'capital distortion' creating a gap between capital hired $(1+\tau_{si}^{K})K_{si}$ at rental rate R and capital employed K_{si}. Examples of output distortions include government restrictions on size, transportation costs or public output subsidies or taxes. Example of capital distortions include various types of credit constraints. While there is no specific friction for labor, the output friction can be equivalently interpreted as a friction that affects access to capital and labor proportionately while the capital friction can be equivalently interpreted as a friction that affects access to capital disproportionately.

Due to these distortions, the firm maximises profit

$$\pi_{si} = P_{si}(1-\tau_{si}^{Y})Y_{si} - WL_{si} - R(1+\tau_{si}^{K})K_{si},$$

where L_{si} is labor hired and employed at wage W. Profit maximisation entails markup pricing

$$P_{si} = \frac{TFPR_{si}}{A_{si}} = \frac{\sigma}{\sigma-1}\left(\frac{R}{\alpha_s}\right)^{\alpha_s}\left(\frac{W}{1-\alpha_s}\right)^{1-\alpha_s}\frac{(1+\tau_{ksi})^{\alpha_s}}{(1-\tau_{ysi})}$$

where

$$\mu = \frac{\sigma}{\sigma-1}$$

is the markup. It also dictates labor input

$$L_{si} = \frac{(A_{si})^{\sigma-1}(1-\tau_{ysi})^{\sigma}}{(1+\tau_{ksi})^{\alpha_s(\sigma-1)}}\left(\frac{\sigma-1}{\sigma}\right)^{\sigma}\left(\frac{R}{\alpha_s}\right)^{-\alpha_s(\sigma-1)}\left(\frac{W}{1-\alpha_s}\right)^{\alpha_s(\sigma-1)-\sigma}Y_s$$

and capital input

includes Lazio, Marche, Tuscany and Umbria; "South and Islands" includes Abruzzi, Basilicata, Calabria, Campania, Molise, Apulia, Sicily and Sardinia.

$$K_{si} = \frac{(A_{si})^{\sigma-1}(1-\tau_{ysi})^{\sigma}}{(1+\tau_{ksi})^{\alpha_s(\sigma-1)+1}}\left(\frac{\sigma-1}{\sigma}\right)^{\sigma}\left(\frac{R}{\alpha_s}\right)^{-\alpha_s(\sigma-1)-1}\left(\frac{W}{1-\alpha_s}\right)^{-(1-\alpha_s)(\sigma-1)}Y_s$$

so that the profit maximising quantity produced is

$$Y_{si} = \frac{(A_{si})^{\sigma}(1-\tau_{ysi})^{\sigma}}{(1+\tau_{ksi})^{\alpha_s\sigma}}\left(\frac{\sigma-1}{\sigma}\right)^{\sigma}\left(\frac{R}{\alpha_s}\right)^{-\alpha_s\sigma}\left(\frac{W}{1-\alpha_s}\right)^{-(1-\alpha_s)\sigma}Y_s.$$

These are the basic components of possible theoretical counterparts of ROA and ULC. In particular, focusing on a steady state with constant rental rate R, wage W and discount factor normalised to one for simplicity, a measure of return on assets may be computed as

$$ROA_{si} = \frac{\frac{P_{si}Y_{si}}{\sigma}}{RK_{si}} = \frac{1}{\sigma-1}A_{is}\frac{1}{\alpha_s}\frac{1+\tau_{iks}}{1-\tau_{isy}}$$

or in logs

$$\ln ROA_{si} = \ln(\mu-1) + \ln A_{is} - \ln\alpha_s + \ln(1+\tau_{iks}) - \ln\left(1-\tau_{isy}\right) \qquad (2)$$

Analogously, a measure of unit labor cost may be evaluated as

$$ULC_{si} = \frac{WL_{si}}{P_{si}Y_{si}} = (1-\alpha_s)A_{is}^{-1}\frac{\sigma-1}{\sigma}\left(1-\tau_{isy}\right)$$

or in logs

$$\ln ULC_{si} = -\ln\mu - \ln A_{is} + \ln(1-\alpha_s) + \ln\left(1-\tau_{isy}\right). \quad (3)$$

Expressions (2) and (3) provide a background for our ensuing empirical analysis as they clarify several things. First, ROA is higher for higher markup, higher TFP, lower capital intensity, higher capital distortions, and higher output distortions. Second, ULC is higher for lower markup, lower TFP, lower capital intensity, lower output distortion. Hence, supply factors (productivity and capital intensity), demand factors (market power) and distortions in factors allocation determine the evolution of profitability.[6] Third, ROA and ULC are linked by the following relation

$$\ln ROA_{si} = -\ln(ULC_{si}) + \ln\frac{\mu-1}{\mu} + \ln\left(\frac{1-\alpha_s}{\alpha_s}\right) + \ln(1+\tau_{iks}) \qquad (4)$$

where $(\mu-1)/\mu$ is the Lerner Index of market power (increasing in μ) so that higher markup, higher labor share and higher capital distortions create a wedge between $\ln ROA$ and $-\ln ULC$. This implies that, absent variations in market power, capital intensity or capital distortions, ROA and ULC would perfectly comove (though in opposite directions). Vice versa, any asymmetric evolution in ROA and ULC would be ascribed to movements in market power, capital intensity of capital distortions.

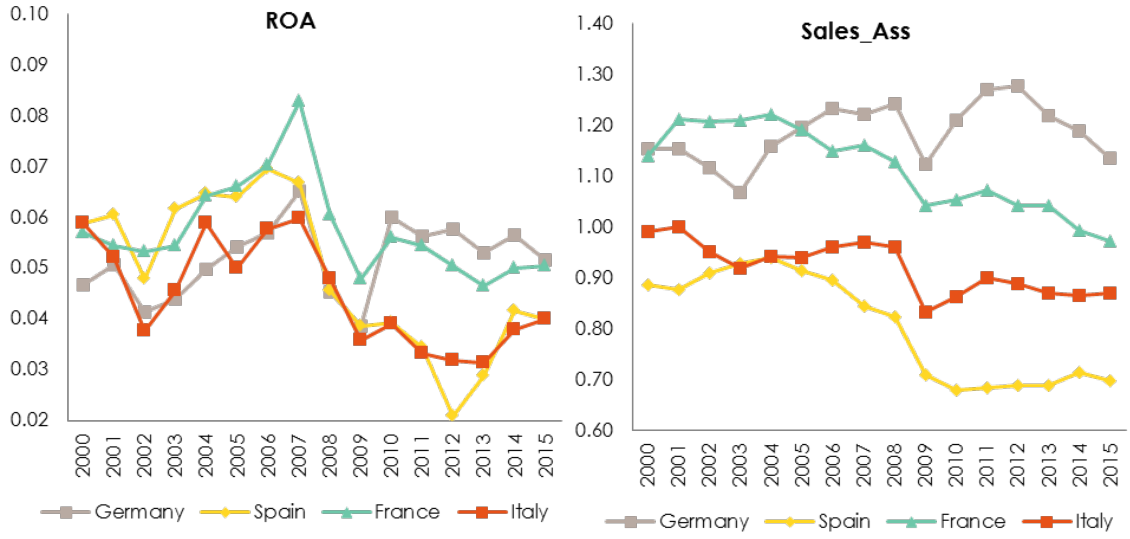
[6] Market power can be related to product quality. We will come back to this issue in Section 8.

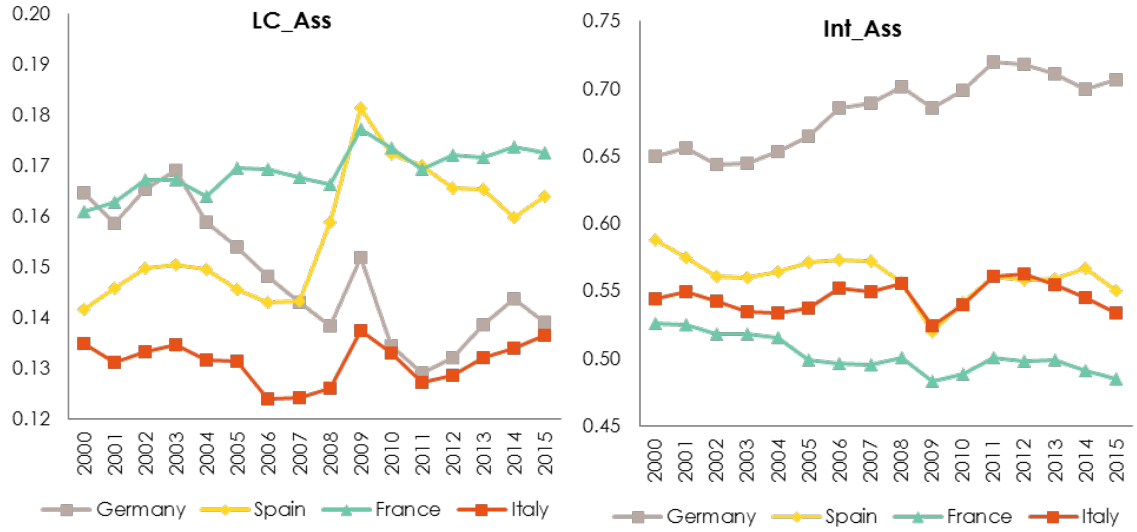
5. CROSS-COUNTRY AGGREGATE ANALYSIS

In this part of the report we study the Italian profitability patterns against those of three other EU countries: Germany, France and Spain. Data are drawn from the BACH database (Bank for the Accounts of Companies Harmonised). Launched in 1985 by the General Directorate Economic and Financial Affairs (DG ECFIN) of the European Commission and provided by the Banque de France, BACH is a ECCBSO (European Committee of Central Balance-Sheet Data Offices) project that uses companies' individual accounts (supplied by the national Balance Sheet Data Offices) to obtain more detailed information than that available in National Accounts. The database provides comparable information on financial statements and economic-financial ratios of companies, aggregated by sector and by size class for the period 2000-2015. As such, BACH offers the chance to perform a cross-country analysis at the aggregate level based on firm-level data, instead of national accounts. Descriptive statistics on the sample used in this report are provided in Table 1. As evident, the sample has same limits in terms of country representativeness. In particular, while Italy is over-represented, the number of German firms is quite low. As a consequence of the prevalence of Italian and Spanish firms, the sample distribution is quite skewed towards small firms. This implies that comparisons in levels should be taken with a grain of salt, while trends are less likely to be subject to sample composition biases, as the sampling rules have remained stable over time.

The patterns associated to ROA and to its main components described in Section 4 are reported in Figure 5.1 for the aggregate economies, as well as at the sectoral level in Appendix (Figure 12.1) separately for Manufacturing, Construction, Utilities and Services.

Figure 5.1: **Evolution of ROA and its components by country**



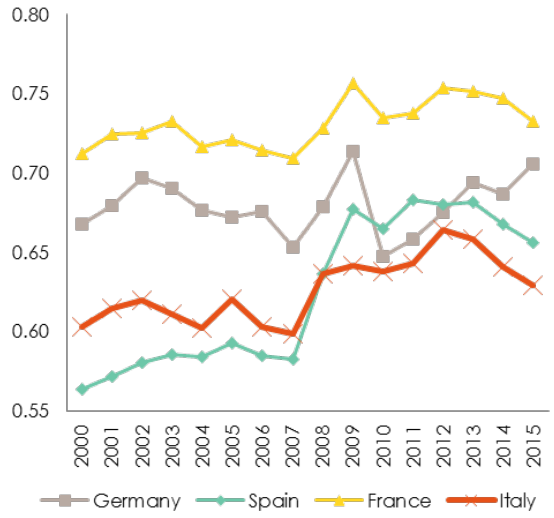


Source: our calculation on BACH data. Sales_Assets is sales over assets, LC_Ass is labor costs over asset, Int_Ass is intermediate over assets.

A first important message we can draw is that the ROA gap across countries widened after 2009. In particular, Italian and German companies performed very similarly (both of them performing worse than French and Spanish companies) before the economic crisis. Then, while the ROA of all the countries under consideration was hit by the economic crisis, German companies gained momentum after 2009 and now display the highest ROA values. By 2009, the Italian pattern of ROA is instead very close to that of Spain, where ROA plummeted with the crisis, with both countries performing now relatively worse than Germany and France. Overall, the aggregate ROA and ROE patterns look quite similar and are broadly confirmed by the country-sector analysis in Figure 12.1.

The ULC of Italian companies appears relatively low, compared to the other countries under consideration. Although Figure 5.2 documents a substantial increase after the crisis, the Italian ULC is the lowest by the end of the sample, followed by Spain, Germany and France. As argued above, however, one should use caution in comparing levels. The time series evolution instead indicates that both Italy and Spain have lost ground with respect to Germany and France, particularly during the crisis. Starting in 2013, both countries have started to record a decrease in ULC, arguably due to wage moderation policies and the fact that firms increased dismissals.

Figure 5.2: **Evolution of ULC by country**



Source: our calculation on BACH data.

