

Italy and Startups: harnessing a country of innovators

A Policy Analysis of the Italian Startup Act and its effects on the Startup Ecosystem

Luca de Angelis, Harvard Kennedy School | Harvard Business School

Prepared for

Professor Tommaso Nannicini

Former State Secretary for Economic Policy Coordination, Implementation, and Evaluation Unit
Prime Minister's Office of the Italian Republic
&

Mr. Stefano Firpo

Director General for Industrial Policy and Competitiveness
Ministry of Economic Development of the Italian Republic

Faculty Advisors:

Professor Josh Lerner

Jacob H. Schiff Professor of Investment Banking
Unit Head, Entrepreneurial Management
Harvard Business School

Professor John Haigh

Executive Dean
Co-Director, Mossavar-Rahmani Center for Business and Government
Harvard University, John F. Kennedy School of Government

PAC Seminar Leader:

Professor John Haigh



Luca de Angelis, Master in Public Policy and Business Administration Candidate, expected graduation date 05/25/2016

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Executive Summary

Why should government invest in startups at all?

The vast majority of policies aimed at creating startups ecosystems have resulted in wasting taxpayers' money. Their failure is the result of mechanically importing policies without regard for the local context and the core economic rationale that underpins startup policies.

The economic reason that lies at the heart of startup policies is in fact that small firms, if incentivized via appropriate funding mechanisms, promote innovation, and consequently economic growth. Moreover, research has shown that no startup ecosystem has ever been started without public intervention, from the USA to Israel.

What justifies policy intervention is thus the well-established knowledge that small firms, if truly innovative in nature, help an economy grow, and can disrupt otherwise inefficient and obsolescent sectors. Policy evaluation has to follow a similar logic: if the intervention is increasing the innovation-content of the economy, whether in its entirety or within clusters, the policy is on the right track; if instead the policy merely promotes the formation of new companies, regardless of their potential contribution to innovation, this is not what the policy is supposed to attain.

Innovation ecosystems and Italy's relative ranking.

An innovation ecosystem is the product of innovation demand – corporates that need innovation in order to thrive – and innovation supply – the amount and quality of researchers educated in an economy. The overall output of this ecosystem is innovation, traditionally measured by the number of patents applied for during a period of time.

Italy's innovation ecosystem, as the exhibits below show, currently lags its OCED peers. Italy's underwhelming performance further justified the need for good policy.

Exhibit 0.01 Innovation supply

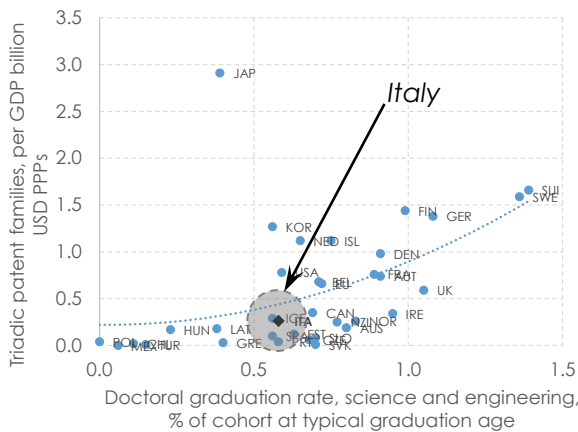
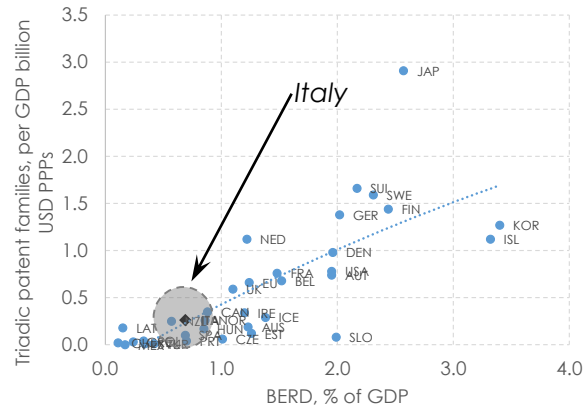


Exhibit 0.02 Innovation demand



Source: OCED data elaborated by the author

In fact, startups policies can go a long way in helping solve the Italian innovation deficit as well as contribute to filling the Italian labor productivity gap vis-à-vis other developed nations.

For this reason, we believe the 2012 Italian Startup Act goes in the right direction: Italy needs the government's intervention to help create a healthy startup ecosystem. At the same time, the ground seems fertile for such an ecosystem to emerge.

Policy evaluation

No policy is as hard to evaluate as an innovative and experimental one, such as the Italian Startup Policy. For this reason, our methodology uses a menu of techniques aimed at elaborating robust conclusions via redundancies: we have described aggregate and individual data, we have put them under the scrutiny of statistics, and we have conducted field interviews to corroborate or dispute those findings.

Given their complexity, we believe it is useful to discuss our results on two dimensions: their extensive and intensive margins. In economics, extensive margins refer to the number of usable inputs, while intensive margins refer to the efficiency of inputs used that are already in place.

Using this analogy, **we believe the Italian Startup Policy to have exceeded expectation in its extensive margin:** startups, entrepreneurship, Venture Capital were concepts known only to specialists before the reform. The Policy has created a culture and movement that shows young Italians an alternative path for their future. Incubators, accelerators, labs and university startup groups have started to emerge in larger and larger numbers. **The momentum is encouraging.**

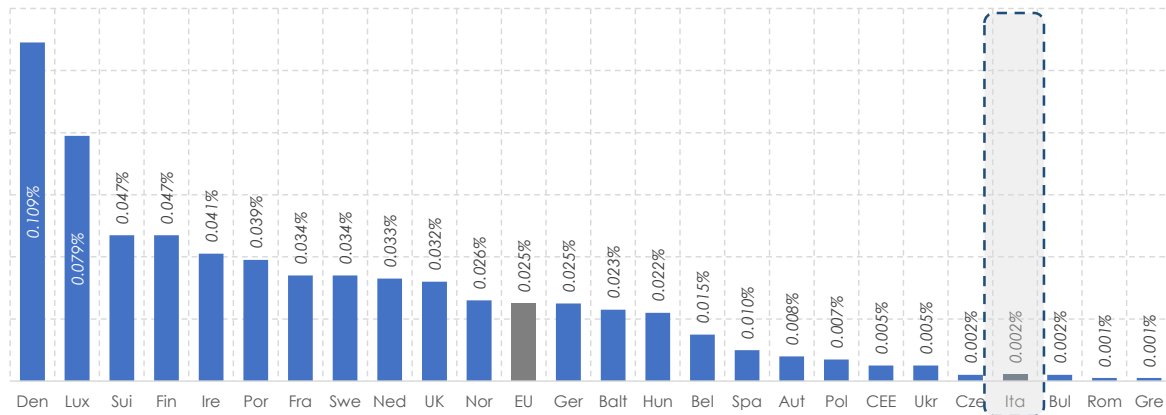
With the same analogy, however, **this review has highlighted some critical points on the intensive margin of the policy. In other words, the policy needs some fine tuning to bring the Italian Startup Ecosystem to its next level.**

