
Simplified tax regime and poverty trap for micro-sized firms in Italy

A numerical simulation and empirical study with Italian firms' data

Thesis presented by
Antonio Barchi

Supervisor
Vincent Vandenberghe

Supervisor and Reader
Claudia Meroni

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Abstract

Taxation burden and bureaucracy slowness are an Italian leitmotif: the country is fiscally complex, and this complexity raises costs for firms, especially the smallest ones, which are living up to low margins. Following an introduction and a literature review, this work presents a theoretical model in which the taxation regime could systematically present a threshold above which firms are disincentivized to grow, resulting in a so-called "low productivity trap", hindering competition and overall improvement in the economy. In a subsequent, empirical section, two different datasets with information on micro, small and medium businesses (revenues, taxation regimes and tax expenditures, employee number and other factors such as productivity) are employed to evaluate the hypotheses.

1. Introduction

Italian economy shows a fragmented business structure: in 2019, 95% of total enterprises in Italy are “micro”, meaning that 4.1 out of 4.3 million firms have between 0 and 9 employees. Furthermore, 60% of the amount of micro-sized activities is composed of self-employed workers¹. In Germany, as a comparison, in 2019, the number of micro sized firms was 81% of total firms, which were in absolute 2.6 million². Even though the trend has been slightly improving in the past decade, with a rising average firm size (1.3% decrease of total firms number and 1.3% increase of number of workers)³, Italy still exhibits the highest relative number of micro-sized activities than any other European country. A key observation which is not always duly considered in the debate is that the lump-sum regime discussed in this thesis is applied on the basis of turnover and costs related to employees. No distinction is made between self-employed workers defined as professional service providers (as opposed to worker that decide to become employees for established firms) and entrepreneurs who set up businesses that are potentially subject to growth (e.g., individual firms or small partnerships).

Many reasons may contribute to this phenomenon: Italy is a rich country, with a very low private debt and a wide welfare (even if not always well performing). Its economy is mainly based on a productive industrial and trade sector (larger firms) and a multitude of small non-productive activities focused on domestic trade of good, services and tourism such as local shops, retailers, restaurants and bars. Italian economy seems to be driven by very

¹ ISTAT. (2021, December). Annuario Statistico Italiano 2021. <https://www.istat.it/it/archivio/264305>

² Federal Statistical Office. (2022, February 11). Statistisches Bundesamt Deutschland - GENESIS-Online: Die Datenbankdes Statistischen Bundesamtes. Statistisches Bundesamt (Destatis). <https://www-genesis.destatis.de/genesis/online?operation=previous&levelindex=1&step=1&titel=Result&levelid=1644599848734&acceptscookies=false#abreadcrumb>

³ ISTAT. (2020, February). Censimento permanente delle imprese 2019. <https://www.istat.it/it/files/2020/02/Report-primi-risultati-censimento-imprese.pdf>

well-performing larger firms, followed by very low-performing small firms. This variance remains unexplained.

Research institutions, academics and regulators mostly converge on the opinion that, in general, uncertainty needs to be reduced for small businesses. Tax systems need reforms to create incentives for these firms to grow. Economic theory and data confirm that productivity and value-added increase with average size and competition suffers from the phenomenon of the micro-sized business. This is even more true for the case of Italy: from an elaboration of Eurostat data, it is possible to show that between 2013 and 2018 the average Italian firm was smaller than German, French and Spanish ones, while its average productivity was 22% lower than the French, 16% lower than the German, but 15% higher than the Spanish productivity. While these results were already anticipated, it is interesting to observe the same data when standardized by number of employees, labour productivity, sector of activity and size: productivity differential in the sector size and structure shows that Italy would be less efficient than Germany only by 6.5% (instead of actual 16%) if Italian workers were as productive as German ones in the same sectors. These results mainly depend on the efficiency of technology used, rather than on the sole quality of labor. Moreover, Italian productive mix (i.e., business structure) doesn't seem to be harmful for economy, since the differentials in productivity wouldn't change that much in case sectorial composition of business was the same as other countries. Finally, in case the sectorial composition stayed the same, while the size of the firms in each sector changed to the level of other countries, this would allow for a positive differential of the total productivity of Italian firms with respect to all others, also compensating for the eventual lower labor productivity addressed before. This elaboration, conducted by economist Enrico D'Elia for LaVoce (2020)⁴,

⁴ D'Elia, E. (2020, February 25). Imprese troppo piccole per competere*. Lavoce.info. <https://www.lavoce.info/archives/63758/impres-troppo-piccole-per-competere/>

confirms the necessity for policymakers to concentrate on the issue of firm size, rather than other variables, where Italy's scores is average if not slightly above average. Incentives and bonuses for aggregation of small firms are nonetheless encouraged – even if they are hardly appealing for firms – as much as protecting regimes for micro-sized activities are highly discouraged. Similar observations were made regarding how small activities invest less on human capital, new technologies, innovation, and quality governance⁵. These issues were raised out of academia as well and were considered among the most urgent challenges for Italian governments in the years to come⁶. Nevertheless, interventions on these matters need political will and favourable socioeconomic conditions, and different governments during the years didn't quite consider this theme in a more structural perspective. Many incentives have been put in place to encourage the start of new activities, but at the same time, the macroeconomic outcomes haven't been quite satisfying from the point of view either of salaries or productivity: many small firms start their business exploiting incentives, but only an insufficient share of them expands at a level which justifies the introduction of the incentives in the first place. The remaining majority either decides to stay in business relying on the bonuses despite competition or innovation, or even to close down.

If structural policies regarding sectorial composition and size of firms require too high costs, also from a design point of view, it is true that a tax regime reform is likely to be the most direct and impactful action in this direction. Nonetheless, it would bear high political costs. This work will focus on the fundamentals behind firm growth and impacts of flat tax in the literature, and the design and application of the different fiscal frameworks

⁵ Berlingieri, G., Calligaris, S., Costa, S., & Criscuolo, C. (2018, April 10). Sulla produttività pesa la dimensione di impresa*. Lavoce.info. <https://www.lavoce.info/archives/52364/sulla-produttivita-pesa-la-dimensione-impresa/>

⁶ Romei, V. (2018, February 6). Five economic challenges for Italy's next prime minister. Financial Times. <https://www.ft.com/content/cfb5baae-00e5-11e8-9650-9c0ad2d7c5b5>

together with the presence of a growth trap in Italy. Potential inefficiencies arising from this trap will be then searched in the available data.

The rest of the text is organized as follows. Section 1.1 starts by defining the concept of “poverty trap” in the economic literature and covers the dynamics of growth in a market economy, particularly focusing on the role of barriers to entry, investment, productivity, and fiscal regime. Section 1.2 specifically focuses on the literature review of the application of flat tax schemes, citing policies and outcomes adopted in other countries. Section 1.3 gives a detailed overview of the Italian fiscal regime, before and after the income tax reform of 2022. Information contained in this section will be employed in chapter 2. This covers the theoretical part of the work, involving a numerical simulation model proving the existence of the trap in theoretical terms, given some assumptions. Chapter 3 is the empirical part of the work and is divided into two sections: section 3.1 presents the results of the research on INAPP survey on firms in year 2005, 2011 and 2018; while section 3.2 presents results on panel data for firms in the period 2011-2019 retrieved on AIDA platform for European firms’ data. Two datasets were used since both provided fragmented, but useful, information regarding investment, growth and income tax expense for firms below €100,000 in revenues for different time periods. The first analysis concerns the relationship between small firm’s investment and its size, while the second exploits panel data to investigate the dynamics of growth for firms in the sample. Fiscal regime was assumed in both analyses basing on the threshold values for costs and revenues provided by law. Chapter 4 summarizes and concludes.

1.1 Reasons for stagnation and growth trap

Academic literature in macroeconomics defines poverty trap in the context of a neo-classical basic conditional convergence model, such as in the well-known Solow model, as well as its more complex and subsequent

deviations (see Mankiw, Romer & Weil, 1992⁷; Barro, Sala-i-Martin, Blanchard

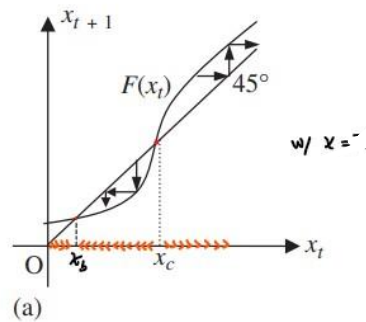


Figure 1 - Matsuyama, 2010

& Hall, 1991)⁸. In these models, growth of certain variables of the economy follows a so-called “balanced growth path” to an assumed steady-state (i.e., stable) equilibrium. When multiple equilibria are featured by the model, the reach of one or another is conditional to the initial value of those variables considered to impact.

For example, in figure 1 taken from Matsuyama (2010)⁹, it is possible to notice the steady state value of variable x (corresponding to $x_t = x_{t+1}$) in the correspondence of the value x_b . Any departing point between the origin and the subsequent value x_c will eventually end up back to x_b . In case the departing value is greater or equal to x_c , the economy in this example will face endogenous growth (it will continue to grow at a constant rate). There are many different instances and examples to depict a trap situation, all having in common the same message which is the self-perpetuating situation of poverty given some specific features of the economy.

Rapidly growing economies may suddenly fall into stagnation, due to structural features that can sort widely: from the population growth rate, depreciation and accumulation rate of physical capital to institutional

⁷ Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *The quarterly journal of economics*, 107(2), 407-437.

⁸ Barro, R. J., Sala-i-Martin, X., Blanchard, O. J., & Hall, R. E. (1991). Convergence across states and regions. *Brookings papers on economic activity*, 107-182.

⁹ Matsuyama, K. (2010). Poverty traps. In *Economic Growth* (pp. 215-221). Palgrave Macmillan, London.

variables drawn from social characteristics or even tax frameworks, coordination failures with multiple equilibria, and others (Aiyar, Duval, Puy, Wu & Zhang, 2013)¹⁰. At the same time, stochastic or additive (e.g., natural disasters, wars or pandemics) shocks could shift or jump up equilibria outside or inside the trap. Macroeconomic literature presents many models of development traps, in which the movement from low to higher income levels is granted by external debt (Burguet & Fernández-Ruiz, 1998)¹¹ or public policy intervention in the form of reforms (see Zhuk, 2012)¹². From a microeconomic point of view, poverty trap relates more to the incentive that each firm or individual may be subject to in the context of an economic decision. Incentives are consequences of specific legal and socioeconomic frameworks in which agents operate. Poverty traps, as a general concept, again, depend on the initial conditions of the individual, who fails to improve its position due to the absence of incentives from public policy or market environment.

Microeconomic literature in this field is mainly concerned with inter- and intra-industry variations in the labor composition for different sectors in time. Researchers try answer questions such as why and how labor composition variation impacts on the economy, what may be its causes and what do these imply for growth and development. In regards of this work in particular, the main policy question tries to deal with the negative effects that a great number of micro activities subject to little if not even no competition at all has on Italian economy. To answer this question is necessary to strengthen the assumptions underlying the possible reasons behind a growth trend in self-employment on the one hand and, on the other, the relation between this

¹⁰ Aiyar, M. S., Duval, M. R. A., Puy, M. D., Wu, M. Y., & Zhang, M. L. (2013). Growth slowdowns and the middle-income trap. International Monetary Fund.

