Deregulation and growth in Italy

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Cristina Mocci (*), Stefania Pozzuoli (**), Francesca Romagnoli (***) Cristina Tinti (****)

Abstract

The aim of this study is to assess the effects of anti-competitive service regulation on economic performance in Italy. This paper runs a cross-sector panel regression of the Italian value added growth on the OECD PMR sectoral regulation indicators (ETCR and RBSR) in the 1995-2008 period using the national Input-Output matrix. This analysis enriches the empirical understanding of the effects of regulation on national value added growth with relevant implications for policy making. The results prove that in Italy sectoral liberalization on total economy and manufacturing played a relevant role in increasing the value added. We find a negative and statistically significant relationship between the overall liberalization of services, as well as in Energy and Professions, and the performance of the whole economy and manufacturing sector in the considered period.

Being Italy among the countries with a significant difference between the regulation (PMR) and the business perception (EFW-DB) indicators, this paper provides a sense of this misalignment in the years of the panel. In particular, evidence shows that economic agents reacted positively to reforms related to state participation (Post, Telecom, Railways) and simplification of paperwork for start-ups in Italy.

JEL: O40, L51, L80
Keywords: Regulation, sector analysis, growth

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1 We have benefitted from insightful comments by Filippo Pericoli, Cecilia Frale, Roberto Galli, the anonymous referee and the participants to the Treasury Department, Directorate I Internal Seminar on 17th May 2012 and to the XXIV Villa Mondragone International Economic Seminar 26th - 28th June, 2012.
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1 INTRODUCTION

In the late 80s, main European continental countries had still significantly stricter product market regulations compared to the Anglo-Saxon countries (U.S. and UK), traditionally characterized by more open economic systems. Since the 90s, Germany, France and Italy have gradually implemented measures aimed at making their markets more competitive. Those measures included the progressive liberalization of professional services and the privatization of utilities and other public services together with the simplification of administrative procedures for the business sector.

Most of the literature studies the association between liberalization in services industries and the performance of the related sectors. It is worth analyzing the gain of reforms in service sectors in downstream manufacturing industries.

Generally, the literature provides two ways to assess the effects of regulation in service sectors on the economic performance:

1. First, the simulation of economic models with scenarios capturing the effect on growth derived from the reduction of mark ups. Main limit of this approach being the necessary assumptions on the effective reduction of the mark ups due to the proposed policy measures.

2. Second, the empirical estimation of econometric equations capturing measures of progress in terms of liberalization and simplification identifying the correspondent effect on growth. Main limit of this approach being the difficulty in measuring reforms and most importantly their actual implementation.

This analysis is focused on the effects of liberalization of the main service sectors on real value added in Italy in the 1995-2008 period through an empirical approach. The model uses the sectoral components of the OECD Product Market Regulation (PMR) Index\(^2\) that measures the degree of openness in the Energy, Transport, Telecommunications (OECD ETCR) and Professions (OECD RBSR) sectors. The sectoral PMR indicators are weighted by the reliance on inputs from each sector based on the national Input-Output (I-O) matrix.

While the focus of this paper is on the relationship between services’ liberalization and the performance of downstream sectors, this study also compares the decrease of regulation and the business perception using the aggregated PMR index for services sectors. Finally, it also assesses how deregulation was perceived in the business sector by comparing progresses of international indicators of regulation and perception in similar areas\(^3\).


\(^3\) The benchmark of business sentiment indicator in this work is the Economic Freedom of the World (EFW) collected by the Fraser Institute. The choice was driven by the width of the economic activities included in the indicator which is the closest (despite still very limited) to the one surveyed in the PMR.
This paper is structured as follows: Chapter 2 reviews the literature on services’ deregulation effects on the economic performance; Chapter 3 illustrates the methodological issues and reports the results for the effects of liberalization on Italy’s real value added in the 1995-2008 period; Chapter 4 describes the comparison, in the whole economy, of the Italian deregulation during the 1996-2011 period and the relative change in the perception of the business sector; finally, Chapter 5 summarizes the findings of both analyses.

2 BACKGROUND

The theory as well as the empirical evidence show that product market regulation impacts on the overall macroeconomic performance. Reforms in this area induce positive effects on resources’ allocation by aligning prices to marginal costs, by reducing rents and by leading less efficient firms out of the market.

Empirical analysis proves that one of the main channels through which competition impacts on growth is the entry of new firms (Aghion et al., 2004). Griffith and Harrison (2004) show that allocative efficiency gains would arise as prices are brought more in line with marginal costs. Additional productive efficiency gains may originate through economies of scale and scope as the composition of output shifts towards more profitable uses. Dynamic efficiency gains may eventually originate if in a more competitive environment the pace of innovation accelerates.

Blanchard and Giavazzi (2003) consider the impact of product and labour market regulations. The effect identified in the short run consists of lower mark ups, reduced unemployment and increasing real wages. Unemployment and real wages return towards their original levels in the long run due to the lower level of rents.

A vast literature analysed the effects of regulation, especially in the service sector, on the economic performance of the regulated sector and found that stricter regulation reduces the level of output, investment and employment. Nicoletti and Scarpetta (2003) look at regulation and productivity in 17 manufacturing and 6 service sectors in OECD countries, finding strong effects on multifactor productivity growth for those countries located further away from the technological frontier. Alesina et al. (2005) show that deregulation in sectors traditionally sheltered from competition, (transport, communication and energy), have a significant positive impact on their investment levels. Forni et al. (2010) assess the macroeconomic effects of increasing competition in the service sector based on dynamic stochastic general equilibrium model for the case of Italy.