In particular, our review has highlighted the following critical points:

- **Funding has not reached European averages (yet):** the Italian Startup Policy has been unable to attract a larger share of investors into Italian startups. We acknowledge that startup policies require patience to bear fruits; the outcomes might just be too far away to be captured yet. The irresponsiveness of investors might however suggest that some actions are needed on this front, if only to change market expectations.
- **Firms register to access debt funding:** in Italy, startups need to register with the Government in order to get a package of benefits. Among those, startups can access government debt guarantees to then access inexpensive debt funding. There is statistical evidence that access to debt funding via debt guarantee schemes might incentivize small firms with suboptimal business ideas, thus incapable of getting VC funding, to register. Debt, in our view, removes a large incentive to innovate, offering benefits to firms that might not “deserve it” and posing a large risk to the state's coffers as the government guarantees loans that are inherently high-risk. Moreover, debt also removes the checks and balances of shareholders, so

vital for a startup to grow. The debt funding might be creating a dual market for startups where those that register are of “lesser quality”. We find this result, if confirmed, concerning.

Exhibit 0.03 Venture investments as a proportion of GDP, European Countries, 2015

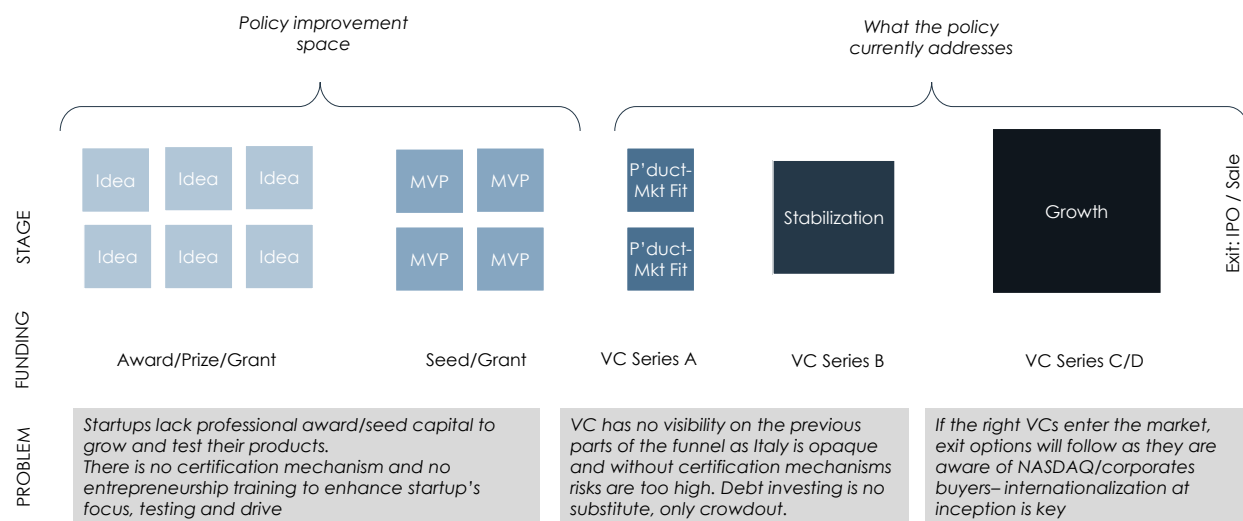


Source: Invest Europe, data elaborated by the author

- **Startups still employ few people per firm:** startups, albeit having an aggregate positive revenue and earnings profile, employ far fewer employees than traditional firms. This need not be a critical issue, given the more innovative (and efficient) nature that a startup is supposed to embody, but might not offer as many opportunities to young people as initially envisaged.
- **Bottleneck at seed and skill formation:** our interviews have highlighted that Italian entrepreneurs seem to lack the focus and techniques that require them to succeed. We believe this to be linked with a dearth of skills formation at the seed level: Italians don’t have mentors with significant prior experience or cannot reach them. Moreover, the funding they receive (mostly insufficient) doesn’t come with appropriate constraints and lessons. Accelerators and incubators do not seem as effective as their international counterparts in solving this dilemma. The arrival in the country of companies like Endeavour is an encouraging sign, as they aim to solve this critical juncture, but more should be done in this space. Italian startups need to receive more funds and guidance to experiment and get their product market fit right.

The exhibit below summarizes the critical points of the startup journey in Italy. It seems to us that the Italian policy is already sufficient to deliver performance at the later stages of a startup, while there seems to be a bottleneck between the idea generation and a workable MVP. That iteration stage is where, in our view, the policy should focus.