¹¹ Burguet, R., & Fernández-Ruiz, J. (1998). Growth through taxes or borrowing? A model of development traps with public capital. *European Journal of Political Economy*, 14(2), 327-344.

¹² Zhuk, A. (2012). Taxation trap in development of entrepreneurship in Russia. *VOPROSY ECONOMIKI*, 2.

economic condition and the stagnation of economic growth from the point of view of its main determinants, such as the taxation regime or the level of firm investment and innovation.

Schuetze (2000)¹³ conducted a study on Canadian and US data, finding that an increase in income taxes has large positive effects on the self-employment rate, as opposed to the choice to work as an employee in someone else's firm. According to the same article, one of the motivations for the choice of becoming self-employed is to exploit the relative benefits associated with this category. This study was nonetheless deepening and reviewing previous similar findings by Blau (1987)¹⁴ and Devine & Mlakar (1993)¹⁵. In fact, although what is generally implied in the non-specialized debate, certain features of income tax designs make self-employment economically convenient due to lower effective rates (Long, 1982)¹⁶. Moreover, some empirical studies claim that self-employed workers may be as well favoured in situations of income redistribution following aggregate changes, such as for example the currency switch that occurred in beginning of 2000s, due to their position of price control for goods and services (Quintano, Castellano & Regoli 2005)¹⁷. The existing literature suggests that introducing a flat tax scheme in a complex regime with high-income taxes, reinforces the choice to be self-employed, de facto, contributing to a very fragmented economy.

Self-employment is a widespread phenomenon driven by many different economic, social and even cultural features of modern societies, and

¹³ Schuetze, H. J. (2000). Taxes, economic conditions and recent trends in male self-employment: a Canada-US comparison. *Labour Economics*, 7(5), 507-544.

¹⁴ Blau, D. M. (1987). A time-series analysis of self-employment in the United States. *Journal of political economy*, 95(3), 445-467.

¹⁵ Devine, T. J., & Alakar, J. A. (1993). *Intr-Industry Variation in the Determinants of Self-Employment* (No. 8-93-3).

¹⁶ Long, J. E. (1982). The income tax and self-employment. *National tax journal*, 35(1), 31-42.

¹⁷ Quintano, C., Castellano, R., & Regoli, A. (2005, May). The contribution of self-Employment to income inequality. a decomposition analysis of inequality measures by sources and subgroups for Italy, 1998-2002. In International Conference in Memory of Two Eminent Social Scientists: C. Gini i MO Lorenz, Siena.

not primarily by the business cycle or economic shocks. For example, self-employment declined in the US almost steadily in the past two centuries until 1970 (Hipple, 2010)¹⁸; then, it started to rise again due to the rapid expansion of services, the propensity to outsource in traditional sectors, and also due to likely demographic factors. These involve the entry of baby boom generation into the age range featuring highest level of self-employment, and the increasing participation of women to the labour force: in fact, an additional monthly wage is argued to reduce overall household's risk, pushing people to attempt the start of own businesses (Steinmetz & Wright, 1989)¹⁹. Other variables related to the rise in self-employment are, for example, social background, educational attainment, work history or family status (Arum & Müller, 2004)²⁰. Self-employment also goes with the rise in income and poverty reduction, given some legislative and economical caveats, such as for example the application of policy incentives from the local government and the presence of these effects only in local non-metropolitan communities, as a seeming functional way out from poverty (Rupasingha & Goetz, 2013)²¹.

Also, the nature of self-employment may have evolved: many forms of self-employment are now significantly less stable and not capable of competing with bigger firms (Müller & Arum, 2004)²². Fragmentation of the business structure of an economy has been directly linked to structural stagnation in some cases: small firms badly perform in terms of job creation and growth in Tunisia for example, with no “up-or-out” effect observed. The

¹⁸ Hipple, S. F. (2010). Self-employment in the United States. *Monthly Lab. Rev.*, 133, 17.

¹⁹ Steinmetz, G., & Wright, E. O. (1989). The fall and rise of the petty bourgeoisie: Changing patterns of self-employment in the postwar United States. *American journal of Sociology*, 94(5), 973-1018.

²⁰ Arum, R., & Müller, W. (2004). The reemergence of self-employment. *A Comparative Study of Self-employment*.

²¹ Rupasingha, A., & Goetz, S. J. (2013). Self-employment and local economic performance: Evidence from US counties. *Papers in Regional Science*, 92(1), 141-161.

²² Müller, W., & Arum, R. (2004). Self-employment dynamics in advanced economies. *The reemergence of self-employment: A comparative study of self-employment dynamics and social inequality*.

reasons for this correlation could be the weaknesses of re-allocation process (Rijkers, Arrouri, Freund & Nucifora, 2013)²³.

It is necessary to deeply think about the overall performance potential of the system, by looking specifically at its fragilities and try to work on them to design a new situation in which growth and synergy are enhanced by economic rationality, rather than hindered by high costs under the form of bureaucracy and taxes. To do so, this sub-chapter will focus on different areas policy makers should pay more attention to, to reduce inefficiencies and facilitate firm's growth: barriers to entry, productivity, investment and fiscal regime.

- **Barriers to entry**

It is widely acknowledged that the reduction of entry costs for firms and small activities is important to stimulate the economy. As an example, in Italy Anima et al. (2016)²⁴ conducted research on the impact of a reform presented in 2011 which provided administrative entities of local communities all the tools to simplify the establishment of new economic activities, making these processes much faster. This time efficiency component of the reform delivered clear positive results, with both a higher entry and survival rate for firms. However, the authors point out that further analysis is needed to distinguish new business whose entry was facilitated and the ones that were born solely as a direct consequence of the reform, contributing to an inefficient outcome of excessive entry. Regarding start-ups in specific, whilst it was found that initial size was not significantly correlated with the likelihood of firm duration, it was also confirmed that survival patterns were sector-specific and depended on barriers to entry or sunk costs (Audretsch, Santarelli &

²³ Rijkers, B., Arrouri, H., Freund, C., & Nucifora, A. (2013). Structural Stagnation.

²⁴ Amici, M., Giacomelli, S., Manaresi, F., & Tonello, M. (2016). Red tape reduction and firm entry: new evidence from an Italian reform. *Economics Letters*, 146, 24-27.

Vivarelli, 1999)²⁵. These are mainly involving costs related to know-how, initial investments, market concentration and tax framework.

- **Productivity**

Productivity gains are another key factor associated with growth. But recent empirical work shows these gains are now less evenly distributed and depend on levels of competition and cross-firm diffusion of knowledge: Bahar (2018)²⁶ finds a “U” shaped relationship between productivity growth and initial levels of TFP using worldwide firm-level data. In his research, the middle productivity trap is a consequence of the increase of productivity dispersion and increasing market share of frontier/knowledge-intensive firms; a problem that could be addressed by policy. Productivity gains are also caused (in the econometric sense) by the larger size of the firm: according to Pagano & Schivardi (2003)²⁷, European R&D data show that bigger firms are able to better exploit positive returns of investments. In this perspective, authors specifically refer to the likely negative effects that policies which reduce growth incentives have on growth. Examples of these policies or institutional frameworks are tax breaks and subsidies for small firms, especially in contexts of fragmented business structure along with small investment in research. Another important point regarding productivity growth is the supportive role played by employment flexibility. Italy has increased that flexibility when it introduced temporary contracts (primarily for the youth). Still, permanent contracts (representing the largest part of the overall employment) are still very rigid as they remain very costly to terminate. Marginal costs faced by employers in deciding whether to prolong permanent contracts or not should be reduced by reducing firing costs for the

²⁵ Audretsch, D. B., Santarelli, E., & Vivarelli, M. (1999). Start-up size and industrial dynamics: some evidence from Italian manufacturing. *International Journal of Industrial Organization*, 17(7), 965-983.

²⁶ Bahar, D. (2018). The middle productivity trap: Dynamics of productivity dispersion. *Economics Letters*, 167, 60-66.

²⁷ Pagano, P., & Schivardi, F. (2003). Firm size distribution and growth. *Scandinavian Journal of Economics*, 105(2), 255-274.

same employers, and by doing this assuring a longer-term stability for each worker and the possibility for investment in the workforce by the employer, with positive expected effects on productivity (Cappellari, Dell’Aringa & Leonardi, 2012)²⁸.

- **Investment**

Growth is also driven by investment. It can be financed internally (using firms’ profits) as well as externally (via loans or other instruments). The latter source of investment financing has empirically proven to be extremely low in Italy for small businesses: these are likely not to borrow at all, while for firms that do borrow, the share of financial debt varies a little (Guiso, 2003)²⁹. From a theoretical perspective, the decision of the self-employed to “stay small” may be reflected in the choice not to invest any money in the business. Economic theory and empirical data confirm the general rule that, on average, firms with higher growth are also the ones that invest more. Investment might be in different activities: from financial activities or new capital and machinery to research and development. Del Monte & Papagni (2003)³⁰ find positive correlation between Italian firms’ growth and research intensity between 1992-1997. Although the variance and mean of the size distribution of the firms engaging in R&D is higher than the one of firms not investing, from the data is clear that the average firm in the sample is a medium/big firm. With regards to this, start-ups whose investment was subsidized did not face higher survival rates than other one which received no subsidies, probably as a consequence of a bias in market selection which goes in favor of bigger and riskier firms (Del Monte & Scalera, 2001)³¹.

²⁸ Cappellari, L., Dell’Aringa, C., & Leonardi, M. (2012). Temporary employment in Italy. *CESifo DICE Report*, 10(1), 55-62.

²⁹ Guiso, L. (2003). Small business finance in Italy. *EIB papers*, 8(2), 121-149.

³⁰ Del Monte, A., & Papagni, E. (2003). R&D and the growth of firms: empirical analysis of a panel of Italian firms. *Research policy*, 32(6), 1003-1014.

³¹ Del Monte, A., & Scalera, D. (2001). The life duration of small firms born within a start-up programme: Evidence from Italy. *REGIONAL STUDIES-CAMBRIDGE AND NEW YORK-*, 35(1), 11-22.

- **Tax regime**

The tax regime is also key to understand the possible (dis)incentives to grow. An agent considers the fiscal system to anticipate the present value of an economic action to embark on in the future. In economic environments characterized by low competition and high taxation, it could be optimal for firms and individuals not to officially increase own economic activity, instead looking for extra profits in the informal economy, especially for agents whose profits are small, hence remaining under the tax audit threshold (Åslund, Boone & Johnson, 2001)³². This situation is also known as the “informality trap”: informal firms are less productive and less likely to innovate or access financial markets than other firms. Public policy needs to emphasize the benefits of compliance, tightening up enforcement and reducing costs of going formal (Kapaz & Kenyon, 2005)³³. In the attempt to reduce costs for very small activities, and encourage them out of the informal economy, policymakers have been introducing reforms such as simplified taxation schemes, like the flat tax regime in Italy. The negative side of these policies are not always clearly considered, as this work tries to highlight.

The design of a pro-formality and pro-growth fiscal regime for small businesses has been deemed crucial, especially for developing countries, in which informal economy is prevalent. In a World Bank official note³⁴, best practices for taxation systems’ reforms are presented. In general, small business regimes should feature low compliance costs, adequate requirements considering taxpayers’ capacity or skills, and compliance-related benefits to being formal. Creating an ad hoc presumptive tax regime specific for these

³² Åslund, A., Boone, P., & Johnson, S. (2001). Escaping the under-reform trap. *IMF Staff Papers*, 48(1), 88-108.