Barone and Cingano (2011) show that, in OECD countries, lower service regulation has positive effects in terms of value added and average labour productivity on sectors that use services intensively. Lighter administrative burdens are linked to a higher number of new firms, to intensive competition and to higher productivity.
Klapper, Laeven and Rajan (2006) show that compared to the same industries in the U.S., European countries with higher entry-costs experience slower increases in the number of firms. Ciccone and Papaioannou (2007) show that countries with quicker procedures for setting up new businesses experience more entry in industries benefiting from expansionary global demand and technological shifts. Fisman and Sarria-Allende (2004) look at the effects of barriers to entry on the industrial structure exploiting technology-determined differences in natural barriers to entry (as start-up costs or minimum scale of production). They find that regulation favours within-industry concentration of production, but does not affect its reallocation across industries within countries.

Rajan and Zingales (1998) examine the impact of financial sector development on growth in downstream industries. They argue that if financial development increases aggregate productivity growth by lowering the cost of external funds, then growth in intensive external finance industries should be faster in financially developed countries so more finance-dependent sectors grow faster in countries with well-developed financial markets.

Duggan, Rahardja and Varela (2013) contribute to the empirical literature on the link between service sector reforms and manufacturing productivity using Indonesian Input-Output tables. Arnold, Javorcik and Mattoo (2010) and Arnold, Javorcik and Mattoo (2011) provide evidence for the case of India and Czech Republic from a national Input-Output matrix.

3 THE EMPIRICAL MODEL FOR SECTORAL REGULATION AND VALUE ADDED GROWTH

This section proposes the estimate of the effects of the liberalization of Professions, Energy, Telecommunications and Transport, as well as the overall index for service sectors, in Italy in the 1995-2008 period on real value added.

In order to capture the reform progress, this work refers to the OECD ETCR (Energy, Transport, Telecommunications Regulation Indicator) and RBSR (Retail trade and Professional Services Indicator) as internationally harmonised indexes of liberalization of utilities and simplification of the administrative burden for Professions.


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4 We do not use the Retail trade indicator in the analysis.
5 We do not consider the 2013 PMR indicator given the unavailability of I-O tables after 2008.
6 Transport includes road and rail indicators.
7 The analysis was drawn up according to information on the Italian Input-Output matrix available on June 2011.
This exercise is based on two main factors:

- The use of an Italian variable Input-Output matrix, contrary to most works typically estimating cross-country panel models in which the U.S. fixed I-O matrix is used for all countries.
- The use of the OECD ETCR and RBSR Indicators of liberalizations and therefore the estimation of country-specific coefficients.

### 3.1 Input-Output Accounts of Italy

Input-Output tables (I-O) describe the sales and purchases between producers and consumers within an economy. They illustrate flows between the sales and purchases (both final and intermediate) of industry outputs or the sales and purchases (both final and intermediate) of product outputs.

Italy's I-O tables are presented here according to the first description. They include the supply and use of goods and services, both imported and domestically produced, showing the value added produced by each sector.

In October 2011, the Italian National Institute of Statistics (ISTAT) released the latest Italy's I-O accounts, which are consistent with the National Account data published in April 2011. This edition includes tables at current basic prices, on previous year prices, and an update to 2008 of the time series from 1995 and 2000.

The Supply table concerns the total production classified by product and by sector (taking into account the imported and the domestic product) and is calculated at basic price; imports are valued at c.i.f. prices (i.e. including cost, insurance and freight). The Use table reports how goods and services are utilized by product and by sort of use (intermediate or final). It shows the value added components and is based on purchasers’ prices. The value added is always recorded at basic prices. In this table, exports are valued at f.o.b. prices (i.e. free on board).

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10 ISTAT, ‘Le tavole delle risorse e degli impieghi e la loro trasformazione in tavole simmetriche’, Nota metodologica, October 2006.
11 In October 2011, ISTAT revised the National Accounts data according to the ATECO 2007 classification. A new edition of Input-Output accounts, including this revision and only for the year 2008, has been published on May 2012. These tables are consistent with the National Account revised date released in March 2012 and are compiled on the basis of NACE Revision 2 for economic sectors and of CPA 2008 for products.
13 The purchasers’ prices is the price paid by the buyer for goods.
14 The value added is calculated by production at basic price minus total intermediate consumption at purchasers’ prices. The basic price is the price received by the producer for a single unit of goods or service, deducted duties due to production or selling, but considering the contribution to be received on that unit.
The I-O tables are constructed with two different levels of aggregation:
- by 59 sectors and products (excluding the activity of Institutions and extra-territorial institutions as non-resident productive unit, Q sector);
- by 30 sectors and products (excluding the Q sector).

The I-O accounts adopt the NACE Revision 1.1, while the CPA is applied to products. These two classifications are fully in line.

The disaggregated by sectors value added that we need in our panel is only available until 2008. Therefore, we used the I-O tables constructed by 59 sectors and products at current prices.

From these calculations we obtain the technical coefficients describing the industry dependence on liberalised services (the so-called direct effects). They are used to construct the variable \( \text{SERVREG} \) in our model.

### 3.2 Sectoral Product Market Regulation Indicators

The OECD compiles several indicators of macro and structural economic policies with the purpose of measuring progress and comparing countries' performance. They use different methods to construct internationally comparable indicators which are in most cases widely used and recognized as reliable.

Of course, compiling information from different countries naturally implies the use of a common method sometimes to be applied to very different economic and political systems. For this reason, when we look at those indicators we must be clear about the methodology in use, not to misinterpret or over play the possible conclusions.