Exhibit 0.04 Policy Successes and Challenges along the startup journey



Source: compiled by the author

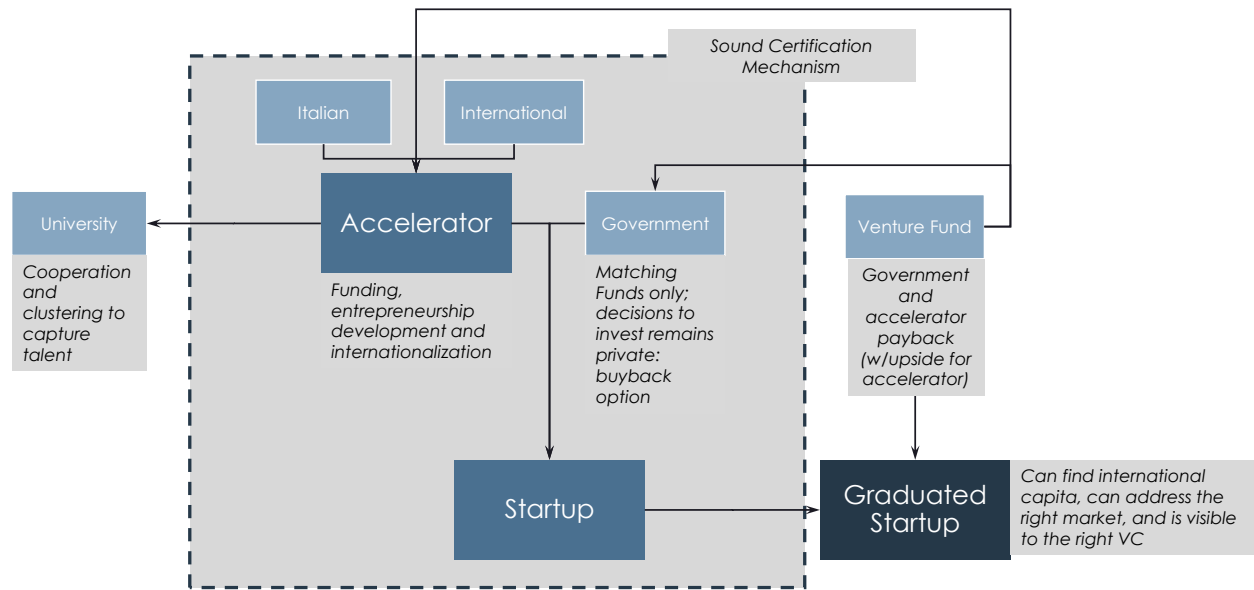
Policy Recommendations

The existing policy environment has had tremendous success in the extensive margin (getting more firms to become startups) while more needs to be done in the intensive margin (making the system more efficient). We suggest that the government:

- (1) **Keep** and reinforce the current policy tools that are working, and namely the cut to red tape, front end tax incentives and targeted labor laws. These policy tools have been game changers.
- (2) **Remove** access to the debt guarantee scheme. We believe that such measure might be creating the wrong sort of incentives: it is distortive and risky.
- (3) **Broaden** the definition of startup (only in conjunction to the removal of debt guarantees) to slowly include more new firms or for a longer period of time. The private sector will be able to discriminate those worth investing and those that are not. The government has forgone ~€10mn in revenues for tax incentives linked to the definition of startup in 2014, while it has extended guarantees for ~€270mn. Broadening the definition at the expense of debt guarantees can also be cost effective.
- (4) **Start** a government sponsored and privately run international accelerator program that would borrow international credibility, improve the entrepreneurial skillset of Italian entrepreneurs, and give them access to international networks and funding.

To expand on the latter point, the government should aim for the creation of one or two high level international accelerators in the country (Exhibit 0.05). Those accelerators should be:

Exhibit 0.05 Attracting international accelerators as a policy option combining certification, funding and skill formation



Source: compiled by the author

- **International:** the government should spend ample time inviting the best-in-class accelerators to start a branch in Italy, together with an Italian counterparts of their choice. Accelerators would welcome startups from all Europe, borrowing the international investors' reputation.
- **Educational:** accelerators, in order to access government incentives, have to create a program of skills formation targeted to Italian and European corporates. In particular, they should improve on product management skills, language skills, internationalization, product/market fit.
- **Privately managed:** government should attract the best-in-class and incentivize them with match funds a-la Yozma (40% matching equity with buyback options in five years at face value plus inflation) but every decision about location, investments and teaching should be left private. Investors know better what is needed for a startup to be more successful than the governments. However, the government should cap the investor downside to incentivize market penetration, as explained with the matching funds structure.
- **Partner with Universities:** another requisite of the accelerator is to partner with a university (e.g. Politecnico di Milano/Torino) in order to help them with skills formation for students. In return, the accelerator will receive preferential treatment to the university's IP. The accelerator is to decide which university they will partner with. This will incentivize the clustering necessary for the formation of an ecosystem, as research shows.
- **Give access to international funding:** international accelerators and operatives would bring along a strong international network of funders and investors that is so needed in Italy to help

Italian startups grow internationally. Internationalization is hence not only of skills, but of networks.

- **Provide a *certification*:** certifications, i.e. “stamps of approval” from renowned R&D institutions/investors that lower VC search costs, are an important element to trigger a startup ecosystem. This structure has the potential to grant such certification to graduating startups, thereby offering that needed trigger for the ecosystem.

This structure is in itself wholly insufficient to fill the funding gap in the Italian VC market, but it can serve as a strong catalyst. By borrowing international credibility, networks and improving the skills of Italian startups, it has the potential to establish best-in-class norms for the ecosystem and attract founders and investors around its edges. Convincing an international accelerator to open their first European branch or campus in Italy might go a long way in attracting not only the best Italian startups, but also their European counterparts to work in Italy. Moreover, this policy is a high-potential small-scale experiment, building on the experimental nature of the policy. Instead of devising large programs that might not work, an experiment allows for fine-tuning before scale-up.

This set of fine-tuning measures has the potential to generate further momentum and provide a strong catalyst for the sector, in our view.

Conclusion

In a way, Italy has always been a country of startups. There is no reason why the country should not be able, in principle, to be home to a vibrant and productive startup ecosystem.

Currently, and in spite of innovative and coordinated government efforts, the sector seems unable to take off. Italy still ranks low among European peers.

The Italian Startup Policy has gone a long way in promoting entrepreneurship among young Italians and has also provided an ample and innovative set of policy tools.

Our review finds that some of those tools are indeed working, while others need rethinking. We believe in particular that some financial incentives should be better targeted to financing truly innovative firms and we propose two new mechanisms that would (hopefully) serve as strong catalysts for a renewed momentum of the sector.

We strongly believe that Italy has all it takes to become a European startup hub, but it largely depends on how the present momentum will be enhanced. Startup ecosystems are fragile. They need all the Government’s attention to grow and mature. We hope this research has partially contributed to achieve that goal.

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1. Why should the government be involved in startups at all?

The vast majority of public policies aimed at startups have resulted in wasting public resources as they mechanically replicate policies elaborated elsewhere without understanding the core economic rationale for promoting startups.

The reason at the heart of startup policies is to promote innovation as a conduit to economic growth. Research has shown that startups do indeed contribute to growth but only if competitively funded by Venture Capital. At the same time, no Venture Capital industry has ever been started by the private sector alone. The link between startups and innovation via VC justifies government intervention, not having startups per se.

Governments around the world are increasingly focused on launching successful innovation ecosystems and promoting a vibrant startup culture. However, the rationale behind such policies is often unclear. It sometimes seems that government intervention in this sector is driven by the need of promoting startups per se, without regard for the economic rationale that lies behind such interventions. Understanding the key economic tenets of startup policies is fundamental if a government wants to avoid wasting public resources, as it allows (1) to comprehend the overarching economic rationale and (2) adapt it to the local economic context without importing foreign policies that might not work when implemented in the local context. In fact, wasting public resources has been the overwhelming result of many startup policies enacted in the world so far, as Lerner argues in *Boulevard of Broken Dreams*¹.