³³ Kapaz, E., & Kenyon, T. (2005). The informality trap: tax evasion, finance, and productivity in Brazil.

³⁴ Loeprick, J. (2009). Small Business Taxation - Reform to encourage formality and firm growth. World Bank. <https://openknowledge.worldbank.org/bitstream/handle/10986/10571/483130BRIOSMET10Box338894B01PUBLIC1.pdf;sequence=1>

businesses is a widely adopted strategy in order to reduce costs of accounting for the firms as well as auditing and checking costs by the authorities. The note proposes the simplified application of a general regime (consisting in reducing direct tax rates; simplification of VAT and other tax forms, filing processes and payments) and four examples of special regimes:

- 1) Turnover system: progressive turnover-based tax with uniform tax rates for small businesses, or even different tax rates for different sectors based on average profit.
- 2) Indicator-based system: indicators of firm size and output to enjoy ad hoc tax rates.
- 3) Combined turnover/indicator-based tax: this is a turnover-based system with specific indicators to further differentiate to contrast tax evasion.
- 4) Net cash-flow scheme: tax rates based on records for gross income and expenses.

In the case of Italy, the flat rate regime has a turnover-based threshold, but the tax expense is evaluated and based on a lump-sum profit. In the taxonomy given by the article of the four possible special regimes, the Italian system would fit in the third category. In setting adequate thresholds, it is critical to understand that these will likely create incentives, resulting in strategic behaviour from the firms. Thus, safeguards must be provided as well.

So far, investment and productivity were outlined as “pull factors”, while taxes and other general entry costs were seen as “push factors”, in the perspective of firm growth: this wording comes from Foti & Vivarelli (1994)³⁵, who designed an empirical research based on the self – employment model. In particular, “push” factors, may be explained as features that make individuals take some choice in order to change their economic conditions, while “pull”

³⁵ Foti, A., & Vivarelli, M. (1994). An econometric test of the self-employment model: the case of Italy. *Small Business Economics*, 6(2), 81-93.

factors correspond more to opportunities capable of attracting the individual and to lead him towards a change (Storey, 2016)³⁶. Self – employment theory, as a specific topic framed in industrial organization, aims at better understanding the reasons behind firm’s creation, besides the rudimentary “entry-for-profit” logic. This work tries to adapt a similar kind of framework, however, focusing on the strategic choice not to grow once a new firm has been created, rather than on the choice whether to create one or not.

To wrap up, depending on their socioeconomic conditions, professional and academic path, people might decide to look for employment in firms or provide professional service as third parties. This choice is subject to different level of risks, career perspectives and needs different management of own resources. Start-ups and little businesses (mainly in the service, manufacturing and commercial sectors) start their activity being framed as self-employed workers. Growth (not only, but greatly) depends on the capability of these activities to enter and stay in the market, invest, innovate and exploit economies of scale to increase productivity. Tax regime needs to take into account these factors.

1.2 Flat tax regime: incentives

The literature on flat tax regimes is inconclusive: this policy is fiercely promoted (or, equally, strongly opposed to) by some politicians and has given mixed results where it has been implemented (mainly corporate taxes). This system provides for one or more fixed tax rates, which can be applied on the overall income, both personal and labour-related, for private individuals or firm. Furthermore, a flat tax regime may be applied in parallel with a progressive one (such as in the case of Italy) for some reason, or it can be used to entirely replace a previous one, giving rise to different effects and growth expectations. For example, Cassou & Lansing (2004)³⁷ estimate the growth

³⁶ Storey, D. J. (Ed.). (2016). *Entrepreneurship and new firm*. Routledge.

³⁷ Cassou, S. P., & Lansing, K. J. (2004). Growth effects of shifting from a graduated-rate tax system to a flat tax. *Economic Inquiry*, 42(2), 194-213.

effects of the shift from a progressive fiscal system to a flat one, without increasing total revenues for the government, in the theoretical framework of the neoclassical growth model and endogenous growth models. They find that the shift could also bring negative results in the long run, and that the most important feature of the reform is the flattening of the marginal tax rate curve, which needs us to consider the distortionary aspect of the system. Moreover, their findings are consistent with most studies on distortionary taxes, showing that positive increasing growth effects are present only when the elasticity of time allocations is assumed to be very high with respect to the change in fiscal rules.

Flat tax has been introduced in many countries, most of which were developing, since year 2000. Empirical research has been conducted to assess the impact of this policy, as well as to estimate the underlying equity and efficiency tradeoff. Its implementation in Estonia, Slovakia, Romania and other Eastern European countries led to an increase in tax revenue, even if this effect came at different proportions and most likely depended on different structural characteristics of each country (Evans & Aligica, 2008³⁸). Politicians like to claim credit for these results, but a deeper analysis calls for nuances. Other available contributions, seem to be more politicized and praise the flat tax for its simplicity, its contribution to free enterprise and its capability to raise more government revenues, but silence its distribution and equity effects which are mostly regressive (see Greco, 2004)³⁹. The case of Albania suggests that flat tax has neither contributed to the reduction of labour informality, nor to the increase in tax revenue, since its adoption in 2005 (Mara & Narazani, 2011⁴⁰). A different result was achieved for the Russia case by Gorodnichenko

³⁸ Evans, A. J., & Aligica, P. D. (2008). The spread of the flat tax in Eastern Europe: A comparative study. *Eastern European Economics*, 46(3), 49-67.

³⁹ Greco, A. (2004). *Flat tax: the British case* (p. 14). London: Adam Smith Institute.

⁴⁰ Mara, I., & Narazani, E. (2011). *The Effects of Flat Tax on Inequality and Informal Employment: The Case of Albania* (No. 094). wiiw Balkan Observatory Working Papers.

(2008)⁴¹, who showed an increase in tax revenue after the introduction of the flat tax. Nonetheless, this policy was found by the author not to be the main cause of the increase. Slonimczyk (2012)⁴² finds that the same reform had a positive impact in the reduction of informal work.

In short, the literature on flat tax calls for a case-by-case assessment. Flat tax lift increase tax revenues as a behavioral response to the decrease of rates (a Laffer-effect). Its impact on compliance is empirically confirmed, although gain still has no solid theoretical foundation. The regressive effects of this tax rule are ambiguous: it could even increase progressivity in some cases, even only through the impact of compliance (Keen, Kim & Varsano, 2008)⁴³. Following, a presentation of the fiscal system in Italy will be presented. It provides rules underlying the simulation model to evaluate the trap given by the jump between the two different regimes. It is important to stress the fact that this is the only distortive aspect of the design of the system to be investigated, but it's likely not to be the only one causing issues.

1.3 Fiscal frameworks in Italy

Firms in Italy are subject to different taxation regimes, based on their size and particularly on the level of revenues. We distinguish three main regimes: an ordinary one, a simplified accounting one and, finally, a lump-sum scheme for firms performing revenues lower than €65,000 and total gross labour costs (i.e., wages for fixed or casual workers, training or health costs, etc...) lower than €20,000. Key is that the parameter conditioning the applicable regime is turnover, while the tax liability is effectively applied on

⁴¹ Gorodnichenko, Y., Martinez&Vazquez, J., & Peter, K. S. (2008). nMyth and Reality of Flat Tax Reform: Micro Estimates of Tax Evasion and Productivity Response in Russia. NBER Working Paper, 13719.

⁴² Slonimczyk, F. (2012). The effect of taxation on informal employment: Evidence from the Russian flat tax reform. Emerald Group Publishing Limited.

⁴³ Keen, M., Kim, Y., & Varsano, R. (2008). The "flat tax (es)": principles and experience. *International Tax and Public Finance*, 15(6), 712-751.

profit before taxes (EBIT) in the first two cases and on a lump-sum income in the case of the flat tax system.

➤ **Flat rate (or lump-sum) scheme**

The flat rate scheme is a facilitated regime for small businesses and startups introduced in 2014, replacing the similar so-called “minimums regime” (note: this applies to all firms, whether they are individual firms, partnerships, or corporations). In this regime, not only the total tax rate is 15% for the regular firms and 5% for startups (i.e., in the first 5 years of activity), but also many other fiscal and operational costs are cut thanks to accounting simplifications⁴⁴. The tax rate is levied on income, computed according to lump sum rates defined as profitability ratios for each sector of activity. In this way, revenues are the only actual variable in the computation, while costs are not considered. Commercial activities have lower profitability ratios than professional activities, to reflect the higher costs generally associated with them. A system assuming fixed costs favours low-risk activities with highly predictable costs, since it is rational for firms’ owners to lower costs below the value assumed by the profitability ratio to enjoy net gains on taxation. The system is generally convenient for who has low costs and higher margins, and creates incentives to reduce costs, increasing profitability (tax-free) but not productivity. This regime does not provide for cost deductions nor deductions (i.e., different type of tax credits and discounts that will be better detailed later on), and VAT is not applied.

Following, all the profitability ratios for each sector of activity, the relative maximum tax liability and the final net income⁴⁵.

⁴⁴ <https://www.fattureincloud.it/guida-regime-forfettario/vantaggi-contabili-e-fiscali/>

⁴⁵ Marra, C. (2022, March 20). Coefficiente di redditività: cos'è e come funziona. Studio Commerciale Online. <https://studiocommercialeonline.it/cose-il-coefficiente-di-redditivita-nel-regime-forfettario#:~:text=Il%20coefficiente%20di%20redditivit%C3%A0%20nel,vengono%20pi%C3%B9%20presi%20in%20considerazione.>

Sector	Profitability ratio	Tax liability (max revenue)	Turnover net of taxes (max revenue)
Food & Beverage	40%	€3,900	€61,100
Wholesale commerce	40%	€3,900	€61,100
Itinerant trade of food & beverage	40%	€3,900	€61,100
Itinerant trade of other goods	54%	€5,265	€59,735
Constructions and real estate	86%	€8,385	€56,615
Trade intermediaries	62%	€6,045	€58,955
Hospitality and catering services	40%	€3,900	€61,100
Professional, scientific, technical, healthcare, educational activities and financial or insurance services	78%	€7,605	€57,395
all other activities	67%	€6,532.5	€58,467.5

Table 1 - Profitability ratios for sector groups (2022)

Tax liability is computed as the maximum revenue level of €65,000 multiplied by the profitability ratio for the relative sector and multiplied again for the flat tax rate (i.e., 15%). The turnover net of taxes is just the difference between revenues and tax expense. To this number, each activity must subtract its costs to have net income. Since costs are different for every firms, to have a baseline model they will be assumed to be equal to the value presumed by the profitability ratio.

➤ Simplified accounting regime

The simplified accounting regime can be enjoyed only by individual firms and has the same tax rates of the ordinary regime. The main difference is the reduction of some accounting costs for firms. It is automatically enjoyed

by firms reaching no more than euros €400,000 (in cases of services) and €700,000 (in case of goods) in annual turnover.