To corroborate the aggregate profitability patterns highlighted in Figure 5.1and Figure 5.2, we report the results of an econometric analysis inspired by Equation (4). As explained, Equation (4) reveals how, in the absence of frictions (as captured by parameter τ_{iks}), ROA and ULC would perfectly co-move (in opposite directions), for given levels of market power (captured by the Lerner index $(\mu - 1)/\mu$) and capital intensity (captured by the term $\frac{1-\alpha_s}{\alpha_s}$). Vice versa, any asymmetric evolution in ROA and ULC should be ascribed to movements in market power, capital intensity or capital and labor market distortions. Accordingly, we can identify proxies for the extent of distortions in the capital and labor market and use them as ROA explanatory variables, together with ULC, controlling for market power and capital intensity by means of country and sector fixed effects. With year dummies used to control for the EU-wide business cycle, this setting allows us to isolate specific effects, such as the competition effects associated to China's increasing export flows. Of course, this exercise should be interpreted with a grain of salt, as they are simple correlations and do not necessarily indicate causality.

The estimating equation is the following:

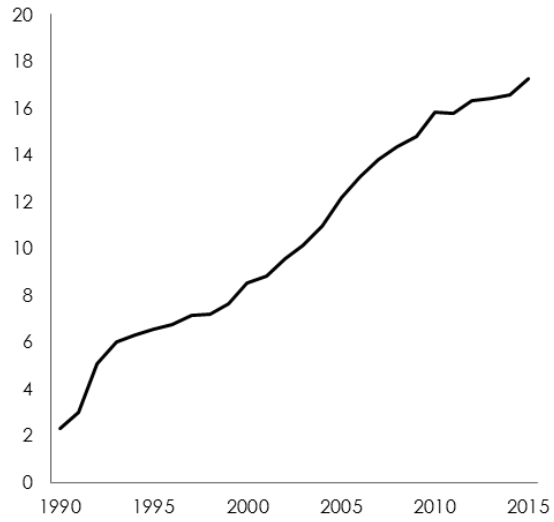
$$ln(ROA_{cst}) = \beta_0 + \beta_1 ln(ULC_{cst}) + \beta_2 ln(Xlab_{cst}) + \beta_3 ln(Xcap_{cst}) + \beta_4 ln(IPC_{st}) +$$
$$+\beta_5 DCountry * ln(IPC_{st}) + \beta_6 DCountry + \beta_7 DSector + \beta_8 DYear + \varepsilon_{it} \qquad (5)$$

where $Xlab_{cst}$ and $Xcap_{cst}$ are the variables used to proxy for labor and capital market frictions; $DCountry$, $DSector$ and $DYear$ are country, sector and year dummies; IPC_{st} is Import Penetration China, with $DCountry * ln(IPC_{st})$ denoting its interaction with the country dummy.

Results are reported in Table 2. In the first two columns we focus on frictions in the labor and capital markets. To proxy for the former, we consider Trade union density (and Employment protection legislation as a robustness check in column 5); for the latter, we consider the amount of domestic credit to the private sector as a

percentage of GDP (and the ratio of the overall amount of financial system deposits to GDP as a robustness check in column 5).[7] All variables have country-year variability. The first two are drawn from the OECD - STAN database[8], while the third and fourth variables are provided by the World Bank through the Financial Development and Structure Database. In columns (4) and (5) we introduce the variable *Import Penetration China* interacted with the country dummies in order to highlight possible differences in the country reaction to the rising export performance of China. *Import Penetration China* is a sector-time specific indicator computed as the share of World imports from China in total World Trade (source: STAN database). Figure 5.3 shows that, on average, import penetration from China has displayed a strong growth, of approximately 15 percentage points. Figure 12.6 in the Appendix reports the evolution sector by sector, highlighting substantial cross-sectoral heterogeneity.

Figure 5.3: **Chinese import penetration: global trend (world imports from China as a % of world trade)**



Source: our calculation on OECD-STAN data

We find a strong negative correlation between UCL and ROA, indicating that, when the labor share rises, profitability declines and vice-versa. Controlling for ULC, we do not find any significant correlation between labor market indicators (Trade union density and Employment protection legislation) and ROA. On the contrary, ROA is significantly negatively correlated with the private credit to GDP ratio.[9] One possible interpretation is that, during credit booms, the financial sector lends more and screens customers less, leading to a decline in the profitability of capital.

Interestingly, Chinese import penetration is not significantly correlated with ROA (Column 2). However, when we allow the effect of import penetration to differ by country (columns 4 and 5), we find that, although the

[7] As far as countries and sectors are exposed to the same (international) shocks, the cross-country and cross-sector variability in these ratios can be understood in terms of different reactions to those shocks, arguably related to market frictions. Of course, the ratio is also likely to be affected by a number of domestic factors not directly related to market imperfections. This is particularly true in the presence of credit bubbles or crunches.

[8] The OECD/ICTWSS database contains information from administrative and survey data. Union density is defined as the ratio of union members divided by the total number of employees.

[9] This complements with the detrimental effects of capital market frictions in terms of misallocation documented by Calligaris et al. (2016).

overall ROA effect of Chinese import penetration is not significate in all countries, the differential effect is negative and significant for Italy (only). This suggests that, among the four countries under consideration, Italy is the one that suffered the most from the rising international competitiveness of China.[10] Arguably, this is due to a productive structure specialised in traditional, low-tech activities, more exposed to the Chinese competition.[11] We will return to this point in Section 6.4, when discussing returns to intangible investments.

6. FIRM-LEVEL ANALYSIS: THE EVOLUTION OF PROFITABILITY OF ITALIAN FIRMS

6.1 The CERVED database

We consider the Italian firms recorded in the CERVED dataset, which accounts for the universe of incorporated businesses ('società di capitali') in Italy. After cleaning the database from the observations with negative turnover, we are left with an unbalanced panel of firms observed over the period 1993-2015. The number of observations tends to grow over time, ranging from slightly more than 350,000 in 2000 to around 700,000 in 2014 and 2015.

Table 3 presents descriptive statistics for the year 2015, both in absolute terms and in percentage with respect to the total sample. The majority of firms (65.1% of total) operate in the services sector, while slightly more than 18% are manufacturing firms. The geographical distribution is slightly skewed towards Northern Italy, but this is consistent with the real distribution of Italian firms. Notably, almost 96% of the sample consists of firms with a less than 10m Euros turnover (i.e., micro or small firms). This is a reflection of the well-know prevalence of small firms in all economies, which in Italy is particularly strong.[12].

6.2 The evolution of profitability

Figure 6.1 plots the evolution of ROA and its main components: sales on assets, labor on assets and intermediates on assets.

It shows a mildly declining trend in ROA by approximately one percentage point up to 2005; the recovery of 2006 and 2007 brought it back to its 1993-1994 levels. During the economic crisis we observe a sharp contraction, followed by only a slow recovery starting in 2013. Since 2010, ROA oscillates around an average level which is approximately two percentage points below the 1993-2007 average: in 2015, the level is still between one and two percentage points below the pre-crisis value.

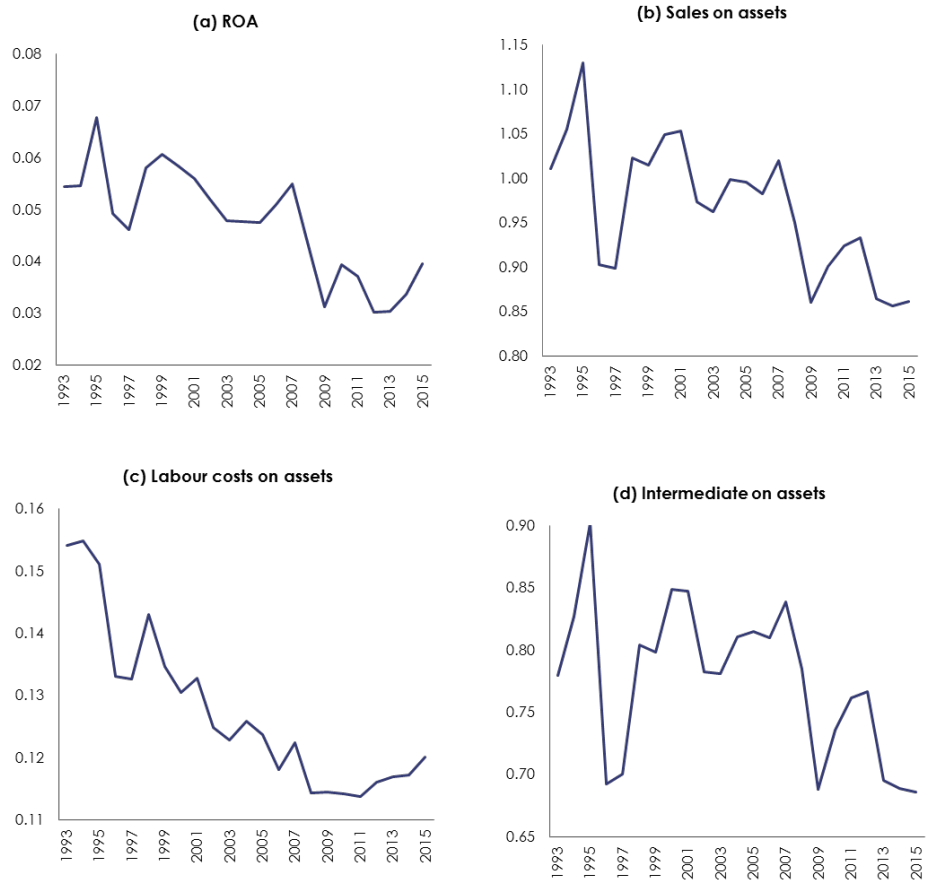
[10] Having set Germany as the benchmark country, the coefficient of *Import Penetration China* measures the estimated ROA effect in Germany; the coefficients of the interacted variables represent the differential ROA effects in Spain, France and Italy with respect to Germany; the overall effect in each country can be obtained by summing the coefficient of the interacted variable to the coefficient of *Import Penetration China*.

[11] Note that this is a within-sector rather than a between sector effect: that is, a given rise in export from China in a sector hurts more firms in that sector in Italy than in the other countries.

[12] According to ISTAT, the firms with less than 10 employees were the 95% of the 4241912 firms active in Italy in 2015.

The analysis of the components reveals that the capacity to produce sales from assets has declined (asset turnover). Wages over assets also show a declining trend, but this is not enough to avoid the drop in profitability. As expected, intermediates on assets follow the sales on assets pattern quite closely.

Figure 6.1: **Evolution of ROA and its components**

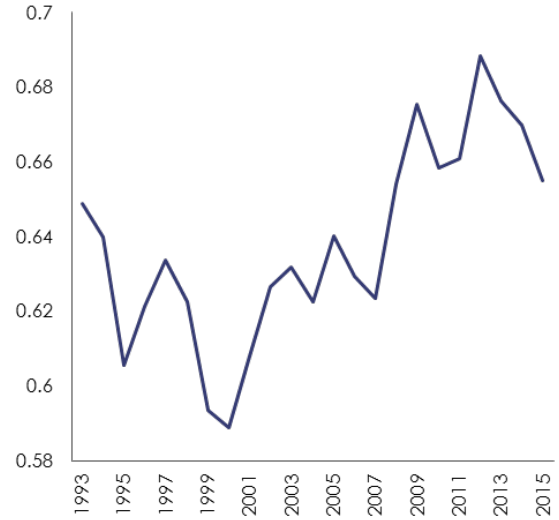


Source: our calculation on CERVED data

To further investigate on whether the drop in profitability is mainly due to a deterioration of firm's capacity to generate revenues from asset or to an increase in the cost components, Figure 6.2 reports the evolution of ULC since 1993.[13] Up to 2000, ULC were actually falling. Since then, however, it has been rising almost constantly until 2012. The deterioration has been substantial, by around 10 percentage points between 2000 and 2012. Thus, the crisis had a strong effect on ULC: in the wake of falling sales, firms were not able to reduce correspondingly labor costs, so that the weight of labor costs over sales, net of intermediates, has grown substantially. It is worth noting that, since 2013, ULC have been falling by approximately 1 percentage point per year. Although encouraging, this trend needs to strengthen to bring ULC at least back to the levels before 2000.

[13] The pattern in Figure 6.2 slightly differs from the one reported for Italy in Figure 5.2. This is due to accounting differences between the income statement items in BACH and Cerved, although the ULC definition is the same. For example, differently from Cerved, value added in BACH is net of "operating taxes and other operating charges".

Figure 6.2: **The evolution of ULC**



Source: our calculation on CERVED data

Considered the decline in the asset turnover, which is in line with the revenue productivity slowdown documented by Calligaris et al. (2015), this pattern suggests that the drop in revenue productivity that hit the Italian economy, in particular after the economic crisis, was too deep to be compensated in terms of labor costs, also net of changes in outsourcing activities (which however seems not to be relevant, according to Figure 6.1), thereby resulting in lower profitability.[14]

Moreover, although the differences due to the homogenisation of balance sheet items across countries hinder the comparison of the analysis in this Section with the cross-country analysis carried out in Section 5, Figure 5.2 suggests that the substantial increase in ULC is specific to Italy and Spain, with Germany and France recording quite flat evolutions of ULC throughout the whole period. Figure 5.1 also suggests that labour costs over assets tend to be lower in Italy than in other countries.