This section explores said rationale and makes the case for targeted government intervention in the startup ecosystem. The government is best placed to kick-start and maintain a positive ecosystem, but it should avoid both directly investing in startups and providing non-discriminatory incentives.

Economic rationale

Governments should create and promote a startup ecosystem. That intervention, in order to be successful, has to follow a particular logic that we spell out as follows:

- (1) Innovation leads to economic growth. By increasing efficiency, innovation implies more production for the same level of inputs. Productivity gains lead to a superior growth trajectory².
- (2) The innovative content in an economy is the product of innovation supply, mostly universities, and innovation demand, investors and corporations. Between idea and commercialization there is however a gulf that requires an entire ecosystem to emerge³.

¹ See [15] Lerner, *Boulevard of Broken Dreams – Why Public Efforts to boost Entrepreneurship and Venture Capital have Failed – and What to do about it*, Chapter 4.

² The link between innovation and economic growth has been the subject of ample economic research in the 1960s and 1970s. For example, this link is first brought forward by Morris Abramovitz and later complemented by the works of Robert Solow.

³ See [15], Chapter 5,6,7.

- (3) There is evidence that new and smaller firms are more innovative than large incumbents, especially if VC funded, as “a dollar of VC appears to be about three times more potent in stimulating patenting than a dollar of traditional R&D.”⁴
- (4) VCs are helpful insofar they select, mentor, monitor, induce efficiency in the startup, and help it grow to its next stage, be it sale or IPO.

In other words, the link between startups and growth is far from direct and is subject of debate within academia. If policies do not respect this logic, however, the chances of wasting public resources increase at every step of the chain, jeopardizing success at the same time.

This logic is not a “one-size-fits-all” approach, as local contexts command targeted policies, but is however an underlying architecture that should underpin government intervention. Such tight architecture alone can produce a coordinated ecosystem as currently happens both in the USA and in Israel.

Government intervention

The roadmap spelled out above provides a guide for government intervention too. Government has in fact three fundamental roles in this ecosystem:

- (1) **Ensuring innovation supply by focusing on education policy and research.** The government alone, especially in continental Europe, is responsible for education policy and funding to research and development institutions. It is not a case that the Silicon Valley, the Boston startup hub, and the Tel Aviv ecosystem all revolve around leading global higher education institutions. The work of Zucker, Darby, and Brewer⁵ highlights for example that the American biotechnology startup ecosystem is primarily a result of excellent research capabilities and human capital. Agrawal, Kapur, and J. McHale⁶ stress the importance of social and spatial proximity for knowledge spillovers. But that proximity is only useful insofar there is a center of knowledge “production”. Taken all together, this implies that, **without a strong university ecosystem, innovation cannot be fostered.** Equally important is the insight that incentives to startup ecosystems far away from “knowledge production centers” can be wasteful.
- (2) **Kick-starting innovation demand by promoting a healthy VC industry.** No VC industry has been started without government intervention to date⁷. In the case of the Silicon Valley, certification programs⁸ and the presence of federal-sponsored agencies, in connection to top tier universities, has laid the foundations for a tight VC ecosystem to emerge; in Israel, a

⁴ See [12], Kortum and Lerner (2000).

⁵ See [25] Zucker, Darby, and Brewer (1998)

⁶ See [1] Agrawal, Kapur, and McHale (2008)

⁷ See [15] Lerner (2009)

⁸ See [14] Lerner (1999)

government sponsored fund-of-funds, coupled with the presence of capital as well as a top tier university created the right incentives for the system to emerge⁹.

- (3) **The overall maintenance of such tight ecosystem by constant evaluation and policy correction.** For example, Israel's policymakers had the vision to interrupt their government sponsored fund-of-funds Yozma because it was *too* successful and could have distorted the newly created market if not discontinued¹¹.

In particular, research shows that effective government intervention in (2) is usually limited to:

- **Certification.** Innovations are complex and plentiful. Moreover, their discovery is costly and surrounded by secrecy, making an investing environment difficult to emerge. Without an institutionalized mechanism to sort innovative firms, investors cannot successfully bear the search costs. To start a VC industry, there needs to be some system of efficient certification that filters those innovations and helps new VCs sort this multitude of projects¹². This has been proven to help kick-start innovation ecosystems.
- **Confidence booster.** As in the case of Yozma, where the government provided a capped downside but unlimited upside to VC investors in the fund, governments often serve as initial injectors of confidence for nascent industries by absorbing some of the risk. Importantly, this injection does not imply that the government should start making investment decisions in place of private investors. Economic decisions must be left to the industry, which will learn from its mistakes and practices without government aid and absolve the role of efficient capital allocator. The government should merely instill enough confidence to help investors take risks. Such confidence boosters can come in the form of tax incentives, co-investments, or capped downsides.
- **System regulator.** Not only investing, but also creating a startup involves plenty of risks. Bankruptcy is the most likely outcome. IP is its core asset. Contracts its lifelines. Governments are important to lower the costs of bankruptcy and eliminate the stigma attached to it. They are also responsible for efficiently protecting IP and upholding the rule of law. Efficient judicial procedures are also key to solve disputes and let the industry move on.

⁹ See [23] Senor and Singer (2011), Chapter 10.

¹⁰ We note that these measures are to be viewed in addition and as complementary to the presence of capital surrounding the new entrepreneurial activities. As research shows, for example [15], in regions “without high technology firms and venture capital organizations” public intervention might fail. This is why we stress, in this narrative, the presence of innovation supply as well as demand, united with capital.

¹¹ See [23] Senor and Singer (2011), Chapter 10.

¹² See [14] Lerner (1999) and [15] Lerner (2009), page 69 for a complete account of *certification* mechanisms.

Matching the two: economics trumps imitation

Governments have multiple levers to influence economic policy and different tools should match different objectives. If the objective is innovation, a startup policy following the logic described above might be the most effective and efficient tool. If the objective is not innovation, there are other policy tools that might be more effective. Being unclear on the objective, or trying to ask a startup policy *too much* might produce distorted incentives and help achieve neither.

The following discussion thus evaluates the Italian startup policy using the above logic as benchmark: is the policy promoting innovation as conduit to economic growth?

The specific benefits to Italy: productivity.