In particular, the Energy, Transport, Communications, Regulation Indicators (ETCR) and the Retail trade and Professional Services Indicators (RBSR) are built as following:

- The regulation in energy, transport and communications indicators (ETCR) summarise the regulatory provisions in seven sectors: telecoms, electricity, gas, post, rail, air passenger transport, and road and it is also available for 1998, 2003 and 2007\(^{16}\) (Fig.1).
- The indicator of regulation in the professional services measures the regulatory

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\(^{15}\) NACE is the acronym used to designate the various statistical classifications of economic activities developed since 1970 by the European Union. NACE is derived from the French "Nomenclature statistique des Activités économiques dans la Communauté Européenne" (Statistical classification of economic activities in the European Community). The CPA is the European version of the CPC (Central Product Classification devised by the United Nations). The full title of CPA is: Statistical classification of products by activity in the European Economic Community. NACE Rev. 1.1 is the classification of economic activities corresponding to ISIC Rev.3.1 (the classification of economic activities drawn up by the United Nations) at European level (Source: International Standard Classification of All Economic Activities, Third Revision, United Nations, Statistical Papers, Series M, No 4, Rev. 3, New York 1990; Statistical Classification of Economic Activities in the European Community, Rev. 1.1 (2002) (NACE Rev. 1.1), Methodological Introduction).

conditions in the professional services. This professional services indicator covers entry and conduct regulations in the legal, accounting, engineering, and architecture professions and is available for 1998, 2003 and 2007.

- The regulation in retail trade indicators measures the regulatory conditions in the retail sector. The retail indicator is available for 1998, 2003 and, 2007.

These sectoral indicators are now computed and released together with the OECD Indicators of Product Market Regulation\(^\text{17}\) (PMR) (Fig.2). The PMR is a general indicator measuring the extent to which policies promote or inhibit competition in the areas of product market. The PMR covers formal regulations in the areas of state control of business enterprises, legal and administrative barriers to entrepreneurship, barriers to international trade and investment. The PMR Index records values on a scale from 0 to 6, where 6 represents the most restrictive-to-competition regulatory set up.

Both the sectoral and the general PMR indicators are compiled on the basis of a questionnaire on the regulation at the time the answers are provided. This means that the indicator does not measure the degree of “implementation” of the regulation but only the legal conditions.

Our analysis is looking at the options for the policy maker to promote policies to boost growth. For this reason, looking more closely at the legal framework fits better our purposes. Nevertheless, we acknowledge that the result of an improvement in the regulation sometimes implies only a partial improvement of the conditions for the private sector if the implementation does not follow closely the legal framework. For this reason we provided a sense of the misalignment between reforms and perception on the ground in the second part of this paper\(^\text{18}\).

### 3.3 Methodological framework


Under the purely methodological point of view, this analysis consists of a panel of 3 year


\(^{18}\) See Chapter 4.

\(^{19}\) The whole economy contains 45 sectors excluding Forestry and related services (2), Mining of coal and lignite (10), Mining of metal ores (13), Tobacco (16), and the following services: Electricity, gas and water (n. 40 and 41); Transports and storage (n. 60, 62, 63); Post and Telecommunications (n. 64); Professional services (n. 71 and 74), as reported in the OECD PMR document. The manufacturing sector 25 industries is built excluding the construction and the service sectors.
average of the real value added at sectoral level, as a measure of economic performance, regressed on the sectoral PMR indicators multiplied for the sector-specific technical coefficients. The I-O matrix provides nominal value added. Nominal values are deflated using respective macro-sector deflator in order to obtain the correspondent real value.

The general regression is the following:

\[(1) \quad \ln VA_{j,t+1} = \alpha + \beta \ln SERVREG_{j,t} + \varphi \ln EMP_{j,t} + \mu_t + \mu_j + \varepsilon_{j,t+1}\]

where:
\(\ln VA_{j,t+1}\) is the log of the real value added (3-term average) at basic prices in the whole economy \((j)\) and in the manufacturing sector \((j)\) for the years 1995-1998-2001-2004-2007\(^{20}\) \((\eta)\).
As the effects of services liberalization may take time to materialize, this variable is considered in the following three year period. The years of publication of the sectoral PMR are considered as the previous year of the 3 year averages of the value added. This is a way to concentrate on the effects of reforms up to about three years after the implementation.

\(\ln SERVREG_{j,t}\) is the log of the weighted sum that captures the relevance of service sectors regulation for each sector \(j\). There is no correlation between technical coefficients and OECD indicators (as reported in Table 2). This exercise shows that a national I-O matrix can be adopted, providing country-specific coefficients that fit better the purposes of policy making.

\(w_{j,s,t}\) are the variable technical coefficients obtained as the ratio between the cost of service \(s\) inputs and the value of the sector \(j\) output. They capture the direct dependence of sector \(j\) on the input of the service \(s\). They are obtained on the basis of I-O tables of Italy published in 2011 by ISTAT for the period 1995-2008\(^{21}\). \(X_{st}\) are the OECD regulation indicators in the 6 services. To take into account simultaneity between value added and inputs, we considered a different period of time (\(w\) is at time \(t\) whilst the value added is at time \(t+1, t+2, t+3\)) and we eliminate service sectors from the value added.

\(\ln EMP_{t}\) is the log of number of employees (3-term average) by sector. This variable is lagged one period (corresponding to the preceding three year period) in order to avoid simultaneity. This variable controls for aspects of the structure not related to services’ liberalization.

Finally, \(\mu_t\) and \(\mu_j\) are time - and sector - specific fixed-effects. They control for unobserved heterogeneity and capture sector-specific, time-invariant effects.

Further analysis was conducted for aggregated ETCR and RBSR indicators using the \((1)\) where \(SERVREG_{Tot,j,t} = \sum(w_{j,s,t} \cdot X_{t})\) is the simple average of weighted sectoral regulation

\(^{20}\) In the year 2007 we used the 2008 data given the availability of data.