➤ **Ordinary regime**

The ordinary regime is mainly composed of three taxes:

- IRPEF (personal income tax) is levied on the whole taxable income for individual firms and employees; levied proportionally on shareholding in the company in the case of partnerships; based on the proportionally fixed IRES rate, currently equal, in most cases, to 24% for joint stock companies. This tax is progressive, meaning that different rates apply to different levels of income. At the end of 2021, in the period in which this work is being prepared, a fiscal reform of personal income tax has been done by the government and parliament as a consequence of the European Recovery Plan requisites⁴⁶.

Revenues (€)	Tax rate	Liability
0 - 15,000	23%	23% of income
15,001 - 28,000	27%	€3,450 + 27% of income
28,001 - 55,000	38%	€6,960 + 38% of income
55,001 - 75,000	41%	€17,220 + 41% of income
> 75,000	43%	€25,420 + 43% of income

Table 2 - IRPEF tax rates until end of 2021

Revenues (€)	Tax rate	Liability
0 - 15,000	23%	23% of income
15,001 - 28,000	25%	€3,450 + 25% of income
28,001 - 50,000	35%	€6,700 + 35% of income
> 50,000	43%	€14,400 + 43% of income

Table 3 - IRPEF tax rates since beginning 2022

⁴⁶ Legge 30 dicembre 2021, n.234 "Bilancio di previsione dello Stato per l'anno finanziario 2022 e bilancio pluriennale per il triennio 2022-2024"

- IRAP (regional tax on productive activities) is levied on the taxable income and used for health system financing, going from a base of 3.9%, subject to regional decision for a raise up to additional 0.92 percentage points.
- IVA (vat, i.e., value added tax).

For simplification reasons the impact of these two last taxes won't be considered: to do it in facts it would be necessary to evaluate the trap for each rate in the twenty regions. Moreover, since January 1st 2022, IRAP is only applied to the societies and not to individual firms. The effect of the value added tax is ambiguous. Firms in the ordinary regime need to pay the full amount of VAT for each product sold, thus increasing prices to the consumer level (value added tax is borne by consumers). But this is the same price at which flat-taxed firms sell their products, for competition reasons, without being forced to pay the tax. However, it is true that firms in the ordinary regime can "discharge" the amount of the tax for intermediate products and pass it on to the final products. This allows these firms to arrange resources, materials and operations with less costs than the ones under the flat tax regime.

Moreover, ordinary regime provides for fiscal deductions to personal income tax, which are amounts to reduce each worker taxable income, before the tax computation process; and fiscal deductions, which are discounts directly applied on the tax expense as it comes out of the said computation process.

Tax deductible expenses comprehend personal and family-related expenditures, such as medical expenses, parental allowances or periodical allowances consequent to the fulfillment of last wills, social security contributions and other donations.

Tax deductions comprehend interests on the main home loan, expenses for real estate brokerage, energy saving or anti-seismic building renovations, purchase and installation of safety systems and many others.

Since this methodology provides for a wide differentiation within fiscal systems and not across them, in the following analysis it won't be necessary, to consider each possible instance. Nevertheless, it is important to say that rational frictions arising from the presence of the trap are in several cases partially or completely calmed down by the deduction and detraction system. In facts, these could allow contributors to pay very low-income taxes. In some cases, the final tax due could be even zero. However, these deductions and detractions are almost never business-related, therefore a final overall neutral effect on the incentive mechanisms with respect to firm growth will be assumed.

2. Theoretical model: a numerical simulation

This section illustrates the existence and the magnitude of the “poverty trap” affecting Italian micro-sized firms. Using numbers and information presented in section 1.4 on income taxation in Italy. I show that the trap is present for both the previous law and the one introduced with the 2022 reform. Even if the magnitude of the trap has been slightly reduced, it still represents a serious disincentive to expand revenues for these firms.

Some considerations and premises on the set-up of the model are due. First, the outputs of the model are of two types, to highlight the size of the trap from different point of views: in terms of gross profits and net incomes, and in terms of gross profit and relative average tax rate. Second, analysis is conducted in discrete terms, considering additional €1,000 of revenues at each step of firm growth, with relative gross and net income, actual tax rate (according to the fiscal regime) and average tax rate. Third, average tax rate is computed as the difference between gross and net income as a fraction of gross income. Fourth, regarding computation of incomes, the model assumes all firms, at all revenue

levels, have costs equal to the amount implied by the profitability ratios for each sector, both in the flat tax scheme and in the ordinary one. This makes for cost ratios that are fixed for each sector and total costs that are increasing with revenues. Cost ratios are assumed to be constant in order to have a baseline scenario, and relevant comments, should actual costs be higher or lower, will follow. This costs assumption highlights the functioning of a revenue-based system such as the Italian flat tax regime. As explained in section 1.1, such a system has shown to be helpful in gathering more tax revenues in developing countries, but has issues: in fact, by only assuming costs for firms, these have incentives to control expenditures (i.e., keep them lower than the level implied by the ratios) and enjoy net gains from taxation. The assumption that firms of very small size can control costs quite easily, and at the same time show an average fixed profitability ratio when they grow in revenues, follows the assumptions that they bear quite low fixed costs and don't enjoy economies of scale at a small size stage. Anyway, to the ends of the simulation, having averagely fixed profitability ratios allows to compare the tax burden for each fiscal regime and sector, net of the weight of cost allocation. This scenario gives a clear view on the size of the trap in the best case: if costs rise, *caeteris paribus*, profits shrink and tax expenses decrease as well, but this model's aim is only to evaluate the tax burden in a perspective of firm growth, hence with growing revenues. It is certainly possible that firms in the lump-sum regime with the same tax expense could perform even higher net incomes than the ones displayed after.

The model simulates a representative micro-sized firm, in activity since more than 5 years, that initially operates under the flat tax regime. As it was already anticipated, maximum threshold for revenues is capped at €65,000 and total costs related to employees at €20,000. Flat tax rate applied is 15%, but the taxable income depends on the sector of activity. Six profitability ratios for nine sectors plus one (that considers all remaining sectors), bring different net incomes at the threshold point in the flat tax regime, ranging between €22,100

and €47,515. These net incomes correspond to gross profits ranging between €26,000 and €55,900. With the switch to the ordinary regime, to earn the same net income, the gross profit needed by the firm for each sector would range between €29,452 and €71,499. The differential between the two values for each firm goes from the lowest €3,452 up to €15,599. This accounts for a 13.2% to a 27.9% increase in gross profit year to year, with the previous reform, to have the same final net income. In figure 2, a descriptive simulation for gross profits going from €20,000 to €80,000 in relation with average tax rates is depicted, for each profitability ratio characterizing sectors. Note that, in the ordinary regime, average tax rates do not correspond to actual tax rates, but since no other costs or expenses are modeled between the change from gross to net income, it is deemed to be a good proxy of how the tax and its effects are perceived by firms. At the same time, average tax rate for the lump-sum regime is equal to the actual flat tax rate established by law at 15%. This is due to the cost dynamics assumed by the model, which makes actual profitability ratios again equal to the one assumed by law.

With the purpose of streamlining the overall look of the graphs, 9 sectors were reduced to 6 groups based on the relative profitability ratio. Orange group corresponds to the food & beverage, wholesale commerce, itinerant trade of food & beverage and hospitality services (ratio = 0.40); yellow group corresponds to itinerant trade of other goods (ratio = 0.54); grey group corresponds to constructions (ratio = 0.86); red group corresponds to trade intermediaries (ratio = 0.62); green group corresponds to professional, scientific, technical, healthcare, educational activities and financial or insurance services (ratio = 0.78); blue group corresponds to all other activities (ratio = 0.67).

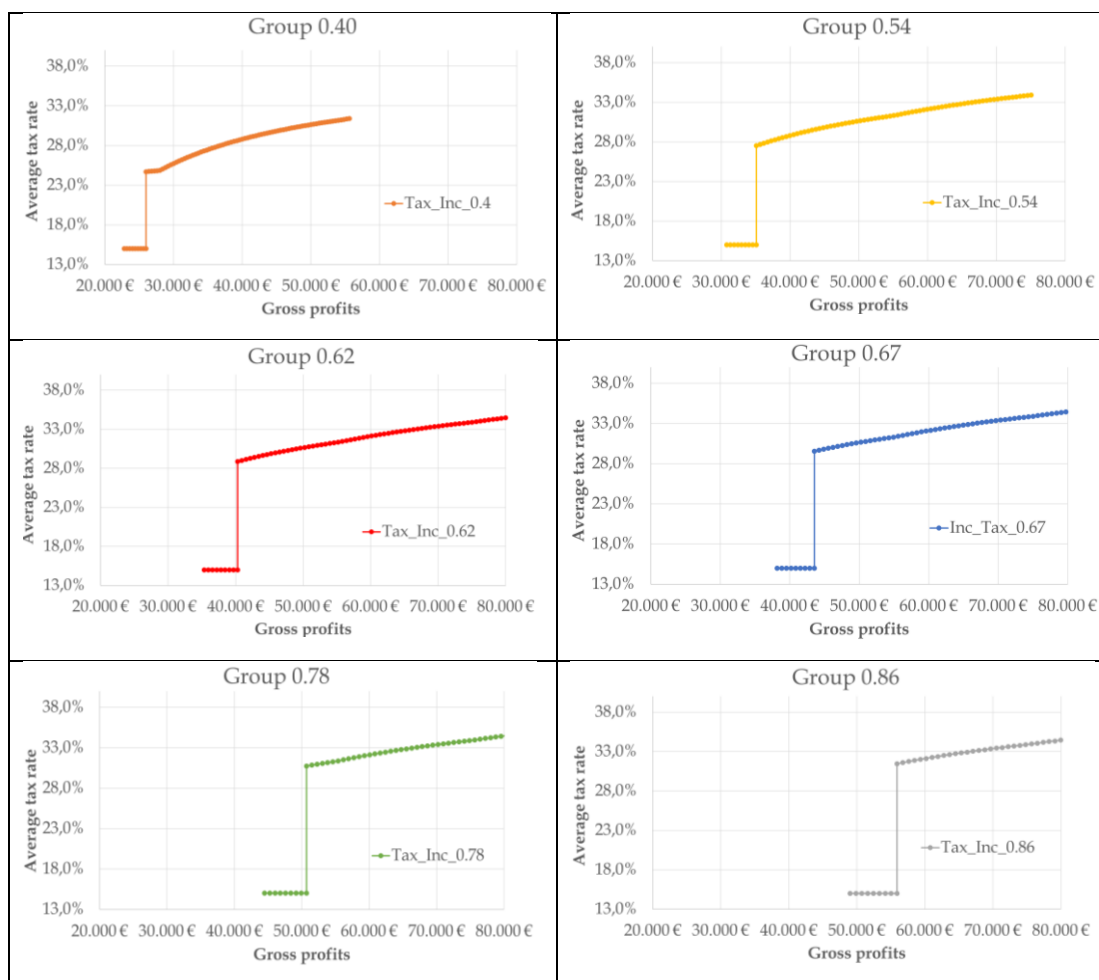


Figure 2 - Gross profits and average tax rates for sector group (BEFORE the reform)

The graph clearly shows that the trap has different sizes for each sector: the highest one is the one for construction and real estate; with a marginal tax rate on the additional €1 of 31.5% (hence, a tax growth rate of 109.8%), followed by professional services with an average tax rate right after the discontinuity point of 30.7% and a tax growth rate of 104.9%; then, the group of all the other activities sees an average tax rate 29.5% on the additional €1 (for a tax rate growth of 97%), followed by trade intermediaries and itinerant trade of general goods with rates respectively equal to 28.9% and 27.5%, and consecutive growth rates of 92.5% and 83.4%; the smallest-sized trap is the one for the group with the lowest profitability ratio seeing average tax rate at the discontinuity point equal to 24.7% and a growth of average tax rate on the marginal of gross income equal to 64.6%. After the leap, the progressive tax rate dynamics kicks in. The slightly increasing, but marginally decreasing

behavior of the line shows the progressive feature of income tax of the ordinary regime. Note that some lines look more concave than others, such as in the case of the first group, with a profitability ratio of 0.4. This is due to the consequences of the low profitability with growing revenues in a jump to the ordinary regime's thresholds. The design of the tax rate jumps is a heavier burden for less profitable firms, which enter in the new fiscal regime at a lower level of gross profits which corresponds to the highest leap between rates. Between 15,001 and 28,001, tax rate applied is 27%, while it goes up to 38% for higher incomes. So, it is interesting to note a contradiction: poverty trap between two regimes is higher for high profitability sectors, but once firms go on the other side, progressivity of the new regime affects them asymmetrically, favoring the same highly profitable firms.