Thus, the challenge to increase corporate profits in Italy seems to be more about increasing revenue productivity rather than reducing labor costs. By this perspective, it is key to understand what the main drivers of the drop in revenue productivity have been, as declining TFPR calls into question either demand (mark-ups, quality, etc.) or productivity (i.e., TFP) issues. This forms the objective of the analysis in Section 8.

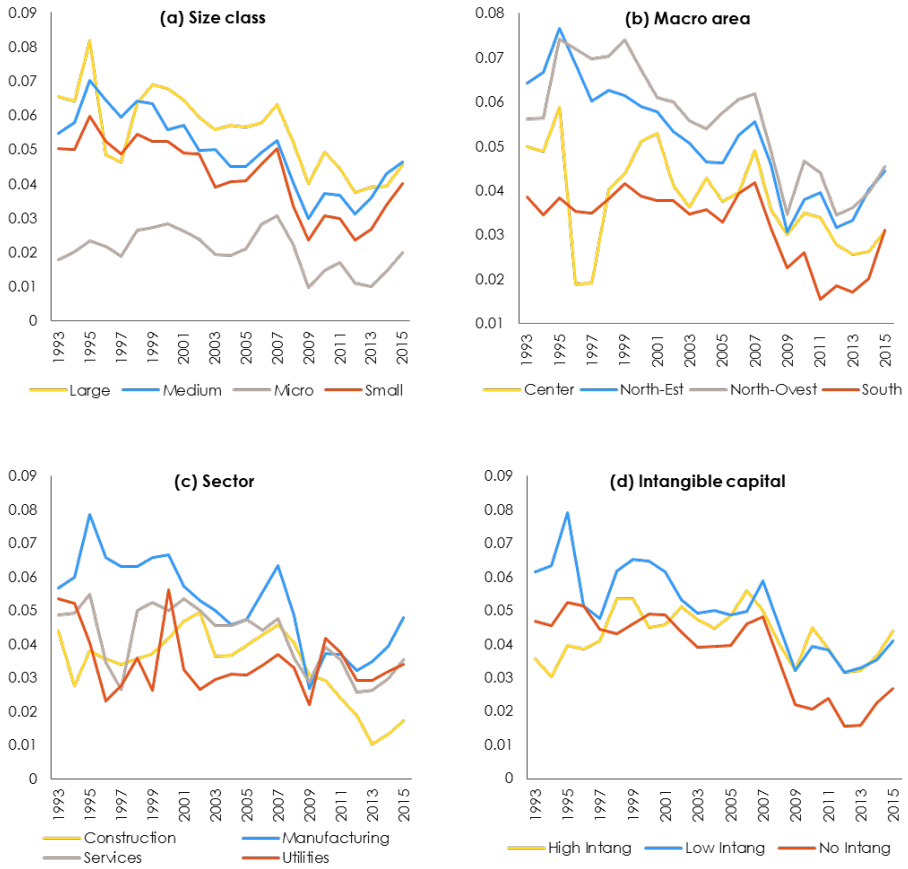
As explained above, we split firms along four dimensions: size classes (micro, small, medium and large), macro-sectors (Manufacturing, Utilities, Services and Construction), macro-areas (North-West, North-East, Center, South), Innovative content (No intangible capital, low intangible capital, high intangible capital). This part of the analysis is reported in Figure 6.3.

[14] Arguably, declining revenue productivity maps into declining marginal revenue products of inputs. At given unit wage, firms should react to a decrease in the marginal revenue product of labor (i.e., MRPL) by reducing the amount of labor used, in order to restore the efficiency condition (equality between unit wage and MRPL). However, with labor costs representing a decreasing share of assets (i.e., capital) and an increasing share of value added, this seems not to be happening. While, in principle, the decline in the ratio of labor costs on assets might be happening through a reduction in labor costs, the increasing pattern of ULC tells us that the drop in TFPR (as mirrored by the drop in the asset turnover) tends to dominate, so that a higher share of value added is absorbed by labor.

In terms of size classes, panel (a) shows a clear hierarchy of the return on capital according to firm size: in fact, the average return increases with size. The difference is most apparent for micro firms (sales below 2m euros), whose ROA fluctuates around the very low value of 2%. At the other extreme, large firms obtain a ROA of around 6%, while small and medium firms are approximately 1 percentage point below, with a smaller difference between them. The drop in ROA during the crisis has also been more pronounced for SME than for large firms, although since 2013 the recovery has been more steady, leading medium size firms to close the gap with large ones.

Panel (b) splits firms by geographical area. As expected, firms located in the South record around 2 percentage points lower returns on average, which represents one third of the average return. This indicates that, despite more of a century of policies aimed at promoting development in Southern Italy, the region still pays a large competitiveness disadvantage, reflected in the lower returns earned by firms on the capital invested. Firms in the other areas display similar patterns, with a slightly higher profile for firms located in the North-West.

Figure 6.3: **Evolution of ROA by firm categories**



Source: our calculation on CERVED data

In terms of sectors, panel (c) shows that manufacturing firms on average generate a higher ROA compared to the other sectors. This confirms the comparative advantage of the Italian economy in manufacturing compared to other industrialised economies (and similarly to Germany). Despite this, the sector also shows a worryingly downward trend that clearly pre-dates the crisis, and starts after the pick of 1995, when the manufacturing sector was still benefitting from the devaluation of lira of 1992 (Macis and Schivardi, 2016). Manufacturing firms also

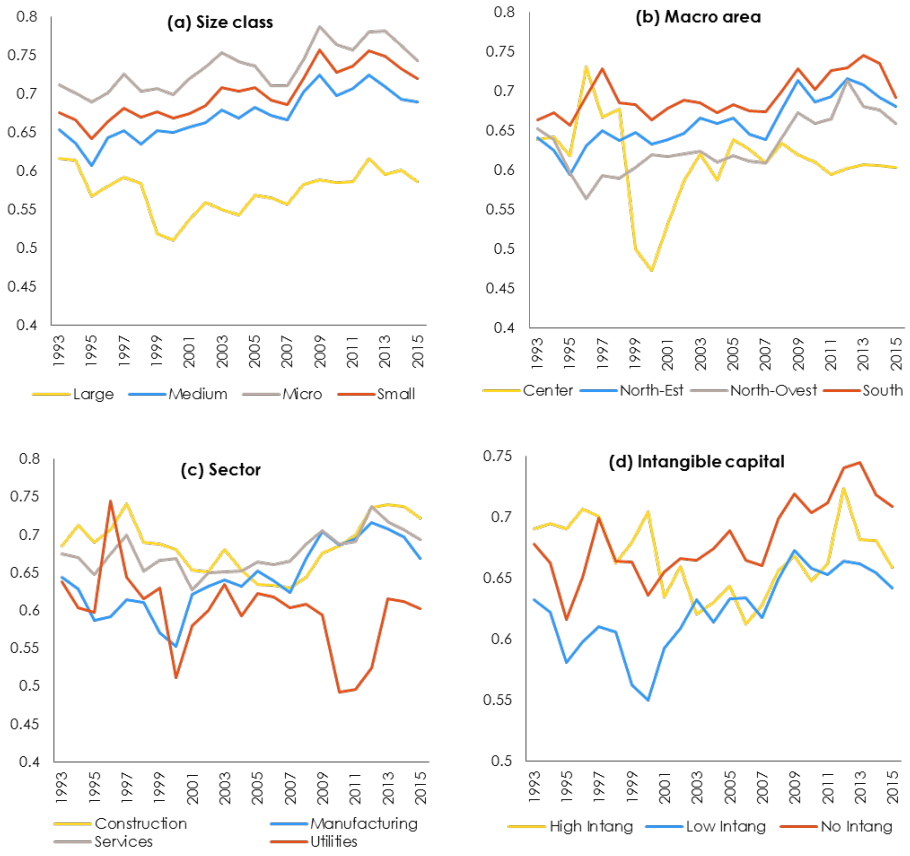
recorded the sharpest drop in returns at the onset of the crisis, from 6% in 2007 to below 3% in 2009, when international trade collapsed. However, they were also the first to recover: as of 2015, ROA is almost back to the pre-crisis average. Among the other sectors, ROA tends to be historically lower in Utilities, arguably because less riskiness; in fact, firms in this sector where hit the least during the crisis. Services firms are in between manufacturing and utilities, with a higher average ROA than the latter and a lower drop than manufacturing since 2008. The sector that was more heavily hit be crisis is Construction, where ROA dropped constantly from 2008 to 2013, to a though well below 2%. In 2014 and 2015 there are signs of inversion, but the recovery lags behind that of other sectors and the returns are still less than half of the pre-crisis level.

Panel (d) reports the evolution of ROA for the three groups of firms in terms of innovative content. Generally, firms with no intangible capital secure lower returns on capital than the other two categories. The difference increases during the crisis, when firms with no intangible capital's ROA dropped to almost zero. This signal a traditional weakness of the Italian productive system: a large share of traditional firms, which are not able to keep up with technological change and increased international competition. This said, the second interesting insight is that firms with a low or a high share of intangibles fair similarly: if anything, before the crisis low intangibles firms tended to record a higher ROA. This is an indication of the difficulty that Italian firms incur in competing at the top of the technological frontier. During the crisis the gap has closed. Overall, this indicates that high-tech innovation is still difficult to carry out by Italian firms, but that the crisis might have worked as an accelerator of the process of technological upgrade. It will be interesting to check if these patterns will be confirmed or reversed by the recovery under way.

In Appendix 10 we report additional tables with the patterns followed by the ROA components along the different categories. The differences associated with firm size become striking. In particular, it is worth noting how large firms suffer substantially less than other firms the burden of labor costs on assets and how the relatively lower ROA of micro firms maps into an even more evident gap in terms of sales and intermediates on assets. Moreover, sales per assets are shown to be substantially lower for Manufacturing and Services firms.

Next, in Figure 6.4 we report the evolution of ULC for the different categories. The aggregate pattern of Figure 6.2 masks some interesting differences across categories, particularly by size class. First, large firms have substantially lower ULC. This is not surprising, as typically these firms are more capital intensive and, therefore, more productive. What is more interesting is that these firms on average actually recorded a substantial drop before 2000, that explains the decrease at the aggregate level, and a fairly moderate increase since 2000. On the contrary, for all other size categories ULC were already on the rise since 1995, implying an increasing divergence with respect to large firms. This calls into question the capacity of SMEs to compete in the globalised world. In terms of the other categories, there are no remarkable differences across areas or sectors, while the division by intangible capital confirms that firms that have no intangible capital are less competitive than the others.

Figure 6.4: **Evolution of ULC by firm categories**



Source: our calculation on CERVED data

6.3 Regression evidence

The graphical analysis discussed above cannot account for correlated effects, for example for the fact that large firms are more prevalent in the North-West. To determine the profitability by category controlling for other categories we resort to regression analysis. We regress the indicators of profitability on dummies based on the size, area, sector and intangible assets categories using the following regression equation:

$$Z_{it} = \beta_0 + \beta_1 DSize_{it} + \beta_2 DArea_{it} + \beta_3 DSector_{it} + \beta_4 DIntang_{it} + \beta_5 DYear + \varepsilon_{it} \quad (6)$$

where R_{it} is a profitability indicator, DSize are dummies for size, DArea for area, Dsector for sector, Dintang for intangible intensity and DYear are year dummies. We use the same categories as in the previous figures. The excluded category is Small-North West-Manufacturing-No Intangibles. We exclude micro firms that would represent the large majority of firms but a small fraction of output and weight the regressions by firm size. We use robust standard errors.

Column [1] in Table 4 reports the results for ROA. The regressions confirm the graphical inspection analysis in Section 6. Profitability increases monotonically with size, is lower in the center and especially in the south, and is higher in manufacturing. The ranking in terms of intangible capital reinforces the previous conclusion that

Italian firms do not seem to be able to capitalise on innovation: in fact, controlling for other characteristics, firms with no intangible assets have a higher ROA of both low and high intangible firms.[15]

Columns [2]-[5] perform the basic regression for the components of ROA. Large firms have both a higher productivity of capital and a lower ratio of labor costs on assets, while they use more intermediates. As a consequence, ULC decrease with size. Surprisingly, controlling for other characteristics, sales on assets turn out to be higher in the South and especially in the Center compared to the North-West (column [3]). This is due to the fact that firms in this area tend to use more intermediates (column [4]). Interestingly, they also have lower ULC, thanks to a lower level of labor costs on assets.

Overall, the patterns seem to be driven by strong differences in terms of intermediates on assets. For example, firms in Central and Southern Italy are characterised by a higher asset turnover, compared to the benchmark category, but they end up with a ROA that is significantly lower, due to over-helming expenses on intermediate goods and services. The same is true for the services sector.

Summing up, the evidence confirms the usual weaknesses of the Italian corporate sector, from the size distribution aspects to the geographical ones. The results on intangibles are, to the best of our knowledge, new. In contrast with some previous literature (see Battisti et al., 2015), we do not find a monotonically increasing ranking of profitability in terms of intangible capital. This suggests an original view of the difficulties of the Italian productive system. While the typical prescription is to increase the technological content of products, our evidence points to the fact that firms investing in technology (as measured by the possibly imperfect measure of intangibles) are not necessarily those doing better. This is particularly true for SMEs, that are seems less able to exploit the returns from intangible investments.