\(^{21}\) In this calculation, we considered the ratio between the sectors’ intermediate consumption and the total value added.
indicators\(^{22}\)

\[
(2) \quad \ln VA_{j,t+1} = \alpha + \beta \ln SERVREG_{j,t} + \phi \ln EMP_{j,t} + \mu_t + \mu_j + \epsilon_{j,t+1}
\]

In addition, as suggested by the literature, we introduce the FDI inward stocks as a control variable, given the relevance of FDI attractiveness in Italy. This variable captures other channels through which increased openness may affect economic performance, for example the availability of inputs provided by foreign investors. A similar effect was investigated by Javorcik (2004) who found a positive effect of FDI on local producers in upstream industries and no significant effect on local producers in downstream manufacturing sectors in Lithuania.

As a further specification, we estimate a model in first differences. Differencing takes out all observable and unobservable time-invariant characteristics at the level of sectors.

\[
(3) \quad \Delta \ln VA_{j,t+1} = \alpha + \beta \Delta \ln SERVREG_{j,t} + \phi \Delta \ln EMP_{j,t} + \mu_t + \mu_j + \epsilon_{j,t+1}
\]

### 3.4 Results

This empirical work contributes to better understand the effects of de-regulation on value added growth with relevant implications for the policy maker. The results prove that in Italy the sectoral liberalization played a relevant role in increasing value added in general and in the manufacturing sector. The effects of higher regulation in utilities, communication, energy, transport and professions sectors aggregated in our SERVREG variable is negative. Under the economic point of view, this result is in line with the idea that liberalization in SERVREG sectors (decrease of the sectoral component of the PMR indicator) determines positive effects on growth in downstream sectors.

First, in model (1) the estimated coefficients for energy and professions are statistically significant both in the whole economy (respectively -0.21 and -0.20; Table 3) and in the manufacturing sector (respectively -0.10 and -0.26; Table 4). Moreover, there is also a strong evidence for the transport sector (-0.28) in the whole economy (Table 3).

Second, the results from the estimation of equation (2) are shown in Table 5. We find a negative and statistically significant relationship between the overall liberalization of services and value added growth in the whole economy (-0.29) and in the manufacturing sector (-0.14). Moreover, if we introduce the inward FDI stocks in the model (2) the results are in line with previous estimates for the whole economy (-0.30) and slightly higher in the manufacturing sector (-0.17), as reported in Table 6.

Finally we estimated the model in first differences as specified in the equation (3). These estimates confirmed our earlier conclusions (Tables 7 and 8). As before, statistically significant

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\(^{22}\) This average do not correspond to the OECD aggregated ETCR because we do not take into account the gas, post and retail indicators.
effects are found for the aggregated indicator in the whole economy (-0.29) and in the manufacturing sector (-0.11). The result for the Professional services is significant in both cases, whilst the Energy sector’s regulation seems to be particularly relevant in the whole economy. Given the important reforms of the Italian Government in these two areas, more research would be interesting to sequel those results.

4 LIBERALIZATION REFORMS AND BUSINESS SECTOR PERCEPTION

This part of the work analyses the degree of regulation in the Italian product market by comparing the legal framework with the perception in the business sector. A time line of Italy’s product market regulation since the end of ‘90s is reported in Fig. 4. The legal framework is measured by looking at the OECD PMR and the corresponding business sentiment indicator by the Fraser Institute’s Economic Freedom of the World (EFW) index. Both indicators look at the degree of openness in the economy as a whole.

The EFW indicator measures the economic agents’ perception of the degree of openness and the expected profitability in 141 countries. It takes into account the role of the public sector in the economy, the legal framework, the amount of credit in the system, the openness to international trade, in the labour market and credit regulation. The EFW is the most comprehensive business sentiment indicator and it contains sub-components from other similar international indicators including the Doing Business released by the World Bank. Despite its high degree of comparability, it is partially influenced by the economic cycle and the acquired credibility by longstanding best performing countries.

The general PMR indicator is the most internationally relevant and comparable measure of regulation in OECD countries. Nevertheless, it has some natural limitations due to the generalized methodology. A few general weaknesses and others specific to the case of Italy have been identified.

General PMR weaknesses are:

- The omission of measures concerning the environment, access to credit, health and consumers’ protection.
- The timing of the legal enforcement is not recorded, therefore, the indicator does not provide sufficient information on the timing of the expected economic impact.
- The classification of activities and functions, sometimes too close to the U.S. model.

Italian-specific PMR weaknesses are:

23 http://www.freetheworld.com/reports.html
24 http://www.doingbusiness.org/
25 The latest update of the PMR questionnaire address some of those issues.
The definition of the public sector includes only central government and regions. Therefore, it does not take into account shares owned by local authorities which are particularly relevant in Italy especially in the transport sector.

The necessary secondary legislation that could, in a few cases, prevent the legal enforcement of primary law. As a consequence, in those cases the indicator could record a progress in the national legislation which is not automatically enforced.

4.1 Checking regulation against perception

The joint analysis of the two indicators (Fig. 5) shows a discrepancy among the performance of Italy compared to France, Germany and the United Kingdom. In Italy, between 1998 and 2009, the EFW indicator worsened significantly (decreasing from 75th percentile to 50th percentile), while the PMR registered a marked improvement (decreasing from 3 to 1.5). In contrast, other countries considered scored favourably in both indicators.

Sometimes, this result led analysts to conclude erroneously that reforms in Italy do not perform the expected effect as they are apparently not reflected in the business sentiment. It is worth noting that the limited number of overlapping areas between the two indicators does not allow direct comparisons between the two measures26. However, the overlap between the PMR and the EFW is the largest among regulation and perception indicators. Therefore, it is by isolating the areas of actual overlap between the regulation and the perception indicators that the real degree of discrepancy can be detected. Common areas are: the role of the public sector in the economy, the administrative barriers to trade, the restrictions on national and foreign investment, price controls, the regulatory regime for start-ups and the transparency of the administrative system. Fig. 6 shows the trend of the indicators in the above-mentioned areas for Italy and the other three European countries.