In summary, the graph shows two important insights: first, from a tax rate point of view, the jump from one regime to the other is very harsh, even in the case of least distance, increasing average tax rate on new revenues of 0.6 to 2 times; second, the ordinary regime shows its progressivity features, but it has asymmetrical effects depending on firms' profitability at time of regime-change. Moreover, the flat tax regime, seems to be even regressive: in fact, not only it depends on the profitability ratios which creates differentials for each sector (keeping gross income fixed), but more importantly it is revenue-based and does not consider the costs, which are better absorbed by highly profitable activities. They end up with higher net income than smaller ones. From the point of view of a single firm, the less costs will it bear, the greater will be the relative and absolute size of profit.

In figure 3, the relation between gross and net profits is shown. The same distinction in 6 groups for the 9 sectors as framed in the flat tax regime is applied. The scale for each sector has been left equal to allow visual comparison. The size of the trap is given by the distance between the net income level at the maximum gross profit value and its projection on the

ordinary regime line. In this setting, it is proportional to the profitability ratio: firms featuring lower average taxation are the ones featuring lower incomes and traps. The biggest trap is the one for construction and real estate, with a net income at the discontinuity point equal to €47,515 and needing additional gross €15,599 (for a total of €71,499 and a gross growth 27.9%) to get the same net previous value. It is followed by professional services with net profits of €43,095 at the peak and subsequent needed €13,308 additional revenues, for a total of €64,008 and growth rate of 26.2%; the group of all the other activities sees maximum net income in the flat tax scheme equal to €37,018, and needs additional gross €10,220 to reach it in the new regime, for an increase in revenues of 23.4% in a single year; trade intermediaries and itinerant trade of general goods with net incomes respectively equal to €34,255 and €29,835, need to increase their revenues to a total of €49,314 and €42,185, accounting for revenue growth rates of 22.3% and 20.1%; the smallest-sized trap is still the one for the group with the lowest profitability ratio, being it the one paying less taxes, with a net income at the discontinuity point equal to €22,100 and gross income equal to €29,452 in the ordinary regime, accounting for additional €3,452 and growth rate of 13.2%.

Projection points correspond to the necessary gross income to get to the same net profit reached with the previous regime. The area in each triangle created by the projections is the net income loss from the change of regime due to revenue growth. At the discontinuity point, net income falls as a consequence of the higher marginal tax rate on any new unit of gross profit.

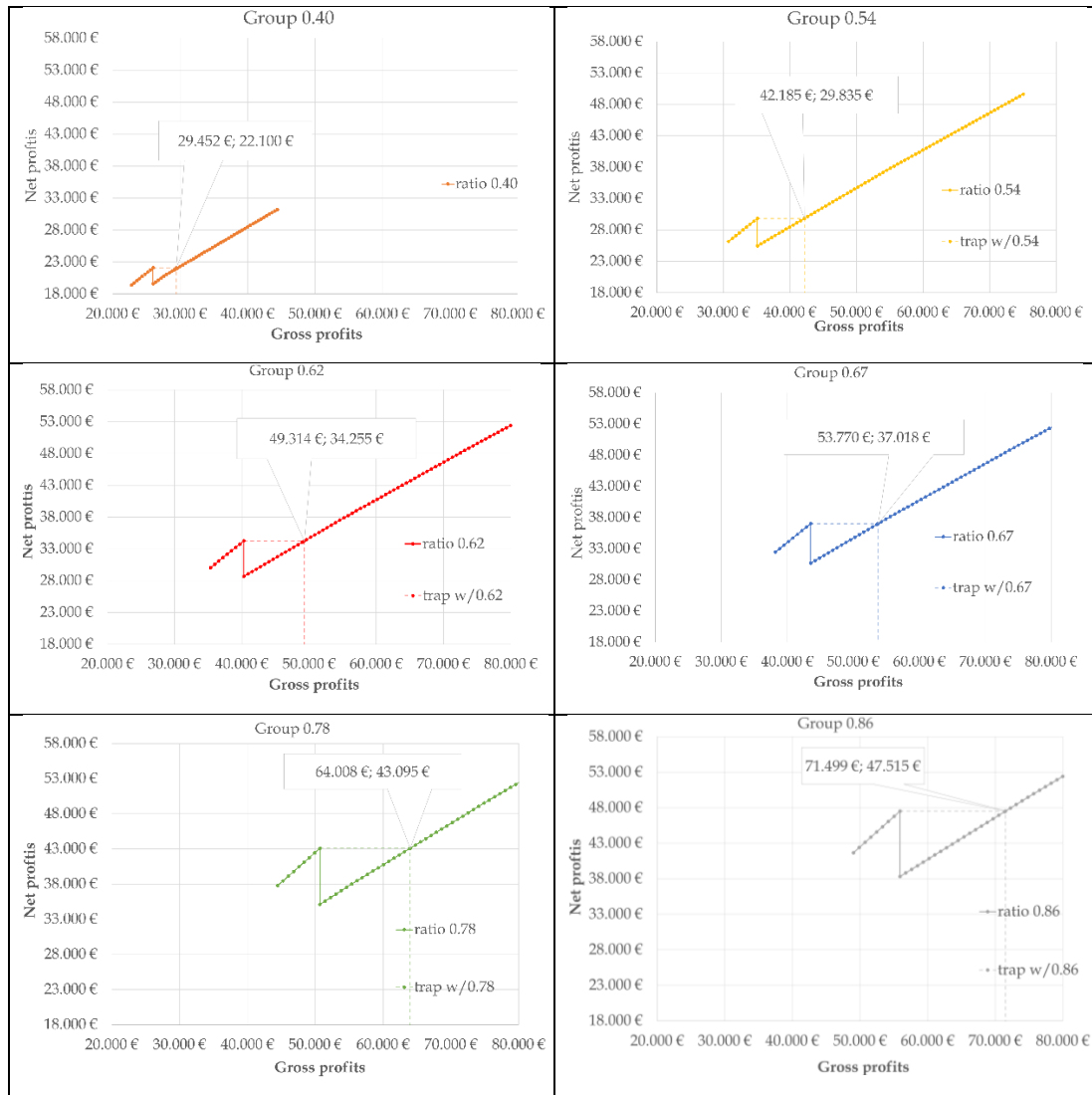


Figure 3 - Gross profit and net income for sector group (BEFORE the reform)

Note that profitability ratios for firms are obviously key to understanding the actual tax burdens. In the case total costs for firms were lower than the ones assumed by law (hence actual profitability ratios were higher than the formal ones), trap sizes would have been even higher, since firms would have earned more income in the lump-sum regime and paid more taxes after the change to the ordinary regime.

The same firm would still see a reduction in its gross profit needed to reach the same previous net income even after the new personal income tax reform. In this sense, the reform has reduced the distance between the maximum and minimum gross profits in the two regimes, hence the size of the

trap for each sector. The different net incomes at the threshold point in the flat tax regime are the same as before the reform. With the switch to the new ordinary regime, to earn the same net income, the gross profit needed by the firm for each sector would slightly shift down from a range of €29,452-€71,499 to €29,066-€70,903. The differential between the two values for each firm goes from the lowest €3,066 up to €15,003. This accounts for 11.8% to 26.8% increase in gross profit year to year, with the new reform, to have the same final net income. In figure 4 and 5, the same descriptive simulations shown before are adapted to the new reform. First set of tables (figure 4) displays gross profits going from €20,000 to €80,000 in relation with average tax rates, for each profitability ratio group.

The reduction is very small: compared to the flat tax gross profit of €55,900 for constructions, the new gross income needed in the ordinary regime is €70,903 (+26.8%); from €50,700 to €63,148 for professional services (+24.6%); from €43,550 to €52,181 for all the other activities (+19.8%); from €40,300 to €47,930 for financial intermediaries (+18.9%); from €35,100 to €41,130 for itinerant trade of goods other than food & beverage (+17.2%); finally, from a flat tax gross profit of €26,000 it is necessary to earn gross €29,066 in the new regime if the firm is in a sector of the 0.4 ratio group (+11.8%).