Several studies point to decreasing labor productivity as the main drag to the Italian economy for the past twenty years.

One particular problem is that the labor market does not efficiently match skills with resources¹³. For example, good engineers might spend their entire productive life in obsolescent incumbents that dry their skills away. Alternatively, small firms do not find talent as skilled labor joins large unproductive firms or moves abroad.

One of the causes, some studies suggest¹⁴, could be traced back to the lack of ICT adoption given both the small nature of businesses on the one hand and the obsolescence of government-protected incumbents. In particular, mediocre managerial quality¹⁵ impedes corporations to update to modern standards and result in a loss of competitiveness.

In this context, promoting a healthy innovation ecosystem could not only add to the innovative content of the economy, but also go a long way in solving the skills mismatch issue, and in particular:

- New entrants can put pressure to government-protected or monopolies and promote competitiveness;
- Adding innovation content can help new entrants and incumbents alike in embracing the ICT revolution;
- New scientists and engineers might be incentivized to join highly-innovative startups as opposed to uncompetitive incumbents that might put their skills at better use or simply move abroad;
- Startups could promote a professional and expert class of managers that can improve the overall managerial quality of the Italian economy.

In conclusion, the right experimentation with an effective startup policy might indeed contribute to solving deeply-rooted issues within in the Italian economy. If younger generations can be educated to aspire to entrepreneurship as a true career alternative to a standard job, if universities start cooperating with investors to restructure the skillset taught, if the cross pollination among foreign and national

¹³ See [19] McGowan and Andrews (2015) or [22] Schindler (2009)

¹⁴ See [21] Pellegrino and Zingales (2014)

¹⁵ See [2] Bloom, Sadun and Van Reenen (2008)

investors can be promoted, Italy is a country prone to fully participate in the global innovation revolution.

2. Italy and Innovation: an OECD snapshot

An innovation ecosystem is the product of innovation demand – corporates that need innovation in order to thrive – and innovation supply – the amount and quality of researchers educated in an economy. The output of this ecosystem is innovation, traditionally measured by the number of patents applied to over a period of time. This section shows that Italy's innovation ecosystem lags its peers on a majority of metrics. The underwhelming performance further justifies policy intervention in this realm.

International Benchmarking

The link between innovation and growth is a well-researched economic theme, as discussed in the previous section, but there is not a single measure for it. The Organization of Economic Cooperation and Development (OCED) fortunately provides an innovation data dashboard with the aim to paint a holistic picture of the overall innovation performance of an economy¹⁶.

In general we can see innovation as an ecosystem composed of innovation demand – those that need innovation to grow such as high-tech companies or just corporates that want to stay innovative – and innovation supply – or those that can provide said innovation, such as researchers, institutions and universities. The literature has taken spending in Research and Development as a good proxy for the overall innovation demand of a country, whereas it has taken the number of doctoral students' graduation rate in science and engineering as percentage of a cohort graduation age for the supply side.

The outcome of both supply (researchers) and demand (R&D) is innovation itself. That quantum is traditionally measured by the number of patents that a country issues over a definite period of time. This is far from perfect in measuring the overall innovative content of an economy, but it is the consensus proxy for it: it embeds in fact the level of innovation as measured by how much science that economy carries out, it measures the productivity of such ecosystem, and it measures the attraction of its legal system in terms of protection granted to IP.

The exhibits below serve to provide a quick snapshot of the Italian situation vis-à-vis its OECD peers in 2014.

The data, taken from the OECD innovation database, shows how countries fare in terms of:

- (1) **Patents/Output.** Triadic patents are those applied for in the EU, USA and Japan simultaneously. This subset of total patents applied for tends to represent high quality patents with high innovative content. Those patents are compared to GDP in order to account for country differences.
- (2) **Researchers/Supply.** Percentage of doctoral students' graduation rate in science and engineering relative to their cohort. This measures the amount of scientists produced each year relative to the total skilled workforce produced.

¹⁶ The main resource can be found here <http://www.oecd.org/innovation/>

- (3) **R&D Spend/Demand.** Annual spend in R&D by private corporations. The measure excludes R&D spend in the private sector, sometimes a high proportion of total, because the aim of the present section is to evaluate the vibrancy of private sectors, not public ones.

Exhibit 2.01 Innovation supply

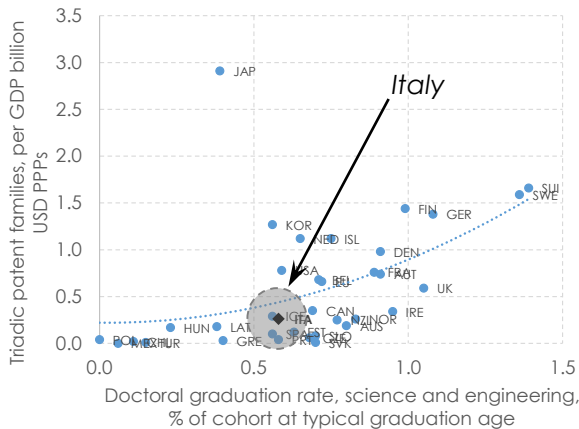
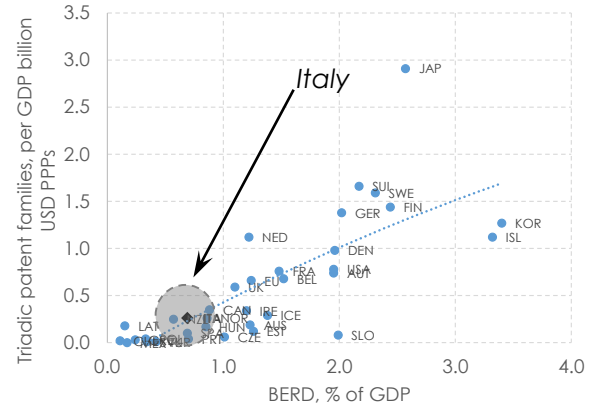


Exhibit 2.02 Innovation demand



Source: OECD data elaborated by the author

Exhibit 2.01 represents the output (patents) per innovation supply (researchers) and aims to describe the innovation supply ecosystem. The trendline represents what the optimal relationship between supply and output among OECD countries is in 2014. Countries above the line get more “bang for the buck” meaning that they can produce more patents per number of students: their *innovation transmission mechanisms* are well functioning. Those countries are Japan, Sweden, Germany, South Korea, Finland, the Netherlands, Israel and Switzerland. Italy, while showing a close-to-average graduation rate of students, falls below the line, meaning that it produces less patents per student graduating than peers. This is a signal of a suboptimal innovation supply ecosystem.