In the case of Italy, a good correspondence between the PMR and the EFW concerning the role of the public sector in the economy (GEI) and the regulations for start-ups (SB) emerges in Fig. 6. This shows that de-regulation, measured by the PMR in these areas, is normally well perceived in the economy.

With regard to transparency in the administrative system (LR) and to foreign-ownership and investment restrictions (FO-IR), the EFW indicator stays stable throughout the period, despite the progress recorded by the PMR (only recently for FO-IR).

In contrast, in areas related to administrative barriers to trade and price controls, indicators signal opposite trends. The EFW sub-index for administrative barriers to trade finds a deterioration in the degree of openness of the Italian economy to international trade, especially related to the timing for clearance at customs, resulting in additional costs for the business

26 The overlap between the PMR and the Doing Business indicator is smaller and included in our analysis as the two DB indicators overlapping with the PMR are reported here in the form of their Fraser-normalized absolute transformation (http://www.freetheworld.com/2011/reports/world/EFW2011_complete.pdf).
sector. Referring to the sub-indicator of price controls, this comparison shows that reforms were not perceived by economic agents in Italy. In fact, the EFW shows that companies perceive price control also on wide spread consumption goods even if they are not in place. In addition, the gradual opening to national and foreign investments does not show a significant sentiment improvement despite the reforms. This could result from both structural (the national production system characterized by small enterprises) and cyclical factors (low growth rates registered in Italy in the last 15 years).

In conclusion, from the comparison between the perception and the regulation, international indicators show that: in two (LR: Regulatory and Administrative Opacity and RTB: Regulatory Trade Barriers) out of six comparable areas Italy performs poorly in making reforms’ perceived to business agents. In fact, in these two areas despite the reforms the business perception worsened. In other two (PC: Price Control and FO-IR: Foreign Ownership – Investment Restrictions) areas out of the six, implemented reforms secured for Italy a stable score in the business sentiment. In the remaining two areas (GEI: Government Enterprise and Investment, and SB: Starting a Business) reforms were followed by a significant and prompt improvement in the perception.

Therefore, given the reduced area of overlap between the perception and the regulation indicators it is extremely difficult to draw conclusions about the effectiveness of reforms’ implementation by simply looking at the indicators’ comparison. Nevertheless, where comparison is possible the performance of Italy’s reforms in influencing business perception is overall balanced.

5 CONCLUSIONS

The very rich literature about the effects of services’ deregulation on growth identifies the need for reforms aimed at boosting competition in the sectors of utilities, transport and professions as growth-conducive in downstream sectors.

In the recent years, important reforms in this field were carried out in many countries under the assumption that implications are not only relevant for the public but also for the business sector.

Therefore, policy makers are increasingly interested in refining their techniques for modeling the effects of structural reforms in the field of product market regulation. The main challenges in this respect are represented by the lack of indicators to measure structural reforms and, in addition where available, those indicators are normally tailored for international comparisons rather than for national analysis. Finally, the literature using these international indicators mainly provides coefficients potentially relevant for policy modeling from panels of several countries, which are not sufficiently accurate for the purposes of national policy making.

This analysis proceeds from the OECD-wide panel model proposed by Barone, Cingano (2011). It extends the time and the sector dimensions and it estimates national coefficients only
for Italy with statistically uncorrelated technical coefficients derived from the 1995-2008 Italian Input-Output matrix.

Results for Italy are consistent in the case of the economy as a whole and of the manufacturing sector. This study finds statistically significant coefficients for overall regulation and at the level of sectors it captures the effect of regulation in the case of Energy and Professions for the economy as whole and for the manufacturing sector. Moreover, there is also a strong evidence for the transport sector in the whole economy. We find a negative and statistically significant linkage between the overall liberalization of services and the performance in the whole economy and in the manufacturing sector. If we consider the inward FDI stocks the results are in line with previous estimates for the whole economy and slightly higher in the manufacturing sector. Finally, the model specified in first differences confirms those results.

This exercise shows that economic agents reacted positively to reforms related to state participation (Post, Telecom, Railways) and simplification of paperwork for start-ups. Nevertheless, in areas associated to international trade, openness to foreign capitals, reduction of price controls and transparency in the administration, the business sector seemed to be less reactive to the implemented reforms.

On this last point, the Italian authorities and institutions should pay more attention to actual reforms implementation and transmission by designing effective communication strategies targeted to domestic and international beneficiaries. Improving the information of stakeholders could also reduce the time for structural reforms to play out fully their effects on economic growth.

In conclusion, the comparison between the perception and the regulation international indicators can only determine that in two out of six comparable areas Italy performs poorly in making reforms’ implementation effective. In fact, in these two areas despite the reform effort, the correspondent business perception worsened. In other two areas out of the six, implemented reforms secured for Italy a stable score in the business sentiment. In the remaining two areas reforms were followed by a significant and prompt improvement in the perception.