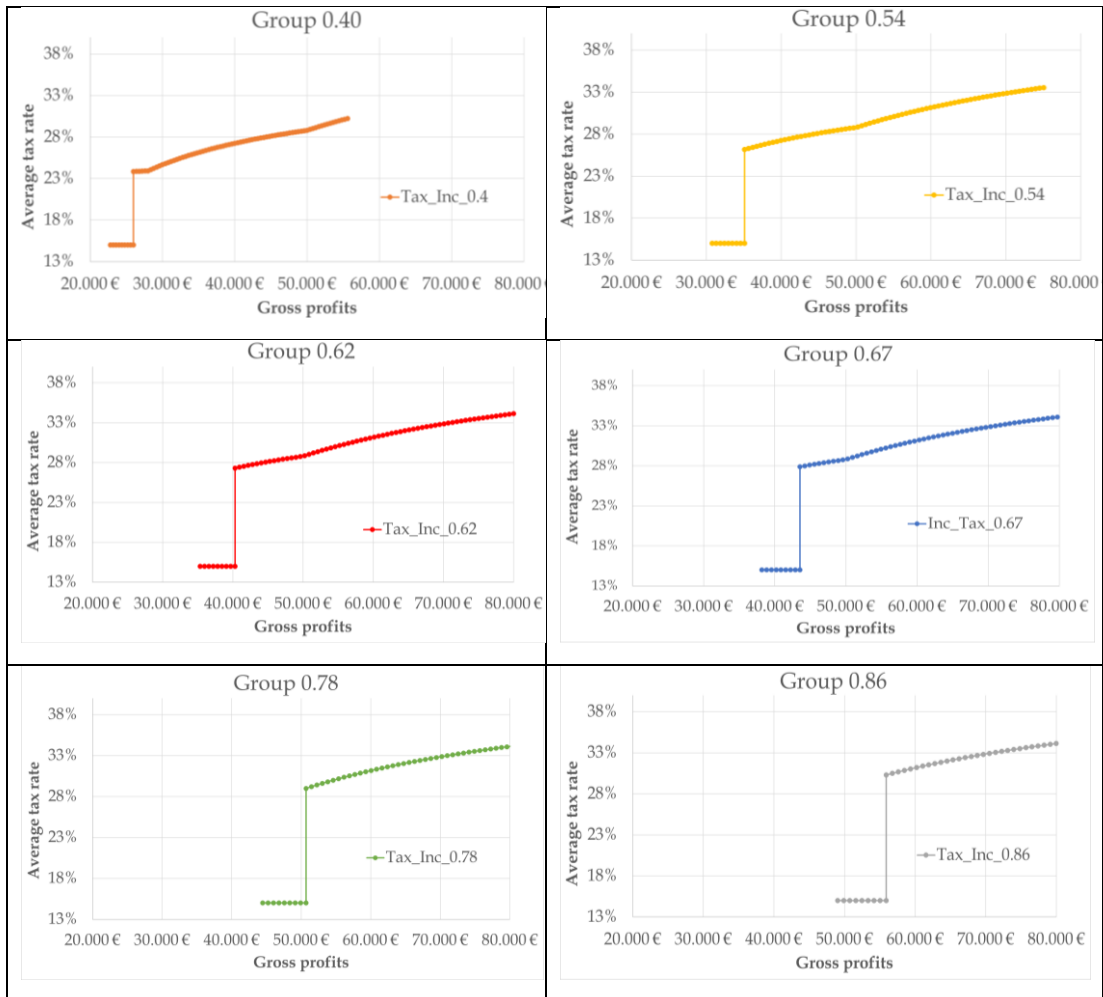
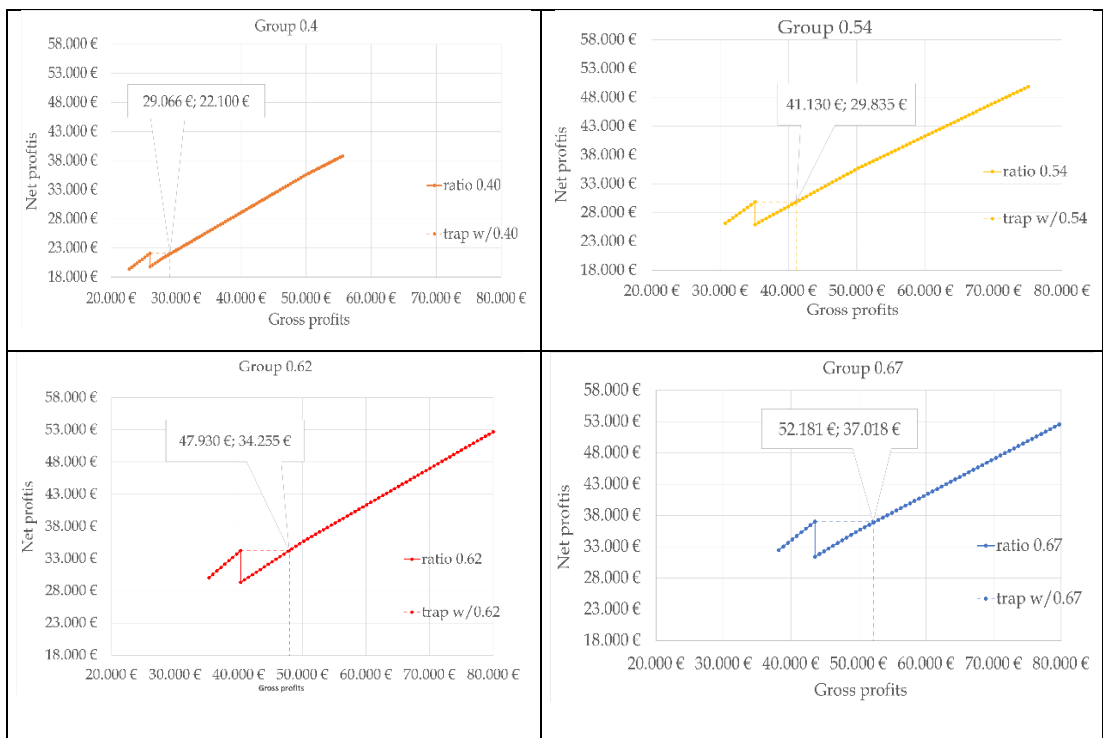


Figure 4 - Gross profits and average tax rates for sector group (AFTER the reform)



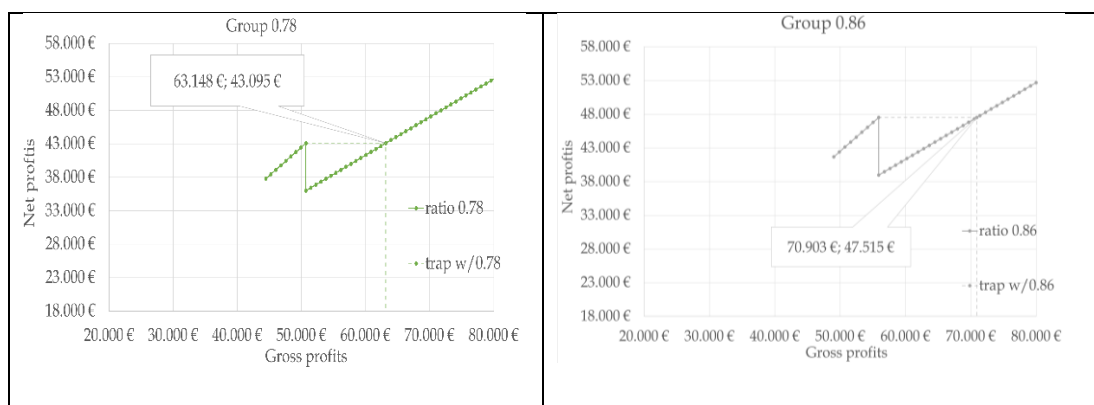


Figure 5 - Gross profit and net income for sector group (AFTER the reform)

From the new reform rules, it is clear how the impact on the disincentives to grow at the regime change is overall positive, since required growth for gross profits has decreased for every sector. Nevertheless, it has decrease asymmetrically since new tax expenses depend on new tax rates for the ordinary regime. Higher decreases in the size of the trap are enjoyed by financial intermediaries and the general (i.e., all the activities not included in the taxonomy) sectors with ratios respectively equal to 0.62 and 0.67. They see a reduction in required gross income after the regime change of 3.4% and 3.6%. Another duly notable observation derivable from the graph is that the new reform contributed to reduce tax burden on the lowest profitability groups: for gross income between 35,000 and 50,000, average tax rate has shifted down from €29% to €27%.

The design of a new system is of politicians' and fiscal economists' concern, having the aim of efficiency, progressivity, and mediation in mind. This work's aim is to numerically, theoretically, and empirically prove the existence of the distortion from the fiscal regime change just highlighted. The next, empirical, section of the work will provide some results from the data to support dynamics of the relation between fiscal regime and growth for micro-sized firms.

3. Empirical research

In this last part of the work, data on small businesses will be showed. The empirical analysis will be divided in two sections: the first will be based on data extracted by the annual survey on Italian firms conducted by INAPP, while the second one will concern data available on AIDA database. From the survey, a mean and regression analysis will be presented to investigate the associations between investment and growth in years 2005, 2011 and 2018. Even if data are available for different years, the sample changed from year to year hindering a panel analysis. From AIDA data, instead, a panel of small firms will be used to test the critical mass concentration around the thresholds for micro sized activities in Italy in the period 2011-2020. Since data on micro-sized firms are almost unavailable, I chose to present results for two different datasets trying to infer on different hypotheses for different variables.

3.1 Analysis on data from INAPP-RIL: Investment and growth

This dataset, available for years 2005, 2007, 2011 and 2018, is the outcome of the Longitudinal Survey on Business and Employment (RIL - Rilevazione Longitudinale su Imprese e Lavoro)⁴⁷ conducted by the National Institute for the Analysis of Public Policies (INAPP - Istituto Nazionale per l'Analisi delle Politiche Pubbliche). The dataset was requested to the institution for research purposes. This investigation studies the behavior of firms in the use of work, characteristics of work demand and other information regarding business management and size. All datasets were reviewed and cleaned: missing answers to key variables were cut out, as well as observations regarding firms with more than €100,000 in revenues and €50,000 in costs of employees for that year. Furthermore, useful observations were reduced to individual firms or partnerships not part of any holding. Year 2007 was not used in the analysis since the sample for that year featured only capital

⁴⁷ Website: <https://inapp.org/it/dati/ril>

enterprises. The database provided many information, and the used variables with *varnames* for each observation year are shown in table 4.

Variable	Type	2005	2011	2018
Investment in the previous 2 years	Categorical	h7	H1	vH1
Total Investment	Numerical	n.a.	H2	vH2
Innovations in product or services in the previous 3 years	Categorical	l4	L1	vL1
Innovations in production process in the previous 3 years	Categorical	l5	L2	vL2
Total number of employees	Numerical	b1t	B1T	vB1_1 _1
Total costs for employees	Numerical	h1t	H6T	n.a.
Total revenues	Numerical	h2	H5	vH5
Whether firm is part of holding	Categorical	a12	A11	vA11
Legal type of firm	Categorical	A305	A4	VA4

Table 4 - Variables, names and types for INAPP RIL data

Total observations for each year were around 30,000 firms, but each time they were reduced to focus only on the small businesses. Dummy variables for investment and innovations were created.

For year 2005 total observations used were 2,074. 51% of the firm in the reduced sample made investments, 44% made product innovations and 39% made production process innovations. The mean revenues are higher for the group which did investments and for the one that did innovations with respect to whom did not, as shown in table 5.

Revenues by investments

	Mean	Std. dev.	Freq.
Yes	1252.64	2073.33	1,062
No	840,35	1303.2	1,012
Total	1056.59	1753.01	2,074

Revenues by innovations in products/services

	Mean	Std. dev.	Freq.
Yes	1124.82	1871.53	910
No	1003.24	1653.30	1,164
Total	1056.59	1753.01	2,074

Revenues by innovations in production process

	Mean	Std. dev.	Freq.
Yes	1178.59	1945.66	809
No	978.567	1613.79	1,265
Total	1056.59	1753.01	2,074

Table 5 - Summary of revenues for investment and innovations groups in 2005 (INAPP RIL data)

Results of the linear regression of revenues as a function of employees' costs, investments and innovations done in the past is shown in the following table 6.

Linear regression

Revenues (2005)	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	Sig
Tot. Emp. Cost	3.714	.09	41.40	0	3.538 3.89	***
dummy_Inv	191.86	57.501	3.34	.001	79.1 304.632	***
dummy_Innov_pdt	(52.3)	63.66	(0.82)	.411	(177.229) 72.458	
dummy_Innov_proc	(15.4)	64.908	(0.24)	.812	(142.709) 111.873	
Constant	260.79	48.696	5.36	0	165.296 356.293	***

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Mean dependent var	1056.590	SD dependent var	1753.004
R-squared	0.462	Number of obs	2074
F-test	443.984	Prob > F	0.000
Akaike crit. (AIC)	35591.287	Bayesian crit. (BIC)	35619.473

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 6 - Linear regression output for 2005 (INAPP RIL data)

Coefficient for total costs of employees and investments are positive and significant, showing a statistical positive association with revenues.