6.4 Why are firms more intensive in intangibles less profitable?

The most surprising result emerging from Table 4 is arguably that firms with no intangible capital have higher returns on assets than firms that do invest in intangibles. This is an interesting finding, given the strong policy emphasis on increasing firms' innovative activity. We argued that this effect might be a signal of some structural features of the Italian productive system that makes it inadequate in terms of innovation. To delve into aspect more, in Table 5 we run the profitability regression (6) on different subsamples of firms. First, we run the regression on three different sub periods: 1993-1999, 2000-2008 and 2009-2015 (Panel A). We find that the negative correlation between ROA and intangible intensity decreases over time. In particular, in the most recent period, firms with a low share of intangibles do as well as those with no intangibles, while the ROA of high intangible firms is only 0.6% lower and marginally significant, against almost 2% (and highly significant) in the 1993-1999 period. This suggests that the inadequacy of the productive system is becoming less salient over time, despite innovation not being yet a positive contributor to profitability even in the most recent period.

Compared to tangible assets, intangible investments tend to have a large fixed cost component, such as to create a trademarked, develop a product, and establish a brand. As such, they require a large customer base to allow

[15] In addition to the regressions on categorical dummies, we have also experimented with the continuous indicator of intangible capital over total capital, finding a negative coefficient of -.0135, highly significant. To check for the possibility that intangibles require time to affect profitability, we have also run the regressions using the first and the second lag of the continuous indicator rather than the contemporary one, finding very similar results. We have also run the same regressions including firms fixed effects to control for fixed firm-level unobserved heterogeneity. Again, the results where confirmed.

recovering the fixed investment. Under this view, small size is detrimental to the profitability of intangible investments. Panel B of Table 5 investigates this hypothesis by splitting the sample by firm size.[16] We find that the negative correlation between intangible assets and ROA found for the overall sample is strongest among small firms, it declines (and becomes positive for low intangible firms) among medium firms, and turns positive among large firms. This evidence supports the assumption that a firm size distribution skewed towards the small size is not only detrimental to how much innovation corporations perform, but also to what they get in terms of returns from such investments.

We next consider sectors, distinguishing between Manufacturing, Utilities, Construction and Services (Panel C). We find that the negative correlation tends to be strongest in sectors with less competition, such as Utilities and, to a lower extent, services, while it disappears or turns positive in manufacturing, which is exposed to international competition. This evidence is in line with the rent-seeking theory of Boumol (1996), according to which, in the presence of rents, entrepreneurs find it more profitable from a private viewpoint to engage in rent seeking rather than in socially-desirable activities, such as innovation. Indeed, Pellegrino and Zingales (2017) point to cronyism as one of the main causes of the Italian disappointing growth performance since the mid-nineties.[17]

Finally, we consider technological content, using the OECD classification that allows to split manufacturing sectors in Low and Medium-Low technology on one side and High and Medium High technology on the other (OECD 2011). Compared to other advanced economies, Italy is specialised in productions with a lower technological content. This might limit the returns to intangible investments, whose contribution to performance and profitability might increase with the technological level of the sector. Panel D supports this hypothesis: the negative correlation between ROA and intangibles only emerges in Mid-Low tech sectors, while the opposite occurs in Mid-High tech ones.

All in all, the evidence of Table 5 is consistent with the view that the Italian productive system is not sufficiently equipped to take advantage of innovative activity. Despite the situation having improved over time, even in the most recent period intangible investments do not seem to pay off in terms of profitability. A productive system still specialised in traditional productions, with a large share of SMEs and few large firms, and key non-manufacturing sectors not sufficiently open to competition (see Figure 1), not only produces too little innovation, but also obtains lower returns to innovative activity when performing it. This has important policy implications, to which we will come back in the conclusions.

6.5 Chinese import penetration

One often cited cause of deterioration in firm's performance in advanced economies is the growth in export from China. In this section we address this issue using information on exports from the OECD-STAN database (also used in Section 5).

We regress ROA on the same set of regressors as above, adding the ratio of sectoral import from China over total sectoral import. Formally, we run this regression:

[16] Given that size is the category on which we perform the split, these regressions are not size weighted. Using weights also within category delivers similar results for small and medium firms, while the positive effect of intangible investments in large firms disappear.

[17] There is anecdotal evidence of some Italian entrepreneurs moving out of competition-open manufacturing activities to sectors with some form of barrier to entry, such as utilities or infrastructures.

$$ROA_{it} = \gamma_0 + \gamma_1 IPCIt_{j(i)t} + \gamma_2 \text{Controls}_{it} + \eta_{it} \qquad (7)$$

where $IPCIt_{j(i)t}$ is Chinese import penetration in Italy in sector j to which firm i belongs. The problem with this regression is that Import penetration in Italy is clearly endogenous, as it depends also on the Italian sectoral performance and is therefore correlated with η_{it}. Consider the case of a sector affected by a negative productivity shock. This will have a negative effect on ROA, but also induce more import penetration, as a weaker sector is more vulnerable to import competition. In this case, γ_2 would capture a spurious negative correlation between import penetration and profitability rather than a causal effect of the former on the latter, leading to an over-estimate of the effect. It might also be that a positive sectoral shock induces firms to import more intermediate goods. As long as these intermediates belong to the same sector, we would have a positive spurious correlation between import penetration and profits. The sign of the bias cannot therefore be signed a priori. To address this issue, we adopt an instrumental variable approach and instrument Chinese import penetration in Italy with $IPCRoW_{j(i)t}$, that is, Chinese import penetration in the rest of the world.[18] This is constructed as sectoral Chinese export over sectoral total world export, excluding Italy from both the numerator and the denominator. Under the assumption that developments in the rest of the world are unaffected by Italian sectoral shocks, this variable is orthogonal to sectoral developments specific to Italy and only reflects Chinese sectoral performance. Given that Italy accounts for a small fraction of international trade, this seems a reasonable assumption. On the other hand, Chinese import penetration in the rest of the world is clearly correlated with import penetration in Italy, as the first stage regression clearly shows. It therefore constitutes a valid instrument.

We limit the analysis to manufacturing and exclude the sectors Other manufacturing, for which no export data are available, and Manufacture of coke and refined petroleum products, which has a low and stable Chinese presence and large fluctuations in firms profitability, arguably due to oil prices.

Table 6, Panel A runs the regression for the whole period and for 3 sub periods. We do not find any significant correlation between Chinese import penetration and ROA when pooling all years. In terms of periods, we find no significant change in the coefficient of import penetration: in fact, despite turning positive in the period 2009-2015, it is never statistically different from zero (Panel A).

To get some further insights, we perform additional sample splits. In term of size (Panel B), we find that that import penetration has a negative effect on ROA in all size classes, with no clear ranking: the effect is smaller for Medium firms.[19] In terms of intangibles class (Panel C), we find that the effect is negative for the no intangible and low intangible firms, and positive for the high intangible ones, but never statistically different from zero. The only significant difference is with respect to the technological content (Panel D), where we find that import penetration has a negative and significant impact for low and medium-low tech firms, and positive but not significant impact on medium-high and high tech firms.

[18] This strategy is widely used in the empirical literature on the effects of Chinese import penetration, see for example Acemoglu et al (2016) and Utar and Ruizi (2013).

[19] As before, we do not weight for size when we perform the sample split regressions. Results are similar when we use the weights, again with the noticeable difference that the effect of import penetration is negative but not significant in Large firm class.

All in all, this analysis lends limited support to the assertion that Chinese import penetration is a major determinant of firm profitability. Overall, we find no effect on ROA. In terms of sample splits, there is some evidence that import penetration has a stronger impact on low-tech, low-intangible firms, but the effects are statistically weak. Of course, this does not imply that firms did not suffer from competition from China. In fact, if we run the same regression using sales growth as the dependent variable, we find a negative and significant coefficient. However, we also find that capital decreases in firms exposed to the increased competition from China. The shock therefore affects both the numerator (profits) and the denominator (capital) of ROA, with marginal effects on their ratio. Stated differently, capital relocates away from the affected sectors, limiting the fall in ROA. This is in line with the findings of Calligaris et al. (2016), who show that the large majority of the increase in capital misallocation that occurred in Italy since the mid-nineties took place *within* rather than *between* sectors. This suggests that a more promising avenue to identify the determinants of profitability is to look for characteristics that vary at the firm, rather than at the sectoral level. This is what we do next.

7. "MARKERS" OF PROFITABILITY

We now investigate the relationship between a number of firm characteristics ("markers") and firm differences in terms of ROA, its components, or ULC. We look in particular at corporate ownership and management, finance, workforce composition, internationalisation and innovation. In doing so, we rely on reduced form regressions at the firm level. Balance sheets do not provide information on such items. We therefore resort to the INVIND database of the Bank of Italy. It covers manufacturing firms with at least 50 employees from 1993 to 2011, thus excluding small firms. A detailed description of the dataset can be found in Calligaris et al. (2016).

We run the following regression:

$$Z_{ist} = \lambda_0 + \lambda_1 X_{ist} + \delta_t + \phi_s + e_{ist}, \qquad (8)$$

where i, s and t refer to firm, sector and year respectively; Z_{ist} is in turn ROA, sales on assets, labor cost on assets, intermediates on assets and ULC; X_{ist} is the marker (or vector of markers) we want to analyse; δ_t is a year dummy that captures common shocks to all firms in a given year; ϕ_s is a sector fixed effects controlling for time-invariant sector characteristics that can influence the effect of the marker on misallocation; e_{ist} is the error term. These regressions are inspired by the analytical framework discussed in Section 4. Needless to say, the econometric specifications that we implement allow us to *identify correlations, but not causation*, and should be interpreted in these terms.

Corporate ownership/control and governance

We construct an indicator of ownership type, distinguishing between firms controlled by an individual or a family, a conglomerate, a financial institution, the public sector or a foreign entity.

Regression results are reported in Table 7. We do not find a clear hierarchy in profitability. The firms with the highest ROA are those belonging to a conglomerate, which record a 0.4% higher ROA than family firms (the excluded category). Not surprisingly, government controlled firms are the least profitable (almost 2% lower than family firms), while, more surprisingly, firms controlled by a financial institution are less profitable than family firms (-0.9%) while those with foreign ownership are equally profitable. Asset turnover is substantially higher in firms with foreign ownership, confirming a general finding of the literature that multinationals are more productive than domestic firms (Bloom, Sadun and Van Reenen, 2012), and lower in government controlled firms. Family firms do have a clear advantage on other firms (with the exception of conglomerates): they display lower ULC. One possible reason is that they are able to pay lower wages. In fact, a growing literature shows that family firms offer more employment security to their workers and obtain a substantial wage discount (between 2 and 5%). In turns, this affects positively firms' profitability, possibly compensating for the lower productivity that family firms typically display (Sraer and Thesmar, 2007, Bassanini et al., 2013, Ellul, Pagano and Schivardi 2018).[20]

Finance

We investigate the relevance of credit constraints and relational banking. We define credit constrained firms as those that declared that they would have liked a higher level of debt, variable *CC1*, and those that declared to be willing to having more credit even at higher interest rates, variable *CC2*. Both measures enter the regression with a lag in order to mitigate endogeneity.

Regression results (see Table 8) show that firms that were credit constrained at time $t-1$ tend tend to be less profitable at time t, on average. This seems to confirm something already highlighted by Calligaris et al. (2016) in terms of productivity: the "right" – that is, least profitable and productive – firms seem to be financially constrained.

We also look at relational banking, considering a firm as being involved in 'relational banking' if it declares that the principal reason for dealing with its main bank is "personal relationship and assistance". Firms with relational banking are less profitable and display higher ULC. This calls into question the effectiveness of relationship banking as a tool to overcome problems of asymmetric information.

Workforce composition

As highlighted in Section 3, the functioning of the labor market is one of the structural features of the Italian economy that has been more extensively reformed since the 1990s. In this Section we look at the role of skill intensity among both blue- and white-collars.

We look at two measures of skill-intensity: the share of white collars holding a degree (variable $share1$) and the share of blue collars holding a degree (variable $Grad\ share2$). We are able to observe these two variables only in 2010 and 2011, thereby we run a cross-section regression for the two years together.

Regression results are reported in Table 9. The share of white collars holding a degree is positively related with profitability and negatively with the labor costs on assets, as well as with ULC. No effects are detected for the share of blue collars holding a degree.

[20] It is important to remember that the database only covers medium to large size firms: only firms with at least 50 employees are in fact included. Small family firms, typically found to have lower performance levels than other firms, are therefore not included in the analysis.

Internationalisation

We focus on two main dimensions of firms' internationalisation: being part of a multinational and the extent of delocalisation. We use dichotomous variables indicating whether firms: i) belong to a foreign group (variable *Foreign group*) or ii) delocalised part of the production process (variable *Deloc*).

Regression results are reported in Table 10. We find the companies which are part of a foreign group to be characterised by higher levels of both ROA and all of its components. No relationship emerges with ULC. Delocalisation has no impact on any of the variables, with the only exception of reducing labor costs on assets. This suggests that delocalisation might not be an effective solution to profitability issues.

Cronyism

Cronyism, expressed in terms of dependency on the public sector and interconnectedness with governmental institutions, is presented by Pellegrino and Zingales (2017) as the ultimate cause of the 'Italian disease'. Moreover, Giordano et al. (2015) show that the efficiency of the public sector strongly affect private firms' labour productivity. With our data, we are able to measure the share of sales to the public sector in total firm's sales for the period 2009-2011 (variable *Publ adm sales*).