Therefore, given the reduced area of overlap between the perception and the regulation indicators it is extremely difficult to draw conclusions about the effectiveness of reforms’ implementation by simply looking at the indicators’ comparison. Nevertheless, where comparison is possible, the performance of Italy’s reforms in influencing business perception is overall balanced.
REFERENCES


ANNEX

Tab. 1  Summary Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
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<tr>
<td>Invareale</td>
<td>245</td>
<td>8.95</td>
<td>1.90</td>
<td>1.18</td>
<td>12.08</td>
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<tr>
<td>Inservregel</td>
<td>245</td>
<td>1.18</td>
<td>1.20</td>
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<tr>
<td>Inservregair</td>
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<tr>
<td>Inservregtel</td>
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<td>0.15</td>
<td>1.15</td>
<td>-3.91</td>
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<td>Inservregprof</td>
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<td>1.02</td>
<td>-2.66</td>
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<td>Inservregtotter</td>
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<td>0.64</td>
<td>-0.37</td>
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</tr>
<tr>
<td>Infdi</td>
<td>245</td>
<td>9.82</td>
<td>1.59</td>
<td>5.16</td>
<td>11.25</td>
</tr>
<tr>
<td>lnemployees</td>
<td>245</td>
<td>4.77</td>
<td>1.82</td>
<td>-1.61</td>
<td>7.63</td>
</tr>
</tbody>
</table>

Tab. 2  Correlation Italian Technical Coefficients and OECD Regulation Indicators by Sectors

<table>
<thead>
<tr>
<th>OECD Regulation Indicator</th>
<th>Energy</th>
<th>Road</th>
<th>Rail</th>
<th>Air</th>
<th>Telecom</th>
<th>Professions</th>
</tr>
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<tr>
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<td>0.03</td>
<td>-0.02</td>
<td>-0.02</td>
<td>-0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>Road</td>
<td>0.01</td>
<td>0.03</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td>Rail</td>
<td>-0.03</td>
<td>0.01</td>
<td>-0.04</td>
<td>-0.02</td>
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<tr>
<td>Air</td>
<td>0.14</td>
<td>0.11</td>
<td>0.14</td>
<td>0.13</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Telecom</td>
<td>-0.10</td>
<td>-0.03</td>
<td>-0.11</td>
<td>-0.10</td>
<td>-0.13</td>
<td>0.02</td>
</tr>
<tr>
<td>Professions</td>
<td>-0.11</td>
<td>-0.07</td>
<td>-0.11</td>
<td>-0.11</td>
<td>-0.11</td>
<td>-0.03</td>
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</table>
### Tab. 3  Impact of regulation on value added for the whole economy

<table>
<thead>
<tr>
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<th>Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45 sectors</td>
</tr>
<tr>
<td>InSERVREG Energy</td>
<td>-0.205*** (0.058)</td>
</tr>
<tr>
<td>InSERVREG Transports</td>
<td>-0.279*** (0.055)</td>
</tr>
<tr>
<td>InSERVREG Professions</td>
<td>-0.199*** (0.059)</td>
</tr>
<tr>
<td>InEmployees</td>
<td>0.201*** (0.072)</td>
</tr>
<tr>
<td>cons</td>
<td>9.307*** (0.424)</td>
</tr>
<tr>
<td>obs</td>
<td>180</td>
</tr>
<tr>
<td>R- squared</td>
<td>0.322</td>
</tr>
</tbody>
</table>

* 10%; ** 5%; *** 1%

### Tab. 4  Impact of sector specific regulation on value added for the manufacturing

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<tr>
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<th>Manufacturing</th>
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<td>25 sectors</td>
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<tr>
<td>InSERVREG Energy</td>
<td>-0.100** (0.049)</td>
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<tr>
<td>InSERVREG Transports</td>
<td>-0.045 (0.045)</td>
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<tr>
<td>InSERVREG Professions</td>
<td>-0.258** (0.099)</td>
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<td>InSERVREG Air</td>
<td>0.174*** (0.065)</td>
</tr>
<tr>
<td>InEmployees</td>
<td>0.307** (0.134)</td>
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<tr>
<td>cons</td>
<td>8.509*** (0.729)</td>
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<tr>
<td>obs</td>
<td>94</td>
</tr>
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<td>R- squared</td>
<td>0.596</td>
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</table>

* 10%; ** 5%; *** 1%
Tab. 5  Impact of regulation on value added for the whole economy and manufacturing

<table>
<thead>
<tr>
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<th>Economy 45 sectors</th>
<th>Manufacturing 25 sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnSERVREG</td>
<td>-0.288*** (0.068)</td>
<td>-0.135*** (0.035)</td>
</tr>
<tr>
<td>lnEmployees</td>
<td>0.219*** (0.082)</td>
<td>0.542*** (0.083)</td>
</tr>
<tr>
<td>cons</td>
<td>8.692*** (0.405)</td>
<td>6.246*** (0.385)</td>
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<tr>
<td>obs</td>
<td>180</td>
<td>100</td>
</tr>
<tr>
<td>R- squared</td>
<td>0.480</td>
<td>0.479</td>
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</table>

* 10%; ** 5%; *** 1%

Tab. 6  Impact of sector specific regulation on value added for the whole economy and manufacturing with FDI

<table>
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<th>Economy 45 sectors</th>
<th>Manufacturing 25 sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnSERVREG</td>
<td>-0.296*** (0.067)</td>
<td>-0.167*** (0.040)</td>
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<tr>
<td>lnFDI</td>
<td>0.031** (0.015)</td>
<td>0.052 (0.032)</td>
</tr>
<tr>
<td>lnEmployees</td>
<td>0.176** (0.084)</td>
<td>0.548*** (0.082)</td>
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<tr>
<td>cons</td>
<td>8.591*** (0.403)</td>
<td>5.719*** (0.500)</td>
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<td>obs</td>
<td>180</td>
<td>100</td>
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<td>R- squared</td>
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* 10%; ** 5%; *** 1%
Tab. 7  Impact of sector specific regulation on value added for the whole economy and manufacturing (first differences)