Dummies for both innovations have negative and not significant coefficient. This is probably due to the nature of innovations which was not very much specified by the respondents to the survey: in fact, it could involve innovation following smart investments, as well as rationalization and management of previous issues (e.g., cut of expenses or processes). These actions do not necessarily bring out revenue increases.

For year 2011 total observations used were 3,945. 17% of the firms in the reduced sample made investment in 2009 (2 years before the survey), 16% made innovations to their products or services and 11% made innovations to their production processes. Such low data are probably due to the impact of the great financial crisis on the Italian economy. While mean revenues are higher for the group that did investments as opposed to whom did not, the groups for the two types of innovations are almost the same (see table 7).

Revenues by investments						
		Mean	Std. dev.	Freq.		
Yes		58546.8	41861.3	675		
No		49824.7	40591.9	3,270		
Total		51317.1	40938.5	3,945		
Revenues by innovations in products/services				Revenues by innovations in production process		
	Mean	Std. dev.	Freq.		Mean	Std. dev.
Yes	51325.2	44069.7	652	Yes	51608.5	45289.9
No	51315.5	40296.8	3,293	No	51279.8	40354.1
Total	51317.1	40938.5	3,945	Total	51317.1	40938.5

Table 7 - Summary of revenues for investment and innovations groups in 2011 (INAPP RIL data)

Results of the linear regression of revenues as a function of employees' costs, investment and innovations done in the past follow in table 8.

Linear regression

Revenues (2011)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Tot. Emp. Cost	1.226	.054	22.62	0	1.12	1.332	***
dummy_Inv	7726.389	1681.899	4.59	0	4428.915	11023.86	***
dummy_ Innov_pdt	(4813.13)	2089.353	(2.30	.021	(8909.4)	(716.81)	**
dummy_Innov_pr oc	(329.88)	2441.126	(0.14	.893	(5115.8)	4456.109	
Constant	43753.28	759.884	57.58	0	42263.48	45243.08	***

Mean dependent var	51317.150	SD dependent var	40938.576
R-squared	0.121	Number of obs	3945
F-test	135.624	Prob > F	0.000
Akaike crit. (AIC)	94485.965	Bayesian crit. (BIC)	94517.366

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 8 - Linear regression output for 2011 (INAPP RIL data)

Coefficient for total costs of employees and investments are positive and significant, again showing a statistical positive association with revenues. Nevertheless, this sample show a wider selection of small business with higher average revenues with respect to the 2005 one. The dummy variable for investment has a greater coefficient, showing an important statistical impact on revenues. Dummies for both innovations have negative, but innovations to products and services have a 0.5 significance level: on average, these innovations are statistically associated with a decrease in revenues. This can be due to the high expense-cuts the firms had to bear during and right after the crisis.

Lastly, for year 2018 total observations used were 3,610. This time, survey questions regarding innovations were different: respondents could answer whether i) they made no innovations, ii) they made innovations just for their firm or iii) for both their company and the market⁴⁹. Question on investments remained a yes/no question. 14% of the firm in the reduced

⁴⁹ Innovations for the firm are solutions adopted by the firm without any expected impact on the market, while innovations for the firm and the market are new products, services or technologies that are brought by the firm and are new to the whole market (according to the respondent).

sample made investments, 10% made product innovations for their firm (additional 6% also for the market) and 9% made production process innovations just for the firm (additional 4% also for market reasons). This year mean revenues are lower for the group which did investments and for the ones that did innovations, with respect to whom did not, as shown in table 9.

Revenues by investments				
	Mean	Std. dev.	Freq.	
Yes	33942.3	43727.3	526	
No	36679.3	41965.1	3,084	
Total	36280.5	42231.3	3,610	

Revenues by innovations in products/services				Revenues by innovations in production process			
	Mean	Std. dev.	Freq.		Mean	Std. dev.	Freq.
Yes (firm)	31690.1	42462.5	6338	Yes (firm)	31599.7	42492.7	303
Yes (firm&mkt)	32801.3	44374.7	215	Yes (firm&mkt)	23648.1	37869.1	126
No	37032.8	42020.7	3,057	No	37226.8	42272.0	3,181
Total	36280.5	42231.3	3,610	Total	36280.5	42231.3	3,610

Table 9 - Summary of revenues by investment and innovations groups in 2018 (INAPP RIL data)

From the tables is also clear that the number of small firms investing is still very low, even if now average revenues associated with not investing are higher than in the opposite case. Results of the linear regression of revenues as a function of number of employees, investment and innovations (in both cases) done in the past follow in table 10.

Linear regression

Revenues (2018)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Tot. Emp. Number	(851.34)	97.21	(8.76)	0	(1041.934	(660.75)	***
dummy_Inv	1353.192	2090.25	0.65	.517	(2745.009	5451.394	
dummy_ Innov_pdt (firm)	(2668)	2969.48	(0.90)	.369	(8490.07	3154.025	
dummy_ Innov_pdt (firm&mkt)	3051.288	3630.46	0.84	.401	(4066.686)	10169.26	
dummy_ Innov_proc (firm)	(1834.6)	3152.57	(0.58)	.561	(8015.689)	4346.334	
dummy_ Innov_proc (firm&mkt)	(13852)	4681.47	(2.96)	.003	(23031.04)	(4673.8)	***
Constant	38842.80	806.396	48.17	0	37261.766	40423.84	***
Mean dependent var	36280.579		SD dependent var		42231.310		
R-squared	0.026		Number of obs		3610		
F-test	15.950		Prob > F		0.000		
Akaike crit. (AIC)	87062.723		Bayesian crit. (BIC)		87106.064		

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 10 - Linear regression output for 2018 (INAPP RIL data)

In the last inquiry, costs were not available, and number of employees was used as a substitute. This value returned a negative coefficient, indicating that firms with higher revenues are also featuring less employees. This could be the consequence of a smaller average size of firm in years. The dummy for investment has a positive value but it's non-significant. In facts, from the previous table, it was clear that not only a small percentage of the reduced sample decided to invest in previous years, but also that the firms which decided in this direction even faced lower future revenue flow. These two points, together with the significant employees-number coefficient, support the idea that smaller businesses, with lower investments better perform than the ones actively trying to grow. Of course, this is not necessarily due to the fiscal regime change that happened in 2016: many other omitted variables might contribute to give consistency to these associations. Nonetheless, it is safe to assume that a fiscal regime rewarding small businesses with low or zero investment has an impact on business formation. Unfortunately, there is no specific data capable to indicate a precise quantitative result and size of the impact. Dummy variable for process innovations oriented to both firm and

market is significant and negative, as it was before. Another due observation is that in the three samples, since 2005, average percentage of small firms choosing to invest has decreased, as well as their relative future revenues as opposed to the other group. Survey for 2018 (the first one after the reform introducing the lump-sum scheme) registered the lowest ratio of small firms which invest, equal to 14%, after the level registered in 2011 (17%) and the highest one in 2005, a relatively wealthy period for Italian economy (51%).

3.2 Analysis on data from AIDA: Income Tax and growth

Data used were available on AIDA database for years 2011 – 2020 and variables extracted were EBITDA, production costs, revenues and turnover, total production value, number of employees, income tax expense, name of the firm and legal type of activity.

Aida platform is part of a wider project for the collection of financial information on firms and public administrations of many countries in collaboration with Bureau Van Dijk⁵⁰. The database is licensed to universities for research purposes. Retrieved information regards financial data of Italian firms: employed variables are EBITDA, revenues, turnover, number of employees income tax expense for each year. All datasets were reviewed and cleaned: wide data was reshaped to long format, for a total of 39,480 firms and 394,800 observations. Growth rates for revenues has been computed with log approximation. To properly compute growth rates, missing observations for key variables were linearly interpolated. Average tax rate was computed as the ratio between income tax expense and earnings before interest and taxes for each observation. Sample was reduced to individual firms and partnerships, which featured revenues lower than €100,000. Total observations of the reduced sample are 1,171. The database provided many information, and the used variables are shown in table 11:

⁵⁰ Website: <https://www.bvdinfo.com/en-gb/our-products/data/national/aida>

Variable	Type	varname
Firm identification number	Numerical	Firm_id
Firm's name	Numerical	Name
Year of the observation	Numerical	Year
Legal type of firm	Categorical	Type
Total production	Numerical	Tot_Prod_
Costs of production	Numerical	Prod_Costs
Total revenues	Numerical	Rev_
Income tax expense	Numerical	Inc_Tax
Earnings before interest, depreciation, amortization and taxes	Numerical	EBITDA_
Total number of employees	Numerical	Emp_
Average tax rate	Numerical	tax_rate

Table 11 - Variables, names and types for AIDA data

Data in the reduced sample produced interesting descriptive insights: first, firms with revenues up to the threshold level of €65,000 do not show significant differences in average tax rate with respect to the total of firms in the reduced sample. By looking at table 12, it is clear how average tax rate always stays below the initial one in the ordinary regime (that was estimated in the previous simulation to be around 29.8%). For each year considered, mean and median tax rate differentials are very low. It seems that, in reality, the possibility for firms in the ordinary regime to deduct costs and lower their tax burden is enough to overcome the trap issue in static terms.

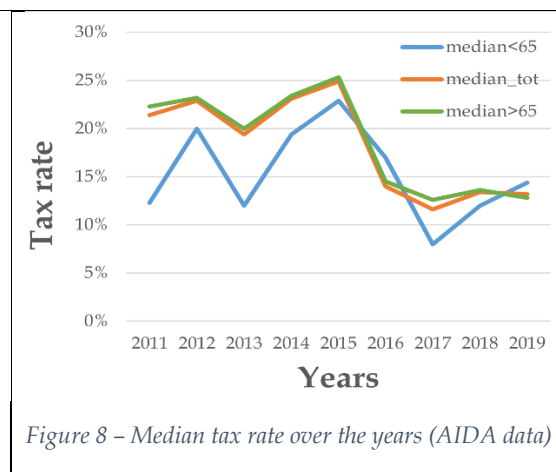
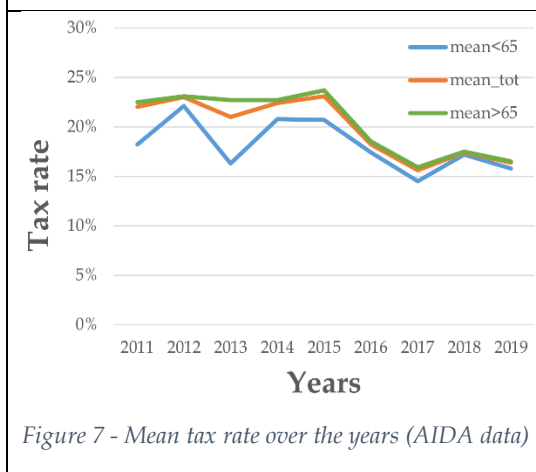
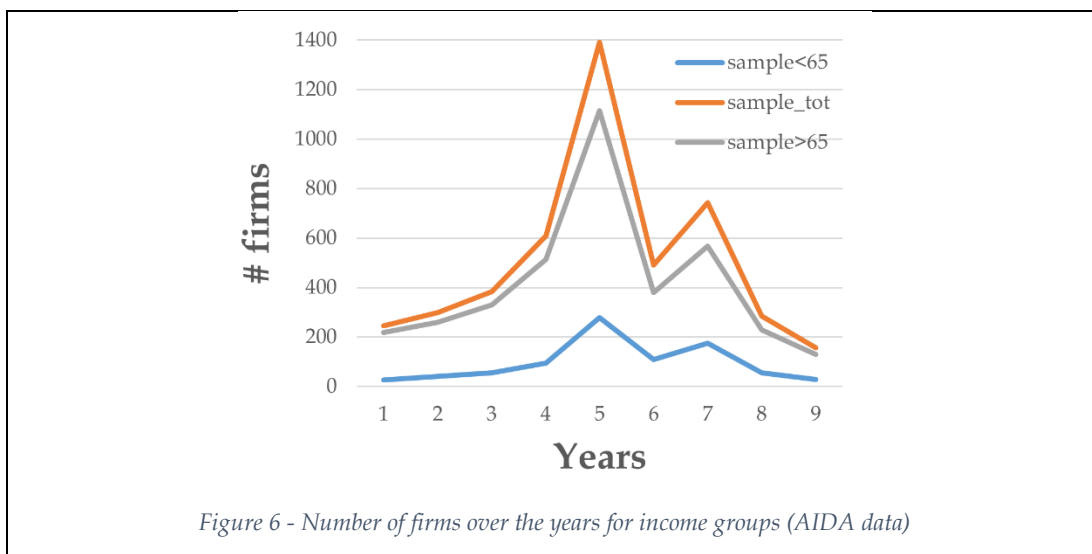
Descriptive Statistics