Regression results are reported in Table 11. The econometric results show a positive correlation with ROA and a slightly significate negative correlation with ULC: supplying the public sector administration is related to higher profitability.

8. DISENTANGLING THE EFFECTS OF DEMAND AND PRODUCTIVITY SHOCKS ON FIRMS PROFITABILITY

Modern theories of industry dynamics assume that firms are heterogeneous along a single unobserved dimension, productivity, which determines the firm's performance (Jovanovic, 1982; Hopenhayn, 1992). The empirical literature on the topic has followed this view, subsuming all the possible determinants of performance in a stochastic scale factor, identified with productivity (see Syverson, 2011 for a comprehensive survey). This is typically understood as the capacity of a firm to transform inputs into output – that is, technical efficiency. However, several other dimensions of heterogeneity may matter. In particular, the assumption that the products of all firms look alike to consumers fails to capture an important ingredient of firm heterogeneity. Differences in the effectiveness in marketing, in developing relationships with customers, in maintaining brand image and in generating word-of-mouth are only some sources of heterogeneity across firms on the demand side.

The literature has shown that productivity measures that do not account for demand shocks are actually a mixture of true productivity effects and demand shocks themselves. However, the relevance of distinguishing between these two sources of heterogeneity goes beyond this measurement issue. It also provides insights on the determinants of firm profitability. In their seminal contribution that distinguishes between shocks to demand and to productivity, Foster et al. (2008) show that exit decisions are determined by profitability rather than by productivity, and that profitability depends on demand as much as on productivity. In fact, there are firms that have a relative low cost efficiency but that can still prosper in the market because they enjoy a high level of demand and therefore can charge high prices. This issue is important also for the analysis of the determinants of profitability of Italian firms. In fact, following the literature, the debate on the Italian slowdown has focussed almost exclusively on productivity. However, demand shocks could also play an important role: the disappointing performance of the Italian economy might partly be due to the fact that Italian firms were unable to improve their products quality to sustain competition on international markets. The policy implications for productivity and demand factors are very different. If the main causes of firms' performance are on the productivity side, then issues of firms organisation, ICT adoption, managerial efficiency, modern manufacturing techniques – in short, process innovation –are key. If demand is the predominant component of the drop in profits, one needs to think more in terms of product development and international competitors – in short, product innovation.

Although these issues are well understood, they are still much understudied. The data requirements to pursue this line of investigation are,in fact, quite stringent. To separately identify shocks to demand and productivity one needs to observe firm level prices, rarely available in the datasets used in the literature. We build on the work of Pozzi and Schivardi (2016), who use a dataset with survey information on firm level prices to study how demand and productivity contribute to firm performance. The analysis is based on a standard model of monopolistic competition on the demand side and Cobb-Douglas technology on the production side, each with its own stochastic shifter, which can be seen as a natural extension of the conceptual framework discussed in Section 4. The model is estimated using the INVIND dataset on Italian manufacturing firms , over the period 1988-2007 in the Textile and Leather, Metals, and Machinery sectors, for which the monopolistic competition assumption is likely to be a good representation of market structure. Idiosyncratic demand shocks are estimated as the residual of the demand function, and the usual simultaneity problem in demand estimation (Trajtenberg, 1989; Berry, 1994) are bypassed using a direct assessment of the elasticity of demand provided by the managers in the survey.

Productivity shocks are then identified as residuals of the production function equation, with output deflated with firm level prices, using the Olley and Pakes (1996) methodology to address the endogeneity of inputs choice. Given that prices are only reported in terms of yearly *changes*, the model is estimated in first differences. Shocks are therefore changes in TFP and demand. We refer to Pozzi and Schivardi (2016) for all the technical details.

We run the following regression:

$$\Delta Z_{it} = \theta_0 + \theta_1 \Delta \text{TFP}_{it} + \theta_2 \Delta \text{DemandShock}_{it} + \varepsilon_{it} \qquad (9)$$

where Δ indicates changes and Z are the usual measures of profitabilities and its components (for example, $\Delta \text{ROA}_{it} = \text{ROA}_{it} - \text{ROA}_{it-1}$) and ΔTFP_{it} and $\Delta \text{DemandShock}_{it}$ are TFP and demand shocks.

The results are reported in Table 12. The first column uses changes in ROA as the dependent variable. The coefficient on the TFP shocks is more than twice as large than that of demand shocks. However, demand shocks have a higher degree of variability: the standard deviation is 0.36 against 0.13. As a consequence, once we factor in dispersion of the shocks, we find that one standard deviation increase in ΔTFP would increase ROA by 1.3 percentage points, whereas the same change in ΔDemandShock would have an impact of 1.4 percentage points. Demand shocks, therefore, have a slightly stronger role than productivity ones in determining the evolution of profitability at the firm level.

The other columns repeat the exercise for the components of ROA and for ULC. Demand shocks are particularly important to determine the evolution of sales on assets. This is not surprising, because a firm experiencing a positive demand shock not only increases the quantity sold but also the price, whereas the opposite occurs for TFP shocks: to sell the extra output produced after the increase in productivity, the firm needs to reduce prices. As a consequence, the impact on sales of a TFP shock is muted with respect to that of a demand shock. TFP shocks have instead a larger negative impact on labor costs: labor costs on assets and unit labor costs have an elasticity approximately three times as large in absolute value to TFP shocks than to demand shocks, consistent with the fact that TFP is a cost shifter. Still, demand shocks too reduce the impact of labor costs on profitability. The reduction in ULC can be explained by the fact that, when demand increases, firms can charge higher prices and this extra revenues are not totally transferred to wages: value added therefore grows more than the wage bill, and ULC go down.

Overall, this evidence suggests that both demand and productivity factors are important in determining firms profitability. Demand has a stronger effect on sales per assets, which, as we have seen above, is the key component of the variations of ROA over time. This confirms that the recovery of firms' profitability should go through revenues more than costs. Moreover, it further suggests that revenue can be recovered not only through improvements in efficiency, but also, and possibly especially, through increases in products appeal.

9. CONCLUSIONS AND POLICY IMPLICATIONS

The profitability analysis of Italian companies reveals a mild decline in corporate profitability (as measured by ROA) up to 2005 and a sharp contraction during the economic crisis, followed by a slow recovery starting in 2013. Since 2010, ROA oscillates around an average level which is approximately two percentage points below the 1993-2007 average.

The ROA pattern masks a combination of decreasing labor costs on assets and declining capacity to produce sales from assets (asset turnover). Although falling up to 2000, firms' ULCs have been rising almost constantly between 2000 and 2012, with a deterioration of about 10 percentage points. Thus, as sales have fallen more than labor costs, the weight of labor costs over sales, net of intermediates, has grown considerably. The substantial increase in ULC is specific to Italy and Spain and the labor cost burden tends to be relatively lower in Italy than in other countries. Thus, the decline in corporate profits in Italy has to be traced back to reduced firm ability to generate sales from given inputs ('revenue productivity') rather than to rising labor costs. Returning to a path of revenue productivity growth is therefore the natural avenue to restore profitability. These patterns are strictly related to those documented, among others, by Calligaris et al. (2016): the drop in revenue productivity was too deep to be compensated in terms of labor costs, notwithstanding an ongoing process of capital deepening (and net of the eventual resorting to outsourcing activities, which however seems not to be relevant), thereby resulting in lower profitability.

Given these findings, from a policy point of view it is key to understand whether the drop in revenue productivity of Italian firms has been mainly driven by demand (mark-ups, quality, etc.) or efficiency (i.e., TFP) shocks. We have found that both demand and productivity factors are important in determining firms profitability. This suggests that revenue productivity can be stimulated not only through improvements in efficiency, but also, and possibly especially, through increases in products appeal.

While the time evolution of profitability is fairly similar across macro-regions, macro-sectors and size classes, the econometric results obtained by controlling for different categories of firms and for a number of potential markers of profitability, allow us to identify interesting hierarchies. Two models of production and running business seem to coexist. On the one hand, there is a 'active model' based on innovation and value creation featuring bigger and international firms with a more educated workforce and a higher expenditure on intermediates and labor, which however come with higher sales and profitability. On the other hand, there is a 'passive model' based on cost control featuring domestic and usually small-sized and family-owned firms, which are losing profits, not being able to reduce their costs in the face of falling revenue productivity. This view is partially confirmed by the analysis of Chinese import penetration, which, despite suggesting that Chinese competition was not a major determinant of firms profitability on average, shows that it took a larger toll on low-intangible capital firms.

Our analysis shows that the natural avenue to improve firm's profitability is increasing productivity and market appeal rather than reducing labor costs. In this perspective, an important result relates to intangibles, arguably the key ingredient to improve firms productive efficiently and market appeal. We show that firms with the highest innovation intensity (as measured by the share of intangible capital) are typically not those with the highest ROA. These average results mask important cross-firm heterogeneity: intangibles are actually negatively related to profitability among small firms and low tech firms, while the opposite is true for large and for high

tech firms. It is therefore the "weak" part of the firm's population that does not seem to be able to take full advantage of technological progress. This view is fully consistent with the firm-level trends recently reported by OECD (2015b), according to which the productivity growth of the globally most productive firms remained robust in the 21st century but the gap between high productivity firms and the rest has risen. The reason why would be that less internationalised firms feature a lower capacity to innovate and optimally combine technological, organisational and human capital in production processes throughout global value chains and harness the power of digitalisation to rapidly diffuse and replicate ideas.

Putting our results in perspective leads to some important policy conclusions. We provide an original view of the difficulties of the Italian productive system. While the typical prescription is to increase the technological content of products, our evidence points to the fact that firms investing in technology (as measured by the possibly imperfect measure of intangibles) are not necessarily those doing better. In fact, a productive system traditionally specialised in low-tech activities and heavily reliant on SMEs finds it hard to keep up with the pace of technological innovation not only because it invests little in innovation activity, but also because these features limit the returns to innovation, even when firms do engage in it.

These conclusions cast serious doubts on what is arguably the most common policy tool used to speed up of the structural transformation of the Italian productive system: subsidies to innovation. If firms do not have the capabilities and the organisational structure necessary to successfully manage the innovation process, an increase in innovation investment due to public subsidies might be little effective in improving firms performance. This is also the conclusion reached by Schivardi and Schmitz (2018) when analysing the effects of ICT subsidies on firms productivity. In their analysis, ICT is complementary to managerial practices, and Italian firms tend to display practices of lower quality than German firms. As a consequence, even when they adopt ICT, they obtain lower increases in productivity than German firms. Stated differently, the subsidy acts on the symptom – low ICT adoption – but not on the deep cause of lower adoption.

A more difficult, but conceivably more promising policy goal is to overcome the structural features that make (many) Italian firms incapable of taking full advantage of innovation. Medium-to-long term policies aim at increasing the share of firms that are capable to embrace the 'active model' described above relative to those stuck in the 'passive model'. Our analysis of the drivers of profitability points to some key features. In terms of ownership, the comparison between family and foreign owned firms well adheres to this characterisation, with family firms achieving a ROA comparable to that of foreign controlled firms, but through lower productivity and lower wages. Moreover, we also find that state owned enterprises have a substantially lower ROA, due to the lower efficiency of the capital use. Even though the state ownership of firms has been substantially reduced since the mid-nineties, there are still areas of active government presence, particularly in the utilities sector. In fact, most local public services, such as garbage collection and local public transport, are provided by firms controlled by local municipalities, with no role for competition.

This observation leads to an additional source of prevalence of the 'passive model': competition. We found that the lack of a premium on intangible investments is particularly apparent in sectors where competition is low, such as Utilities, while they boost profitability in manufacturing, which is open to international competition. This is also confirmed by the study of the reform of the retail trade sector, which shows that a more competitive environment directly impacts negatively profitability, reducing firm's rents, but also increases productivity and technology adoption. Being sheltered from competition allows firms to survive, and possibly prosper, even with low efficiency and obsolete business models. As discussed in Section 3, there are still barriers to competition in some service sectors, particularly utilities and professional services. These are mostly of a regulatory nature and

should be the target of policy action. However, the recent experience with the annual competition law (Legge 23 July 2009, n. 99) confirms that opening sheltered activities to competition is a difficult political task: This law established that the Government would issue an annual law to foster competition, based on the report from the Antitrust Authority. As it turns out, the first annual law was issued only in 2017, after a complicated legislative path.

We also find that the human capital of the workers is related to higher profitability. And this might be even more relevant for entrepreneurs. In ongoing work, Schivardi (2018) finds that, differently from other advanced economies, Italian entrepreneurs are less educated than employees. An entrepreneurial class with a low level of education clearly represents an important obstacle for the modernisation of the productive system. One problem might be the education system, which might not provide graduates with the right set of skills to undertake an entrepreneurial career.