<table>
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<th>Economy 45 sectors</th>
<th>Manufacturing 25 sectors</th>
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</thead>
<tbody>
<tr>
<td>lnSERVREG Energy</td>
<td>-0.220*** (0.082)</td>
<td>-0.105 (0.117)</td>
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<tr>
<td></td>
<td>-0.075 (0.052)</td>
<td>-0.038 (0.052)</td>
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<tr>
<td>lnSERVREG Transports</td>
<td>-0.205* (0.112)</td>
<td>-0.312** (0.129)</td>
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<tr>
<td>lnSERVREG Professions</td>
<td>0.096 (0.074)</td>
<td>0.116 (0.145)</td>
</tr>
<tr>
<td>lnEmployees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cons</td>
<td>-0.103** (0.047)</td>
<td>-0.064 (0.060)</td>
</tr>
<tr>
<td>obs</td>
<td>135</td>
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<tr>
<td>R- squared</td>
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<td>0.300</td>
</tr>
</tbody>
</table>

* 10%; ** 5%; *** 1%

Tab. 8  Impact of regulation on value added for the whole economy and manufacturing (first differences)

<table>
<thead>
<tr>
<th></th>
<th>Economy 45 sectors</th>
<th>Manufacturing 25 sectors</th>
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</thead>
<tbody>
<tr>
<td>lnSERVREG</td>
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<td>lnEmployees</td>
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<td>cons</td>
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<td>-0.034** (0.015)</td>
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<td>obs</td>
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<td>R- squared</td>
<td>0.223</td>
<td>0.224</td>
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* 10%; ** 5%; *** 1%
Fig. 1  The structure of the ETCR indicator system

ETCR

Energy
- Electricity
  - Public ownership
  - Price controls
  - Gov’s involvement in network sector
- Use of command and control regulation
  - Scope of public enterprise

Transport
- Regulatory and administrative opacity
  - Licenses and permit system
  - Communication and simplification of rules and procedures

Communications
- Administrative burdens on start-ups
  - Admin. burdens for corporations
  - Admin. burdens for sole proprietor firms
  - Sector-specific administrative burdens
- Barriers to competition
  - Legal barriers
  - Antitrust exceptions
- Explicit barriers to trade and investment
  - Barriers to FDI
  - Tariffs
  - Discriminatory procedures

Integration of sectoral information (NMR=FDI-index)

Source: OECD.

Fig. 2  The tree structure of the “integrated PMR indicators”

Product market regulation
- State control (0.33)
- Barriers to entrepreneurship (0.33)
- Barriers to trade and investment (0.33)
- Other barriers (0.50)

Public ownership (0.50)
- Involvement in business operations (0.50)
- Regulatory and administrative opacity (0.33)
- Administrative burdens on start-ups (0.33)

Barriers to competition (0.33)
- Legal barriers (0.25)
- Antitrust exceptions (0.25)
- Barriers to FDI (0.33)

Barriers to trade and investment (0.33)
- Tariffs (0.33)
- Discriminatory procedures (0.33)

Integration of sectoral information (NMR=FDI-index)

Source: OECD.
Fig. 3  Sectoral PMR indicators in Italy in the 1995-2007 period

Source: OECD.
Fig. 4  Time line of Italy’s product market regulation

<table>
<thead>
<tr>
<th>Year</th>
<th>EFW</th>
<th>PMR</th>
<th>LAW</th>
<th>EFFECTS</th>
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<td>1970</td>
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<td>1975</td>
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<td></td>
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<tr>
<td>1990</td>
<td>6.54</td>
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<td></td>
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<tr>
<td>1995</td>
<td>6.46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td></td>
<td></td>
<td>Bassanini Law</td>
<td>Rules on administrative procedures, regulations comply with the following criteria and principles: a) simplification of administrative procedures, and of those which are closely connected or instrumental to the same procedures, reduced time limit for completion of procedures and standardization of terms scheduled for similar procedures; c) uniform regulation of the same type procedures, reducing the number of administrative and bringing together processes that refer to the same activities, simplifying and accelerating the disbursement and accounting procedures.</td>
</tr>
<tr>
<td>1998</td>
<td>2.53</td>
<td></td>
<td></td>
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<tr>
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<td>2001</td>
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<td>2005</td>
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<td></td>
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<tr>
<td>2006</td>
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<td></td>
<td>Law No. 248/2006</td>
<td>Abolition of licenses and limits on commercial activities other than food distribution. Extension of the powers of the AGCOM included a fine of up to 15% of turnover. Extension of the control powers of the AGCOM.</td>
</tr>
<tr>
<td>2007</td>
<td>6.99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>6.90</td>
<td>1.32</td>
<td>Law No. 133/2008</td>
<td>Broadband, Start-ups, innovative investment tools, monitoring of prices, Supporting the internationalization of business, manufacturing districts and business networks, Bank of the South, National Energy Strategy, Promotion of strategic infrastructure and operations in the areas of energy and telecommunications, Liberalization and deregulation, abolition of limits on the number of pensions and labor income, job market, local public services of economic importance, Cut-laws, Cut-administrative burdens, Cut-agencies, simplification of administrative controls imposed on enterprises subject to certification, Class Action. Signing of the transfer of shares, company in one day. Simplification of Instruments to attract investment and enterprise development, oil and gas sectors, protection of road safety and regularity of the transport market of things to behalf of third parties.</td>
</tr>
</tbody>
</table>

Mandate to the Government for the assignment of functions and duties to the regions and local authorities, for the reform of public administration and administrative simplification (Law No.59/1997).

Introduction of self-certification (along with the Presidential Decree No. 403/1998).
Conversion into law, with amendments, of Decree Law No. 1, January 24, 2012 (Decresi Italia Decree), containing urgent provisions for the competition, infrastructure development and competitiveness.