Exhibit 2.02 has output on the same axis as exhibit 2.01, but shows innovation demand (R&D) instead. It has a very similar interpretation however, where countries above the line get more innovation output for the same amount of expenditures. Again, these are positive equilibria: a higher “bang for the buck”. Similar countries occupy this space: Japan, Sweden, Switzerland, Finland, Germany and the Netherlands. Italy falls on the trendline, but occupies the bottom left corner of the chart, representing an overall low level of innovation demand (innovation pull).

Interestingly, countries ranking above the line in both charts are those that exhibit a so called *high-skill high-wage* equilibrium.

Exhibits 2.03 and 2.04 show instead an alternative way to advance innovation ecosystems than traditional R&D spend. By plotting patents (output) and investments in startups by Venture Capital companies over 2014 it aims to capture the same relationship as above, but from a startup ecosystem’s standpoint.

3. The Case of Italian Startups – legislation and evaluation

This section reviews the core of the Italian Startup Policy and evaluates what we believe are its key components. Our review is far from complete, but we believe it sheds some light on the overall workings of the policy and suggests some areas for improvement.

3.1 What is a startup for the Italian legislator?

In 2012 the Italian Government, then headed by Prime Minister Mario Monti, set to create the first policy aimed at startups. The policy was approved the same year with the name of Italian Startup Act¹⁸ and has been subject to several incremental changes since then.

The policy's cornerstone is the definition of *startup innovativa* (innovative startup). New small firms that match the legal definition of startup can access economic, legal, and bureaucratic benefits offered by the policy. Those that do not, can only access benefits reserved to traditional companies.

For legal purposes, startups are defined as companies that¹⁹:

- Are new or have been incorporated for less than five years;
- Are based in Italy or members of the EU but have at least a branch located in Italy;
- Earn less than €5mn in revenues per annum;
- Do not and have not paid out dividends;
- Have as main corporate purpose the development, production and commercialization of high-tech products or services;
- Have not been incorporated as a result of merger, sale or split;
- Possess in addition at least one of the following requisites:
 - At least 15% of the greater between revenues and operating costs is spent on research and development yearly;
 - At least 1/3 of employees are PhD candidates/doctors, or at least 2/3 of employees, shareholders or collaborators possesses a Masters Degree;
 - The firm owns or leases a patent or a registered software.

Startups that match this definition have to register to the Startup Registry (hereinafter Registry) in order to activate the benefits associated with the policy.

To any startup professional, this legal definition might indeed read as odd. Startups are difficult to define: startups can be old or new, can be profitable or mostly unprofitable, can be funded by Nobel laureates as well as college dropouts, and can earn anything from zero to several billion dollars in revenues.

The rationale for the Italian definition, however, was to find a small enough subset that would have served as a good test without wasting too many public resources. With this in mind, the definition

¹⁸ Decreto-legge 18 ottobre 2012, n. 179 *Ulteriori Misure per la Crescita*.

¹⁹ Ibid. article 25, comma 2.

looks an interesting policy *ruse* to introduce startups in Italy without raising too many red flags from more traditionalist parts of the bureaucracy.

As we shall later see, this definition has heavily contributed to the introduction of the concept of startups and has opened up real avenues of employment for talented young Italians. In economic terms, this definition has marked improvements on the *extensive margin*.

3.2 What are the benefits for Italian startups?

The Italian Startup Act and its successive amendments offer an ample menu of incentives for registered startups. We summarize the most important features of the Italian legislation below. For a complete list, please see Appendix 2²⁰.

Cut to Red Tape

Startups are waived most incorporation costs, stamp duties, and annual registration costs; in addition they can do so online. Startups self-certify their belonging to the Registry and are subject only to ex-post checks of compliance. The Ministry of Economic Development quantifies yearly red-tape savings to the tune of €525 for the first year of operation and €435 for successive years²¹.

Tailored Labor Laws

Contrary to national legislation, registered startups can hire employees with fixed-term contracts for a maximum of four years instead of three. Moreover, they are not subject to limitations on how many fixed-term to open-ended contracts they can employ. In a nutshell, startups are subject to a labor regime that closely mirrors an “employment at will” model.

Front End Tax Incentives

Individual investors in registered startups benefit from a deduction on the personal income tax equal to 30% of the amount invested for a maximum of €1.0mn. Corporate investors benefit from a deduction on taxable income equal of 30% of the invested amount for a maximum of €1.8mn. The incentives are similar to the successful UK Enterprise Investment Scheme and have been considerably strengthened with the 2017 budget law. Prior to that, the deductions used to be 19% for individuals and 20% for corporates.

Data from the Revenue Agency shows that individuals and corporates have directly and indirectly invested a total of €51mn in 2014 compared to €28mn in 2013, with the larger increase coming from individual investors. This cost the government ~€10.0mn in fiscal deductions or detractions in 2014²².

²⁰ A comprehensive list is also available on the government’s website at http://www.sviluppoeconomico.gov.it/images/stories/documenti/Executive-Summary-of-Italy-s-Startup-Act-new-format-23_02_2017.pdf and

http://www.sviluppoeconomico.gov.it/images/stories/documenti/Innovative_startups_10_02_2017.pdf

²¹ See

http://www.sviluppoeconomico.gov.it/images/stories/documenti/Relazione_annuale_startup_e_pmi_innovative_2016.pdf, page 122.

²² Ibid. page 146.

Special Bankruptcy procedures

Not only registered startups access faster and cheaper bankruptcy procedure (dubbed “fail fast measures”), but are also able to postpone recapitalization in case fresh capital is called to repay yearly losses, extending the life of startups beyond what normally allowed to traditional corporates.

Debt Guarantee

Registered startups can benefit from government guarantees on bank debt. In practice, Italian startups can negotiate loans up to €2.5mn with a private bank, and are able to receive a government guarantee for 80% of the principal. This significantly lowers their interest rate payable on the principal. At the same time, it increases the bank’s willingness to extend the loan given that the government bears the majority of the credit risk while enjoying all the profits.

As of December 2016, the government guaranteed a total of €564mn for an average loan of €244k. The total amount of corresponding guarantees issues is €442mn. Out of the €564mn gross loans, ~€340mn (60%) are outstanding and performing, while others have been repaid or never activated. Importantly, non-performing loans represent only 0.5% of total²³.

It is important to remember that startups are usually characterized by a large number of failures (the majority of them). If the Italian startup definition adequately captures this distribution, it follows that the central government is assuming significant credit risk.