Increasing the quality and the quantity of Italian graduates clearly can help to improve the situation. However, as argued by Schivardi and Schmitz (2018), the problem is not only the supply of skills, but also (or mostly) their demand. As shown by Bugamelli et al. (2012), Italian family entrepreneurs tend to be very reluctant to open up control to external managers, limiting the possibility to inject core competencies at the top of the firm. In this respect, an important role could be played by non-banking financial operators. As shown by the literature, Private Equity (PE)and Venture Capital (VC) funds inject in firms not only equity, an important source of finance when engaging in innovation, but also competencies. These operators could therefore greatly contribute to the modernisation of the Italian productive system. Indeed, we have shown that quite a bit has been done to simplify legal procedures and the administrative burdens for firms startup. More difficult is to foster firms' growth. On this aspect, a well-developed market for Private Equity and Venture Capital is essential. Unfortunately, this market is still marginal in Italy, not only with respect to the frontrunners (the UK and Nordic countries), but even compared to Spain. Investigating the sources of this delay goes beyond the scope of this report, but it is clearly an important subject for future research.

In our analysis the role of the public administration has remained in the background. Needless to say, this is also a key area of policy intervention. First, a large and inefficient public sector can distort entrepreneurial incentives towards rent seeking rather than innovation. In fact, we find that firms that sell more to the public administration are more profitable but less efficient. More in general, a process of structural transformation requires a stable, predictable, intelligible legal and regulatory framework, in which entrepreneurs can program log term. As shown by Gratton et al. (2007), these are exactly the features that have disappeared since the fall of the ‘first republic’ in the first half of the nineties. Hence, both a well-functioning political system and an efficient bureaucratic apparatus are important goals on the way to the modernisation of the Italian economy.

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11. ANNEX: TABLES

Table 1: **BACH database: descriptive statistics (year 2015)**

COUNTRY		**% of sample**
Germany	40418	3%
Spain	424340	36%
France	216797	18%
Italy	512067	43%
Tot (sample)	1193622	100%
		(Italy only)
SECTOR	% of sample	% of Italy
Construction	14%	14%
Manufacturing	17%	21%
Services	67%	63%
Utilities	2%	2%
		(Italy only)
SIZE	% of sample	% of Italy
Turnover < 10M	93%	95%
M ≤ Turnover < 50M	5%	4%
Turnover ≥ 50M	2%	1%

Table 2: **Country-level regressions.**

	(1)	(2)	(3)	(4)
ULC	-1.862 ***	-1.856 ***	-1.854 ***	-1.964 ***
	(0.155)	(0.153)	(0.155)	(0.163)
Trade union density	-0.101	-0.0829	0.00253	0.00664
	(0.165)	(0.171)	(0.173)	(0.178)
Employment protection legislation				1.753
				(1.308)
Domestic credit to private sector (% of GDP)	-0.372 ***	-0.382 ***	-0.378 ***	-0.326 ***
	(0.111)	(0.112)	(0.114)	(0.126)
Financial system deposits (% of GDP)				-0.0895
				(0.207)
Import Penetration China		0.0947	0.101	0.0581
		(0.0690)	(0.0705)	(0.0750)
SPAIN (dummy) * Import Penetration China			-0.00101	0.00788
			(0.0375)	(0.0398)
FRANCE (dummy) * Import Penetration China			0.0459	0.0481
			(0.0348)	(0.0364)
ITALY (dummy) * Import Penetration China			-0.110 ***	-0.104 ***
			(0.0340)	(0.0352)
Constant	-1.278 ***	-0.916 *	-1.197 **	-3.146 *
	(0.491)	(0.495)	(0.498)	(1.743)
N	1378	1316	1316	1172
R^2	0.585	0.596	0.603	0.626

Note: Dependent variable: ln(ROA). Trade union density (ratio of union members divided by the total number of employees) and Employment protection legislation (indicator of the strictness of regulation on dismissals and the use of temporary contracts) are from the OECD-STAN Database; Domestic credit to private sector (\% of GDP) (ratio of the overall amount of domestic credit to private sector to GDP) and Financial system deposits (\% of GDP) (ratio of the overall amount of financial system deposits to GDP) are from the World Bank - Financial Development and Structure Database. Import Penetration China is defined as the share of World imports from China in total World Trade (source: OECD-STAN database). All variables in logs. Standard errors in parentheses. Country, Sector and Year dummies included in all regressions. * * $p < 0.10$, ** ** $p < 0.05$, *** *** $p < 0.01$.

Tabl 3: **Cerved database: descriptive statistics**

		Revenues	EBIT	Value Added	Net Income	Labor	Intermediates	Interest	Assets	Liabilities	Equity	# obs.
*by Sector	Manufacturing	46131	1885	6701	1538	4644	23894	371	40152	14453	14237	123918
	(% of tot)	*34.2%*	*40.9%*	*27.2%*	*46.9%*	*25.1%*	45.8%	*25.9%*	*28.4%*	*12.8%*	*38.1%*	*18.3%*
	Utilities	21584	1677	6534	1352	4199	2788	378	38490	22358	10898	5867
	(% of tot)	*2.4%*	*5.5%*	*4.0%*	*6.2%*	*3.2%*	0.7%	*3.7%*	*4.1%*	*2.4%*	*4.4%*	*0.9%*
	Construction	32262	1317	4524	845	3456	4864	506	40231	20607	8576	106193
	(% of tot)	*3.7%*	*4.3%*	*2.8%*	*3.9%*	*3.0%*	1.5%	*5.4%*	*4.3%*	*3.3%*	*3.5%*	*15.7%*
	Services	48606	1341	9618	831	7474	16119	561	52899	58338	11953	440245
	(% of tot)	*59.7%*	*49.3%*	*66.1%*	*43.0%*	*68.8%*	52.0%	*65.0%*	*63.3%*	*81.5%*	*54.1%*	*65.1%*
*by Size	Micro	428	7	142	-1	150	139	13	937	745	236	505875
	(% of tot)	0.3%	0.1%	0.4%	0.0%	0.7%	0.2%	0.7%	0.5%	0.6%	0.5%	82.8%
	Small	4299	184	1284	131	1052	1383	63	5214	3273	1526	79942
	(% of tot)	2.6%	2.5%	3.4%	2.4%	4.1%	1.8%	2.8%	2.4%	1.9%	2.6%	13.1%
	Medium	20852	747	5768	493	4433	7186	280	27302	12695	8877	20474
	(% of tot)	9.8%	7.7%	11.6%	7.0%	13.1%	7.0%	9.7%	9.6%	5.4%	11.6%	3.3%
	Large	292734	13915	66601	10108	43870	148891	3926	396576	336891	103237	5022
	(% of tot)	*87.2%*	*89.8%*	*84.6%*	*90.6%*	*82.1%*	91.0%	*86.8%*	*87.6%*	*92.0%*	*85.3%*	*0.8%*
*by Geo Area	North-West	48924	2763	10630	2132	6846	14797	679	54246	29762	18257	197239
	(% of tot)	*27.7%*	*44.4%*	*33.4%*	*47.8%*	*29.3%*	21.1%	*35.7%*	*29.5%*	*20.0%*	*37.5%*	*28.7%*
	North-East	27561	1044	5435	795	4218	8232	273	23500	13132	7650	142623
	(% of tot)	*14.1%*	*15.3%*	*15.6%*	*16.3%*	*16.1%*	10.6%	*13.1%*	*11.7%*	*8.0%*	*14.4%*	*20.8%*
	Center	84890	1928	12978	1185	10023	38765	808	94632	107126	19613	168449
	(% of tot)	*45.2%*	*29.6%*	*38.9%*	*25.4%*	*41.8%*	53.1%	*40.4%*	*49.1%*	*67.1%*	*38.5%*	*24.5%*
	South	27663	761	4424	543	3330	12093	239	20554	8579	5389	178139
	(% of tot)	*13.0%*	*10.6%*	*12.1%*	*10.6%*	*12.7%*	15.1%	*10.9%*	*9.7%*	*4.9%*	*9.6%*	*26.0%*

*by Intang.												
	No intang	25809	456	2730	335	2037	13597	134	15090	4284	4001	196178
	(% of tot)	14.1%	7.3%	8.3%	7.4%	8.8%	19.6%	7.1%	8.2%	2.5%	8.1%	32.3%
	Low intang	58365	2393	14278	1869	10500	19684	561	80525	77519	21177	225279
	(% of tot)	41.2%	45.9%	52.6%	49.9%	54.0%	34.3%	35.8%	52.5%	67.7%	51.4%	37.1%
	High intang	66733	2517	10952	1649	7393	27406	929	62074	36939	17221	185264
	(% of tot)	44.7%	46.8%	39.1%	42.7%	37.2%	46.1%	57.1%	39.3%	29.9%	40.5%	30.5%
	Full sample	47232	1639	8383	1176	6130	18501	505	48439	40220	12837	686554

Values refer to year 2015. All variables but # obs. expressed in thousand EUR, 2015 prices.

Table 4: **Profitability indicators by firm categories: regression analysis**

	(1)	(2)	(3)	(4)	(5)
	ROA	SalesonA	WonA	IntermedonA	ULC
Size					
Medium	0.0012***	0.0753***	-0.0474***	0.1444***	-0.0188***
	(0.0002)	(0.0074)	(0.0004)	(0.0077)	(0.0012)
Large	0.0036***	0.3997***	-0.0970***	0.5047***	-0.0659***
	(0.0008)	(0.0257)	(0.0010)	(0.0261)	(0.0060)
Area					
NorthEast	-0.0007	0.0685***	-0.0046***	0.0847***	0.0022
	(0.0009)	(0.0170)	(0.0011)	(0.0173)	(0.0053)
Center	-0.0071***	0.5817***	-0.0374***	0.5739***	-0.0637***
	(0.0016)	(0.0553)	(0.0020)	(0.0550)	(0.0158)
South	-0.0109***	0.1345***	-0.0324***	0.1824***	-0.0387***
	(0.0015)	(0.0243)	(0.0012)	(0.0252)	(0.0062)
Sector					
Utilities	-0.0007	-0.2595***	-0.0021	-0.2902***	-0.0614***
	(0.0019)	(0.0374)	(0.0036)	(0.0357)	(0.0087)
Constr	-0.0094***	-0.4383***	-0.0117***	-0.4405***	0.0329***
	(0.0009)	(0.0193)	(0.0011)	(0.0190)	(0.0060)
Services	-0.0055***	0.6418***	0.0077***	0.6510***	0.0524***
	(0.0010)	(0.0292)	(0.0013)	(0.0295)	(0.0081)
Intang. cap.					
LowIntang	-0.0034*	-0.6025***	0.0339***	-0.5994***	0.1017***
	(0.0019)	(0.0765)	(0.0019)	(0.0794)	(0.0072)
HighIntang	-0.0109***	-0.4417***	0.0336***	-0.4270***	0.0929***
	(0.0020)	(0.0844)	(0.0023)	(0.0879)	(0.0112)
Observations	2,253,472	2,238,137	2,252,777	2,239,853	2,175,801
R-squared	0.0276	0.1233	0.0767	0.1334	0.0225

Note: The table reports regressions of the profitability indicators on the dummies used to perform the sample splits. SalesonA is sales on assets, WonA labor costs over assets, IntermedonA intermediate costs over assets. We exclude micro firms and use sales as weights. Profitability measures are winsorised at the first and 99th percentile. The excluded category is small-manufacturing-NorthWest-No Intangible. All regressions include year dummies. Source: Cerved. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: **ROA and intangible assets: sample splits**

	(1)	(2)	(3)	(4)
Panel A: Periods				
	1993-1999	**2000-2008**	**2009-2015**	
LowIntang	-0.0007	-0.0061*	-0.0029	
	(0.0017)	(0.0033)	(0.0029)	
HighIntang	-0.0182***	-0.0134***	-0.0059*	
	(0.0020)	(0.0034)	(0.0031)	
Observations	564,595	963,600	725,277	
R-squared	0.0234	0.0105	0.0090	
Panel B: Size class				
	Small	**Medium**	**Large**	
LowIntang	-0.0026***	0.0013**	0.0090***	
	(0.0002)	(0.0006)	(0.0019)	
HighIntang	-0.0161***	-0.0099***	0.0045**	
	(0.0002)	(0.0006)	(0.0019)	
Observations	1,702,953	451,290	99,229	
R-squared	0.0155	0.0209	0.0219	
Panel C: Sectors				
	Manuf	**Util**	**Constr**	**Serv**
LowIntang	0.0030**	-0.0202***	0.0038***	-0.0021
	(0.0014)	(0.0046)	(0.0013)	(0.0021)
HighIntang	-0.0010	-0.0364***	-0.0039**	-0.0090***
	(0.0018)	(0.0058)	(0.0019)	(0.0022)
Observations	897,197	14,138	225,877	1,101,612
R-squared	0.0306	0.0446	0.0174	0.0237
Panel D: Technological content				
	Mid-Low Tech	**Mid-High Tech**		
LowIntang	0.0002	0.0063**		
	(0.0013)	(0.0032)		
HighIntang	-0.0068***	0.0028		
	(0.0022)	(0.0033)		
Observations	611,099	285,618		
R-squared	0.0473	0.0290		

Note: The table reports sample splits for the regression of ROA on dummies for intangible capital over total capital. LowIntang are firms with a value of intangible over total assets positive but below the 70th percentile of the distribution in each year and HighIntang are those with a value above that. The excluded category is firms with no intangible assets. We exclude micro firms and use sales as weights in all regression, excluding the size split (Panel B). Technological content splits the manufacturing sectors into low and medium-low on one side and medium-high and high on the other, using the OECD classification. ROA is winsorised at the first and 99th percentile. All regressions include year, area, and sector dummies, as in Table 4. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: **ROA and Chinese import penetration: sample splits**