Year	Variable	Obs	Mean	Std. Dev.	p1	p50 (median)	p99
2011	Tax rate w/rev<=65,000	27	.182	.140	.003	.123	.475
	Tax rate for the all sample	246	.220	.149	.001	.214	.493
2012	Tax rate w/rev<=65,000	40	.221	.161	.001	.20	.496
	Tax rate for the all sample	299	.23	.15	0	.229	.497
2013	Tax rate w/rev<=65,000	55	.163	.134	.002	.12	.492
	Tax rate for the all sample	384	.21	.14	.003	.194	.494
2014	Tax rate w/rev<=65,000	95	.208	.140	.001	.194	.497
	Tax rate for the all sample	608	.224	.142	.005	.231	.491
2015	Tax rate w/rev<=65,000	278	.207	.115	.002	.229	.438
	Tax rate for the all sample	1,392	.231	.118	.005	.249	.473
2016	Tax rate w/rev<=65,000	110	.174	.147	.002	.17	.476
	Tax rate for the all sample	490	.182	.148	.001	.14	.486
2017	Tax rate w/rev<=65,000	176	.145	.140	0	.08	.481
	Tax rate for the all sample	743	.156	.136	0	.116	.472
2018	Tax rate w/rev<=65,000	56	.172	.137	.001	.12	.481
	Tax rate for the all sample	285	.174	.142	.001	.134	.484
2019	Tax rate w/rev<=65,000	28	.158	.131	.002	.144	.487
	Tax rate for the all sample	157	.164	.136	0	.132	.46

Table 12 - Summary of average tax rates for income group and total sample (AIDA data)

The same data, in dynamical terms, show an overall decreasing pattern in tax expenses for firms in the reduced sample. However, this is true for both groups of firms with revenues above and below the threshold, suggesting the idea that incentives of the fiscal regime play no role in this pattern. Furthermore, the group of firms with more than €65,000 in revenues enjoyed more of this reduction, since the mean tax rates for the two groups end up being very similar: in 2018, it was 17.5% for >65 group and 17.2% for <65 group

(figure 7). Medians behavior give us insights on the shape of the distributions: both medians decrease sensitively with time (both distributions are right-skewed), but the one for <65 group goes lower than 10% in 2017. This means that first 50% of firms in that group almost get a half of the mean tax rate, showing the long right tail of the distribution (see figure 8). As a final remark, figure 6 shows that the total number of firms in the reduced sample increased at an almost even degree for both groups (meaning that overall number of firms with revenues lower than €100,000 increased in that year, likely as a consequence of financial and debt crises of 2007 and 2012). In 2016, it started decreasing, eventually reaching a lower total number of firms. What is most important is that the number of firms with revenues higher than €65,000 was almost half-cut in 2019 with respect to 2011, while firms in the other group ended being almost the same as in the beginning (even slightly higher).



From the data, it is then presumable that some impact variable may have differently influenced the growth rate of the total number of firms in the reduced sample (i.e., below €100,000 in revenues) for the two groups. The decreasing path of firms above the threshold (i.e., with revenues between €65,000 and €100,000) starting in 2015 was given by their jump to levels of revenues above €100,000 (hence, out of the reduced sample). This spillover caused by growth in revenues is not observed in the other group: no evidence of upward jumps from the lowest group to the one above the threshold was found. In any case, possible mixed effects and jump between the two groups, as well as from the sample outwards, has been balanced (some firms in the lowest group could have gone out of business, but have been replaced by others going back from a higher level of revenues). Growth rates in the two groups from the beginning to the end of the period suggest again the idea of

the trap: while the reduced sample faced a negative final growth of -36% in the number of firms between 2011 and 2019, the group with revenues above €65,000 also faced -41% negative growth. The group below the threshold, however, closed the period with 4% increase in number of firms. Hence, in the sample, one group varied in numbers, while the other stayed almost constant at the end of the period. This is no proof that a fiscal disincentive to grow for firms below the threshold exists, but it can suggest that the threshold itself is significant.

Nevertheless, we have no additional information on these firms' financial or economic conditions, and much less the tax regime they were subject to. Therefore, these descriptive statistics are only useful to have insights on the possible foundations for the critiques assumed in this work, but further analysis with adequate data is needed. Moreover, it is fair to assume that, in such a database and at such low revenues (for the average firm included), many observations concerning liquidating firms (i.e., that are shutting down activity) can contribute to contradictory results. These are for example average tax rates close or equal to zero on one hand, or firms with very low revenues still paying taxes higher than 40% on the other.

4. Conclusions and policy implications

In the first part of this work, the concept of poverty trap in economic literature was defined. The self-perpetuating feature of a certain economic situation leading to stagnation is key. This may be a condition of poverty, underdevelopment, and recession. According to the case, many variables play different roles in the existence of these traps: population dynamics, depreciation and accumulation rate of physical capital, coordination failures between agents, and institutional variables. In this work, I concentrated on the latter, investigating on the impact that fiscal regime can have on growth dynamics of firms in Italy. From the presented literature sources, fiscal regime has often been found to impact choices of economic agents, especially in

conjunction with other cyclical phenomena (e.g., change in workforce composition given by the entry of women in the work life, or the rise of the services economy). During economically favourable periods, individuals might decide to embark on more risk and start own activities. However, business fragmentation (i.e., high number of micro-sized firms with respect to the average, medium and big ones) has been associated with economic fragility and stagnation: small businesses are less productive and less prone to growth. Policy makers need to consider individuals' preferences and update fiscal regimes in a constructive way, incentivizing productivity growth and wealth creation. In this perspective, literature sources on variables associated with firm's growth were presented.

On these premises, I presented the rules that make up the Italian fiscal system and its two main regimes. I considered some simplifying assumption and focused on the personal income tax framework. From these rules, I modeled the growth path of representative firms in different sectors jumping from a lump-sum regime (flat-tax scheme) to the ordinary regime (progressive tax rate scheme). Results confirmed that a growth trap exist in the passage from one regime to the other, and it depends on the costs incurred by each firm. In the model I assumed that each firm incurred the same amount of costs that were presumed by law in the profitability ratios for the lump-sum regime. This assumption made the size of the traps proportional to the size of the margins for each firm. In the case costs were lower than what assumed by ratios, size of the traps would have been even higher. The largest trap would be in the case of a firm featuring the lowest profitability ratio (i.e., lowest taxable income and tax expense) and the lowest amount of costs. The 2022 reform of income taxation for the ordinary regime contributed to reduce the tax burden for low and medium-low income individuals, hence slightly reducing the size of the trap. Still, from the model, few considerations for policy arise: firstly, profitability ratios are given by law in a turnover taxation scheme, but do not necessarily reflect real profitability of firms. Application of

a flat tax in this context only reinforces the overall inefficiency and regressivity of the scheme: each individual is subject to the same rate, regardless of the revenues amount. Secondly, this situation creates a second incentive to control costs below the level assumed by the profitability ratios in order to enjoy net gains from taxation. This likely translates in reducing fixed costs related to workforce, energy, quality of machinery and materials. Secondly, it is duly to note that this analysis does not consider the deductions (i.e., reduction on taxable income) and detractions (i.e., reduction of the tax expense) featured in the ordinary regime. Even if in some cases they allow to highly reduce income taxation for individuals, they are a majorly regressive tool, since they do not depend on income level. In fact, they mainly concern medical, family-related or investment-related expenditures (ranging from house renovations to music school for kids) that are generally less common among lower income individuals. The inclusion of these effects in the model would require a case-to-case analysis. But it's good to note that if the ordinary regime was not assumed to be completely progressive (but instead, other distortions were considered), the size of the traps for each sector could be – in theory – even larger.

Finally, the third, empirical, part of the work tries to answer questions previously arisen. Namely: i) what has been the trend in investment and innovation in small Italian firms in the last 20 years; ii) what is the relationship between these variables with growth (identified as higher revenues); iii) if there is any evidence that the introduction of a lump-sum regime for small firms hinders growth. From the results we get some major suggestions. Previous-year investment is positively associated with revenues also in small firms. This association holds for 2005, 2011 and 2018 observations, even if the ratio of investing small firms to the total of small firms decreased in years also due to consequences of crises and economic instability. Italian firms invested less and less. Innovations, on the other hand, give mixed results and are not always associated with growth, and in any case, they are almost never

significant. This probably depends on the nature of innovations, which can be direct results of investment on one hand, or cost cuts and process rationalization on the other. Costs related to employees are also positively associated with revenues in the first two surveys (2005, 2011). By analyzing the reduced sample data from AIDA one other interesting point comes up. Even if it seems that size of the traps is lower than expected in static terms (differentials in mean tax rates are low for each year between the two groups below and above the threshold), in dynamical terms we observe a peculiar path: mean and median tax rates are decreasing in time at similar pace, but the number of firms in the two groups ends being very different. After the total firms in the reduced sample reached a peak between 2015 and 2016 (mainly due to the increase of firms above the threshold), in 2019 the group of firms with revenues lower than €65,000 saw a 4% growth in number, while the other group decreased at a rate higher than 40%.

In summary, in 2005 and 2011, Italian small firms with higher revenues were the ones with more employees and that invested. From the 2018 survey, investment is not significant anymore, and average revenues for the investing group are lower than for the non-investing group. Link between employees and revenues has reversed. Moreover, data clearly suggest that firms below the threshold of the lump-sum regime stagnated – even incorporating few other from the higher group – while firms above the threshold varied strongly, likely exceeding the sample constraint of €100,000 in revenues. This suggests that a role might be played by institutions over decisions of individuals.

This work was aimed at proving the existence of disincentives to grow in the design of the regime change between a flat tax scheme and a progressive regime such as it is featured in Italian system. There is need to deepen and reinforce analysis with data on fiscal regime enjoyed by firms and other variables for a consistent period of time in order to give stronger results. This is left for future research.