²³ See

http://www.sviluppoeconomico.gov.it/images/stories/documenti/10%C2%B0_rapporto_Fondo_di_Garanzia_startup_innovative%2031_12_2016.pdf

3.3 Evaluation Methodology

The present paragraph describes the evaluation methodology in detail and outlines the sources we used to evaluate the Italian startup policy as described above.

Methodology

No single method can fully analyze policies as complex and innovative as the Italian Startup Policy. For this reason we used a menu of techniques that, when taken together, allows us to paint a more holistic view of the policy. Moreover, the novel nature of startup policies make the task even more difficult and our results less clear-cut.

The policy review will this work along the following complementary axes:

- A logical *compass* that we already outlined in Section 1.
- A descriptive overview of the startup ecosystem vis-à-vis selected peers and descriptive measures of the startups that compose the Italian Startup Registry to date.
- A quantitative study of interesting features of the Italian startup ecosystem aimed at evaluating the overall effectiveness of some specific aspects of the policy.
- A set of interviews with startup founders, investors, academics, practitioners, and experts in order to give better color to the evidence found in the preceding points.

Databases and Sources

We used a combination of data. First of all we have used industry data taken from the OECD, Invest Europe, and the Italian Venture Capital and Private Equity Association (AIFI).

For transaction data, we compiled a database by merging all data from the Venture Capital Monitor (VeM) since 2004. This database collects data for every reported VC transaction in Italy with data on industry, invested amount, investors and deal origin. By creating panel data from yearly reports, we are also able to assess the number of VC rounds and the invested amount in those rounds. We then merged this proprietary database with the freely available data from the Startup Registry²⁴. For the purposes of our discussion, this database is called Monitor. The Monitor thus includes three different types of startups: (1) registered backed by VC funding; (2) registered not backed by VC funding; and (3) non-registered backed by VC funding.

For interviews, we used the Harvard Business School network of faculty, alumni and students. We also contacted experts in Italy and United States alike for a total of 14 interviews. For privacy purposes, and in order to make the interview process more open, we decided not to disclose their names.

²⁴ Downloads are available at <http://startup.registroimprese.it/>

3.4 The industry’s evolution since the reform

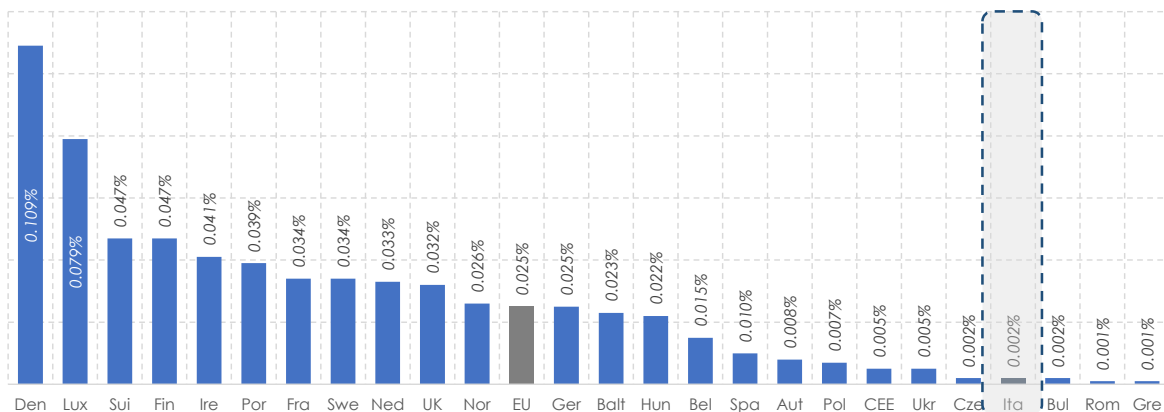
The vibrancy of a startup ecosystem can be measured by the amount invested by Venture Capitalists, as it expresses the demand for quality startups. If demand is low, for example, the ecosystem might not supply enough quality startups or be too risky or opaque. In Italy, VC investments are low compared to European peers. Some positive trends can be observed since 2014 and, if press rumors are confirmed, Italy could be experiencing some momentum. Momentum is however still too limited as Italy lags European levels of VC investment by a margin. The Policy, in short, seem to have helped but not functioned as a sufficient trigger for a wider VC boom.

This section aims to assess the vibrancy of the Italian Startup Ecosystem descriptively. Traditionally, in order to measure the depth of startup ecosystem, economists have used the amount of Venture Capital investment as a proportion of GDP. The measure is not perfect. It doesn’t capture what has been done on the education and legal fronts. But it measure an important fact: is there enough supply of quality startups that investors are willing to finance?

The logic underpinning measuring VC investments is that (1) startups, when financed by VC, tend to produce on average one to three dollars more of R&D than traditional corporations (see Section 1) and (2) the organizational structure of VCs is the optimal organizational form to help a startup ecosystem form²⁵. This is why assessing the “right type” of demand for startups is a good proxy for the vibrancy of the sector.

Exhibits 3.01 to 3.05 attempt to do this picture for Italy. Exhibit 3.01 shows the European VC landscape for 2015. Data is obtained from Invest Europe, the Venture Capital monitor for European countries.

Exhibit 3.01 Venture investments as a proportion of GDP, European Countries, 2015



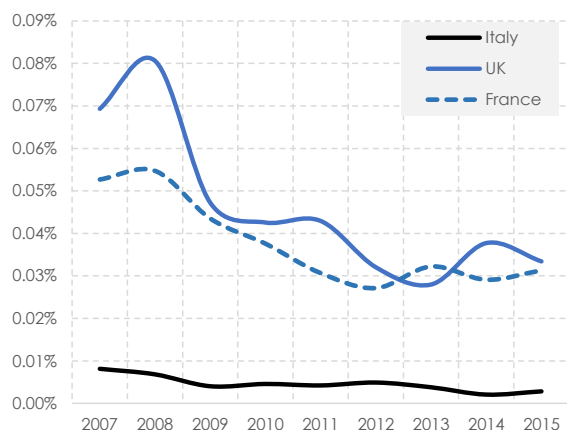
Source: Invest Europe, data elaborated by the author

²⁵ See [16] Lerner (2012) for an account of organizational structure and performance.

Italy ranks below the EU average of 0.025% of GDP at a low of 0.002%, together with the Czech Republic and only better than Bulgaria, Romania, and Greece. To put this into wider context, from Appendix 1 we can see that VC investments to GDP was highest in Israel with 0.31% and the USA with 0.17% in 2014. While Europe starts at an already low level compared to those best-in-class ecosystems, Italy is below the European standards too.