	(1)	(2)	(3)	(4)
Panel A: Periods				
	All years	**1993-1999**	**2000-2008**	**2009-2015**
China penetration	-0.0192	-0.0472	-0.0691	0.0581
	(0.0243)	(0.1908)	(0.0755)	(0.1023)
Observations	870,267	250,400	368,436	251,431
R-squared	0.0646	0.0496	0.0570	0.0723
Panel B: Size class				
	Small	**Medium**	**Large**	
China penetration	-0.0403***	-0.0235***	-0.0645***	
	(0.0056)	(0.0090)	(0.0176)	
Observations	619,324	203,447	47,496	
R-squared	0.0443	0.0438	0.0576	
Panel C: Intangibles				
	No Intang	Low Intang	High Intang	
China penetration	-0.0156	-0.0365	0.0289	
	(0.0382)	(0.0295)	(0.0403)	
Observations	96,326	616,160	155,748	
R-squared	0.0560	0.0735	0.0717	
Panel D: Technological content				
	Mid-Low Tech	**Mid-High Tech**		
China penetration	-0.0652***	0.0239		
	(0.0173)	(0.0538)		
Observations	599,712	270,514		
R-squared	0.0504	0.0922		

Note: The table reports sample splits for the IV regression of ROA on China penetration (defined as the share of Italian imports from China in Italian total imports, source: OECD-STAN Database). Instrument: Chinese import penetration in the rest of the world (share of World imports from China in total World Trade, source: STAN database). We exclude micro firms and use sales as weights in all regression, excluding the size split (Panel B). Technological content splits the manufacturing sectors into low and medium-low on one side and medium-high and high on the other, using the OECD classification. ROA is winsorised at the first and 99th percentile. All regressions include year, area, and sector dummies, as in Table 4. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: **Ownership**

	(1)	(2)	(3)	(4)	(5)
	ROA	SalesonA	WonA	IntermedonA	ULC
Conglomerate	0.0041*	-0.0145	-0.0332***	0.0138	-0.0104
	(0.0024)	(0.0171)	(0.0053)	(0.0157)	(0.0080)
FinInst	-0.0088***	-0.0083	-0.0212***	0.0089	0.0187*
	(0.0027)	(0.0258)	(0.0059)	(0.0196)	(0.0110)
Government	-0.0173***	-0.1348***	-0.0499***	-0.0519	0.0790***
	(0.0047)	(0.0453)	(0.0084)	(0.0440)	(0.0194)
Foreign	-0.0015	0.1547***	-0.0039	0.1543***	0.0239**
	(0.0030)	(0.0279)	(0.0063)	(0.0261)	(0.0103)
Constant	0.0347***	0.8537***	0.2674***	0.5117***	0.7247***
	(0.0057)	(0.0390)	(0.0128)	(0.0353)	(0.0197)
Observations	15,256	15,566	15,566	15,566	15,227
R-squared	0.0521	0.0619	0.0524	0.0681	0.0353

Note: The table reports regressions of the profitability indicators on dummies for the ownership mode: controlled by an individual or a family (excluded category), a conglomerate (Conglomerate), a financial institution (FinInst), the public sector (Government) or a foreign entity (Foreign). SalesonA is sales on assets, WonA labor costs over assets, IntermedonA intermediate costs over assets. Profitability measures are winsorised at the first and 99th percentile. All regressions include year, two-digit sector and area dummies. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 8: **Finance: credit constraints and relational banking**

	(1)	(2)	(3)	(4)	(5)
	ROA	SalesonA	WonA	IntermedonA	ULC
	Panel A: Definition 1				
CC1	-0.0121***	-0.0520	-0.0080	-0.0272	0.0400*
	(0.0045)	(0.0349)	(0.0084)	(0.0305)	(0.0211)
Constant	0.0683***	1.0108***	0.1758***	0.7775***	0.7618***
	(0.0148)	(0.0844)	(0.0220)	(0.0699)	(0.0572)
Observations	1,010	1,031	1,031	1,031	1,004
R-squared	0.0751	0.1308	0.1220	0.1287	0.0480
	Panel B: Definition 2				
CC2	-0.0147**	-0.0936**	-0.0091	-0.0624*	0.0388
	(0.0057)	(0.0411)	(0.0122)	(0.0332)	(0.0291)
Constant	0.0361**	1.1090***	0.2792***	0.7733***	0.7568***
	(0.0159)	(0.1526)	(0.0471)	(0.1312)	(0.1131)
Observations	494	507	507	507	490
R-squared	0.1181	0.1213	0.0841	0.1433	0.0821
	Panel C: Relational banking				
Relational banking	-0.0096**	-0.0543	0.0064	-0.0433	0.0572***
	(0.0047)	(0.0374)	(0.0089)	(0.0342)	(0.0201)
Constant	0.0208*	1.0869***	0.1996***	0.8208***	0.8149***
	(0.0106)	(0.0869)	(0.0194)	(0.0763)	(0.0606)
Observations	748	759	759	759	744
R-squared	0.0419	0.0438	0.0442	0.0501	0.0482

Note: The table reports regressions of the profitability indicators on dummies for financial constraints and relationship banking. Credit constrained firms defined as: firms that declared that they would have liked a higher level of debt (CC1); firms that declared to be willing to having more credit even at higher interest rates (CC2). SalesonA is sales on assets, WonA labor costs over assets, IntermedonA intermediate costs over assets. Profitability measures are winsorised at the first and 99th percentile. All regressions include year, two-digit sector and area dummies. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9: **Human capital**

	(1)	(2)	(3)	(4)	(5)
	ROA	SalesonA	WonA	IntermedonA	ULC
	Panel A: Share of Graduates 1				
Grad share1	0.0280***	-0.0872	-0.0619***	-0.0589	-0.0819**
	(0.0108)	(0.0755)	(0.0181)	(0.0687)	(0.0410)
Constant	0.0280***	0.8087***	0.1967***	0.5810***	0.8092***
	(0.0090)	(0.0546)	(0.0190)	(0.0448)	(0.0326)
Observations	1,301	1,325	1,325	1,325	1,290
R-squared	0.0684	0.0794	0.0352	0.0768	0.0493
	Panel B: Share of Graduates 2				
Grad share2	-0.0042	-0.0537	-0.1104*	0.0580	-0.1547
	(0.0602)	(0.3006)	(0.0566)	(0.2546)	(0.1664)
Constant	0.0336***	0.9312***	0.1905***	0.7126***	0.8445***
	(0.0083)	(0.0782)	(0.0178)	(0.0661)	(0.0406)
Observations	1,259	1,282	1,282	1,282	1,248
R-squared	0.0646	0.0725	0.0283	0.0731	0.0483

Note: The table reports regressions of the profitability indicators on indicators of the share of graduates in the labor force. Grad share2: share of white collars holding a degree; Grad share2: share of blue collars holding a degree. SalesonA is sales on assets, WonA labor costs over assets, IntermedonA intermediate costs over assets. Profitability measures are winsorised at the first and 99th percentile. All regressions include year, two-digit sector and area dummies. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10: **Internationalisation**

	(1)	(2)	(3)	(4)	(5)
	ROA	SalesonA	WonA	IntermedonA	ULC
	Panel A: Foreign group				
Foreign Group	0.0071**	0.2915***	0.0450***	0.2283***	0.0183
	(0.0036)	(0.0322)	(0.0064)	(0.0301)	(0.0125)
Constant	0.0707***	1.1218***	0.2069***	0.8510***	0.6419***
	(0.0068)	(0.0673)	(0.0135)	(0.0624)	(0.0262)
Observations	7,745	7,945	7,945	7,945	7,726
R-squared	0.0446	0.0890	0.0677	0.0957	0.0333
	Panel B: Delocalisation				
Deloc	0.0045	-0.0500	-0.0357***	-0.0166	-0.0230
	(0.0049)	(0.0384)	(0.0082)	(0.0365)	(0.0185)
Constant	0.0402***	1.1625***	0.2430***	0.8541***	0.8166***
	(0.0125)	(0.0852)	(0.0214)	(0.0733)	(0.0556)
Observations	713	723	723	723	713
R-squared	0.0118	0.0466	0.0508	0.0463	0.0264

Note: The table reports regressions of the profitability indicators on dummies for iternationalisation. Foreign group: 1 if the firm belongs to a foreign group; Deloc: 1 if the firms has delocalised part of the production process abroad. SalesonA is sales on assets, WonA labor costs over assets, IntermedonA intermediate costs over assets. Profitability measures are winsorised at the first and 99th percentile. All regressions include year, two-digit sector and area dummies. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 11: **Cronysm**

	(1)	(2)	(3)	(4)	(5)
	ROA	SalesonA	WonA	IntermedonA	ULC
Public adm sales	0.0459***	-0.1043	-0.0076	-0.1153*	-0.0907*
	(0.0127)	(0.0806)	(0.0248)	(0.0596)	(0.0474)
Constant	0.0327***	0.9064***	0.1800***	0.6855***	0.8104***
	(0.0081)	(0.0637)	(0.0165)	(0.0558)	(0.0400)
Observations	2,041	2,080	2,080	2,080	2,031
R-squared	0.0482	0.0717	0.0159	0.0865	0.0229

Note: The table reports regressions of the profitability indicators on the share of sales to the public sector in total firm's sales. SalesonA is sales on assets, WonA labor costs over assets, IntermedonA intermediate costs over assets. Profitability measures are winsorised at the first and 99 th percentile. All regressions include year, two-digit sector and area dummies. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 12: **The effects of demand and TFP Shocks on profitability**

	(1)	(2)	(3)	(4)	(5)
	ROA	SalesonA	WonA	IntermedonA	ULC
ΔTFP	0.103***	0.235***	-0.013***	0.115***	-0.412***
	(0.010)	(0.022)	(0.004)	(0.015)	(0.039)
ΔDemandShock	0.044***	0.165***	-0.004***	0.112***	-0.134***
	(0.002)	(0.009)	(0.001)	(0.006)	(0.007)
Constant	-0.002	0.004	-0.010***	0.052***	0.005
	(0.003)	(0.010)	(0.002)	(0.007)	(0.008)
Observations	9,020	9,020	9,019	9,020	8,944
R-squared	0.162	0.152	0.031	0.143	0.198

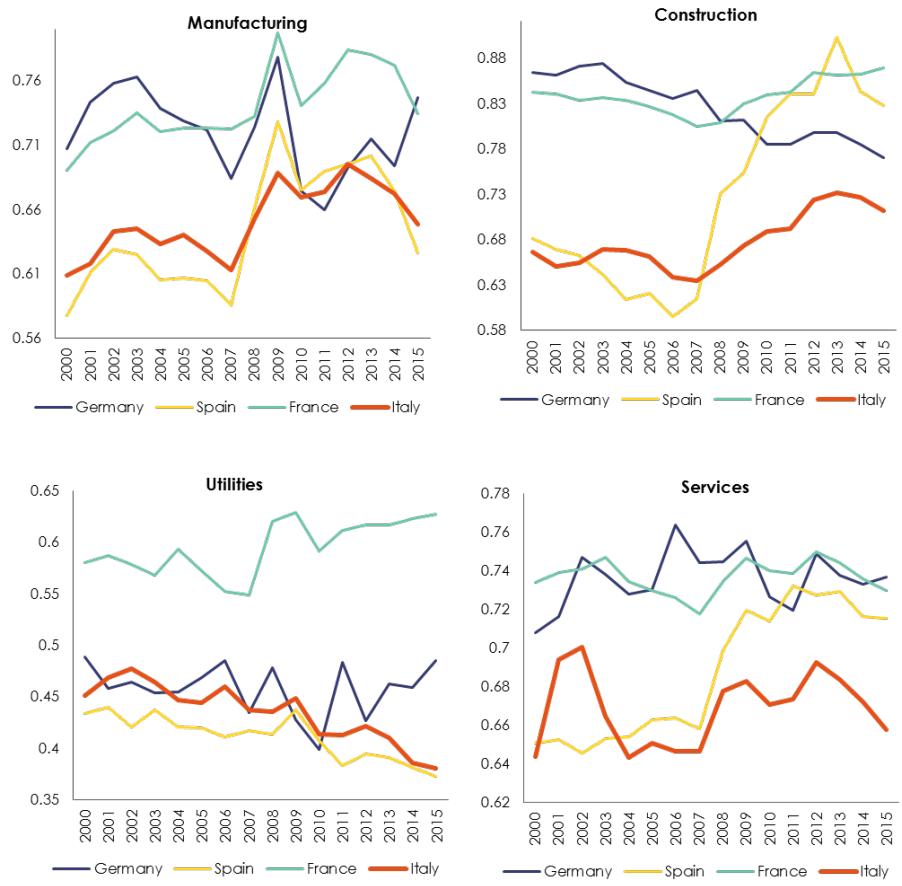
Note: The table reports regressions of changes in the profitability indicators on demand and productivity shocks. SalesonA is sales on assets, WonA labor costs over assets, IntermedonA intermediate costs over assets. Based on the estimates in Pozzi and Schivardi (2006). All regressions include year, sector and area dummies. Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