Liberalization of economic activities-decay of the numerical limits, licenses and authorizations. Repeal the Decree Law No. 138/2011, Art. 3. as numerical limits, permit, license, authorization or consent prior acts of administration, however, called for the initiation of an activity not accounted for by economic interest and that prevent, affect or delay the start of new economic activities limited to the benefit of the binding opinion on Antitrust Regulation by December 2012 for areas where the permission is still required. Creating Court of companies. Ltd. 1 euros for young people. Competition Authority reports to Parliament a rating of law firms. Class action. Card service include compulsory rights for users. Repeat rates professions. Increased authorization for pharmacies (Spending Review indication generic drug prescription). Increase number of notaries. Gas price reduction measures for vulnerable customers and businesses. Ownership unbundling, ENI-SNAM Rete Gas. Liberalization of fuel distributors. Incentives for the production of electricity from renewable sources. Reductions and transparency bank fees on current accounts. Duty rates compared three RC car. Defining functions Authority for Transport (abolition URSF). Fungibility conductor for taxi licenses. Liberalization selling print and newstands. Establishment of project bonds. Simplification and acceleration drawing approval projects. Alignment to European standards of regulation project of rail and road infrastructure. De minimis aid in favor of SMEs in particular areas. Reform of airport charges.

The Decree Law addresses issues such as administrative simplification, energy efficiency, facilities and telecommunications networks, securities-related construction activities, the equivalence of qualifications, simplification in environment, enabling enterprises that install as well as additional changes to the Code of Contracts (Legislative Decree No. 163/2006). Main contents:

- use of self-certification of qualified technicians and sworn (VIR) data communication by electronic means between administrations; payments to the PA by electronic means; equivalence titles for access to competitions; single declaration of conformity systems, simplifying administrative the exercise of activities 'economic, enabling companies to install systems in buildings; simplification in the recruitment of workers (non-EU), simplification of checks on; simplification in the field of public procurement legislative changes for adoption of CPEE resolutions and safeguard rules and procedures under way for the conclusion of the program contracts with the airport management company, authorized only in the environment for SMIs, simplification measures for agricultural enterprises; simplification measures international research and industrial research (for the purpose of simplifying relations instructors and management of research projects for each project, participants can identify between them a subject leader); simplification measures in the field of basic research and particular investigative procedures, evaluation, and control of expenditures, simplification requirements for participation in research projects; improvement of public administration; opening measures of capital for non-listed companies excluding micro enterprises, and revision of the bankruptcy law); measures to facilitate the financing of infrastructure with private capital (project bonds) and through tax relief, and actions for the recovery of resources for development (b) nationalization of facilities and Fund for sustainable growth: R&D, revitalization areas in economic crisis and internationalization, b) procedures for simplification and acceleration of aid lines; a) nationalization of facilities and Fund for sustainable growth: R&D, revitalization areas in economic crisis and internationalization, b) procedures for simplification and acceleration of aid lines; measures for the development of youth employment in the green economy; measures for the revival of construction sector (tax reductions and simplifications on permitting and options); measures for the growth of companies (by market opening measures of capital for non-listed companies excluding micro enterprises, and revision of the bankruptcy law); measures to facilitate the financing of infrastructure with private capital (project bonds) and through tax relief, and actions for the recovery of resources for development (by: a) nationalization of facilities and Fund for sustainable growth: R&D, revitalization areas in economic crisis and internationalization, b) procedures for simplification and acceleration of aid lines); measures for the development and strengthening of the energy sector (blockchains market, extraction of hydrocarbons offshore natural gas market liberalization, integration of geothermal energy with other renewable strategic energy sources) measures to support the internationalization companies and consortia for the Made in Italy: simplified registration to network contracts; national infrastructure for charging the vehicles powered by electricity.

<table>
<thead>
<tr>
<th>Year</th>
<th>Law No.</th>
<th>Conversion into law with amendments, of Decree Law of</th>
<th>Law No.</th>
<th>Conversion into law with amendments, of Decree Law of</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>214/2011</td>
<td>December 2011, No. 201 (Salva Italia Decree), containing urgent measures for growth, fairness and the consolidation of public finances.</td>
<td>27/2012</td>
<td>February 9, 2012 (Semplifica Italia Decree), containing urgent measures for simplification and acceleration of aid lines; measures for the development and strengthening of the energy sector (blockchains market, extraction of hydrocarbons offshore natural gas market liberalization, integration of geothermal energy with other renewable strategic energy sources) measures to support the internationalization companies and consortia for the Made in Italy: simplified registration to network contracts; national infrastructure for charging the vehicles powered by electricity.</td>
<td>2012</td>
</tr>
</tbody>
</table>
Fig. 5  PMR and EFW Indicators: a comparison

Source: OECD, Fraser Institute.
Note: PMR: absolute score, EFW relative score, percentile. An increase (decrease) of PMR means a higher (lower) market restriction. An increase (decrease) in the EFW means an improving (worsening) business perception.
Fig. 6  Sectoral PMR and EFW Indicators: a comparison by larger European countries

Source: OECD, Fraser Institute.
PMR and EFW absolute scores. An increase (decrease) of PMR means a higher (lower) market restriction. An increase (decrease) in the EFW means an improving (worsening) business perception.

Legend:
EFW: GEI: Government, enterprises and investment; RTB: Regulatory trade barriers; FO-IR: Foreign Ownership/investment restrictions; PC: Price controls; SB: Starting a business (from Doing Business included in EFW); LR: Licensing restrictions (from Doing Business included in EFW).
PMR: GEI: State control; RTB: Regulatory trade barriers; FO-IR: Barriers to FDI; PC: Price controls; SB: Administrative burdens on start-ups; LR: Regulatory and administrative opacity (Licenses and permits system, Communication and simplification of rules and procedures).
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Department of the Treasury
Directorate I: Economic and Financial Analysis

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