12. ANNEX: ADDITIONAL FIGURES

Figure 12.1: **Evolution of ROA: different countries and sectors**

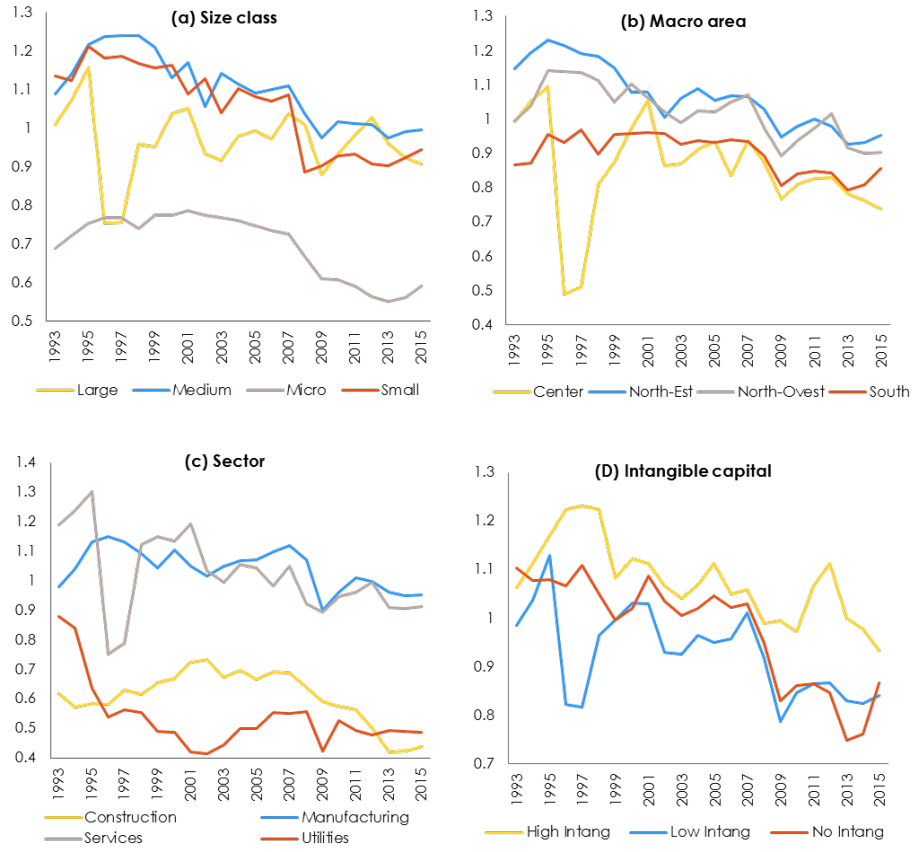
Source: our calculation on BACH data

Figure 12.2: **Evolution of ULC: different countries and sectors**



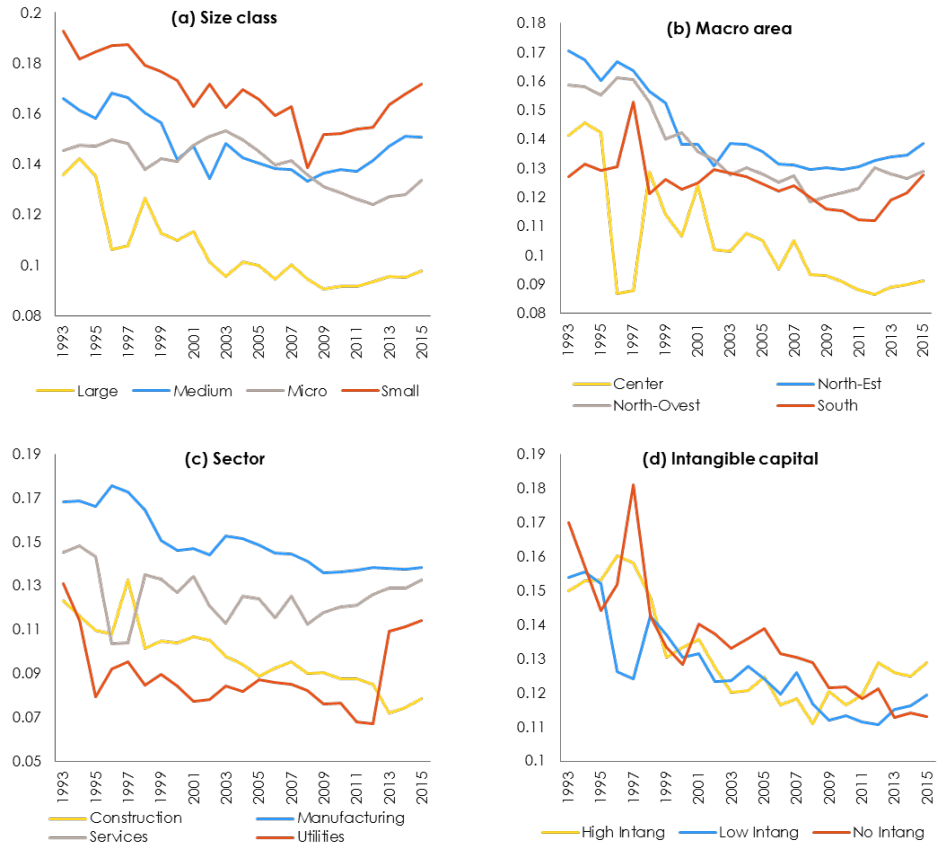
Source: our calculation on BACH data

Figure 12.3: **Evolution of sales on assets by firm categories**



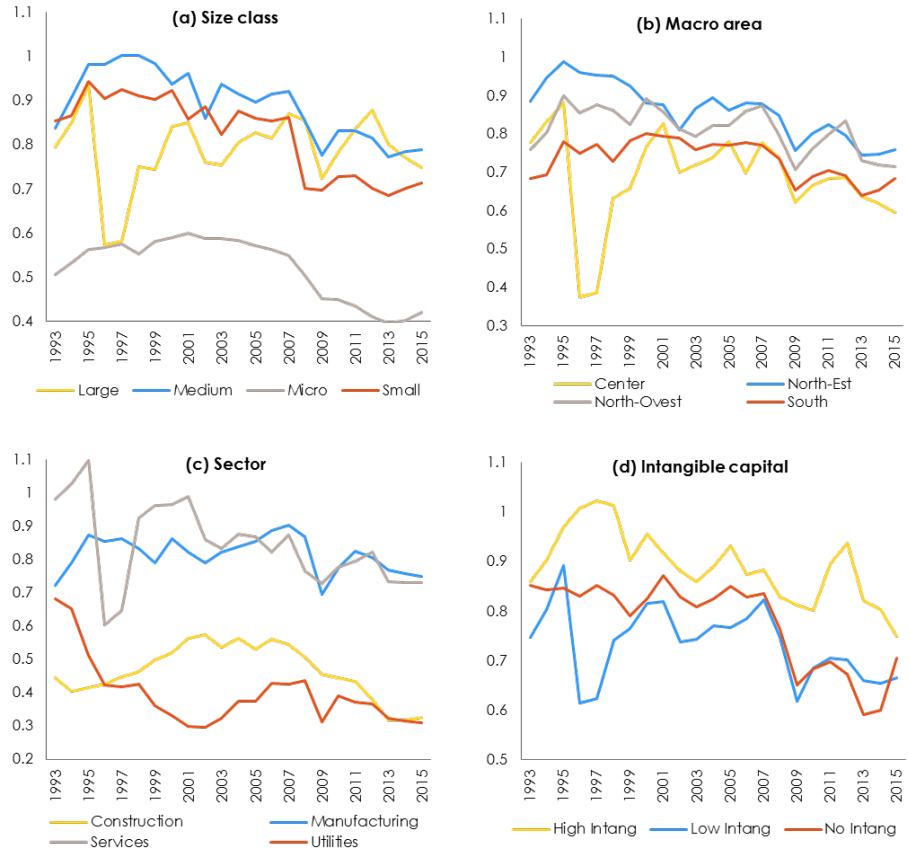
Source: our calculation on Cerved data

Figure 12.4: **Evolution of labor costs on assets by firm categories**



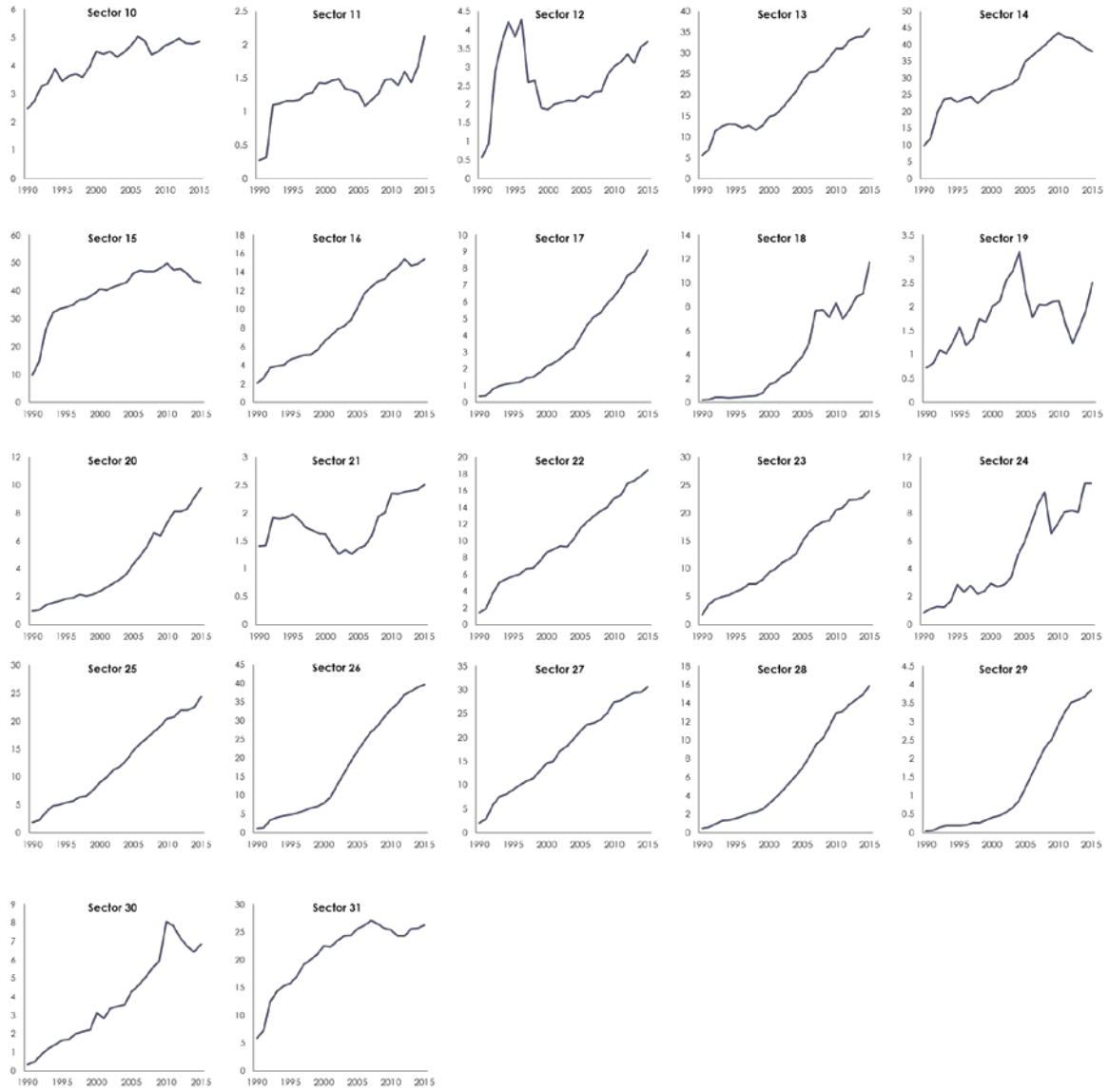
Source: our calculation on Cerved data

Figure 12.5: **Evolution of labor costs on assets by firm categories**



Source: our calculation on Cerved data

Figure 12.6: **Sectoral import shares from China: global trends**



Source: our calculation on Cerved data

The sectoral classication follows ISIC Rev.4: 10 - Manufacture of food products; 11 - Manufacture of beverages; 12 - Manufacture of tobacco products; 13 - Manufacture of textiles; 14 – Manufacture of wearing apparel; 15 - Manufacture of leather and related products; 16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials; 17 - Manufacture of paper and paper products; 18 - Printing and reproduction of recorded media; 19 - Manufacture of coke and rened petroleum products; 20 - Manufacture of chemicals and chemical products; 21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations; 22 - Manufacture of rubber and plastics products; 23 - Manufacture of other non-metallic mineral products; 24 - Manufacture of basic metals; 25 - Manufacture of fabricated metal products, except machinery and equipment; 26 - Manufacture of computer, electronic and optical products; 27 - Manufacture of electrical equipment; 28 - Manufacture of machinery and equipment n.e.c.; 29 - Manufacture of motor vehicles, trailers and semi-trailers; 30 - Manufacture of other transport equipment; 31 - Other manufacturing (including furniture).

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