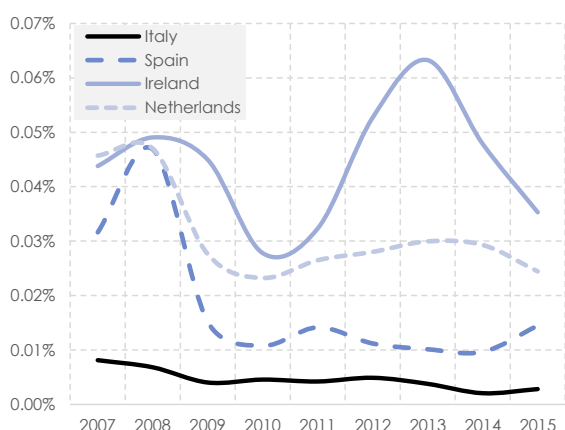
Exhibit 3.01 only shows a static picture, however. Exhibits 3.02 and 3.03 show the historical evolution of VC funding instead, comparing Italy to its most representative peers. Exhibit 3.02 shows the developments for France and the UK, Italy's immediate larger peers. VC investments in Italian startups have largely remained flat over the course of the last decade, while both France and the UK have experienced a significant decline since the Global Financial Crisis. Data is very volatile year on year, depending on the supply of quality startups, but it seems from the chart below that France is slowly regaining momentum, while the UK seems still uncertain about the direction of growth. Italy, instead sees very little movement.

Exhibit 3.02 Venture investments as a proportion of GDP



Source: Invest Europe, data elaborated by the author

Exhibit 3.03 Venture investments as a proportion of GDP



Source: Invest Europe, data elaborated by the author

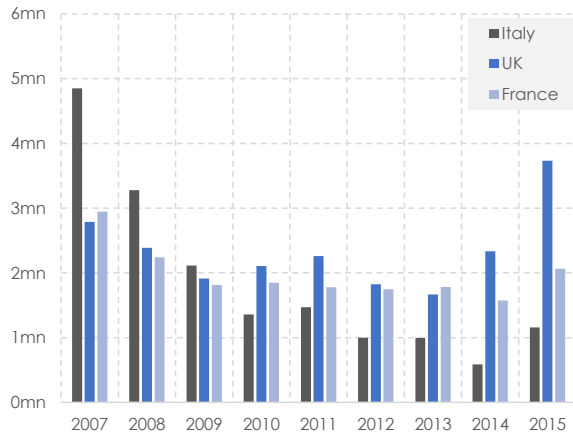
Exhibit 3.03 shows Italy vis-à-vis Spain, its closest GDP peer and Ireland and the Netherlands, countries with a vibrant, yet novel, tech sector. Again, Italian investments have remained broadly constant even though, thanks to the scale, it is possible to notice a moderate decline since 2012. Spain and the Netherlands have both not recovered to their pre-crisis peak, while Ireland continues to benefit from its resident tech giants.

From a descriptive standpoint, the Italian Startup Act does not seem to have significantly increased the amount of startup demand (VC).

Exhibits 3.04 and 3.05 look at the average amount invested per year by VCs on startups. One natural question that arises from the previous charts in fact is whether the number of startups supplied is similar but their size is just smaller and thus requiring less funding. The following pictures disprove this hypothesis. If anything, Italian investment seems to have been historically larger than European

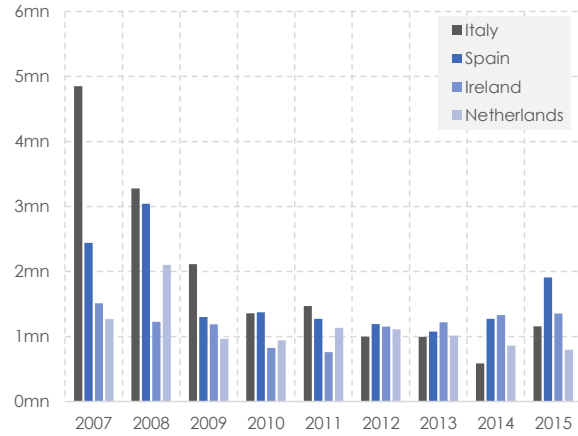
peers, at least until 2011. More recently, the average investment has however decreased compared to peers. One explanation might be that the introduction of *Front End Tax Incentives* has induced more retail investors to invest in startups thus lowering the average invested amount, but this is merely a supposition.

Exhibit 3.04 Average Invested Amount, per year



Source: Invest Europe, data elaborated by the author

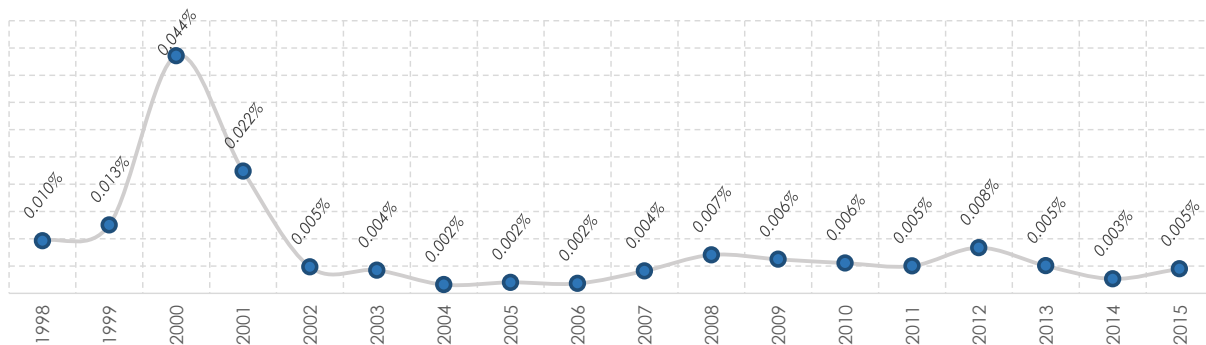
Exhibit 3.05 Average Invested Amount, per year



Source: Invest Europe, data elaborated by the author

Exhibit 3.06 uses data from AIFI, the Italian VC association that slightly differ²⁶ from those of Invest Europe, but shows a longer range of data. Here it is visible how the dotcom bubble has had lasting effects on the amount invested in Italy, with the country unable to reach its former level closer to the EU average.

Exhibit 3.06 Investments in early stage companies as a proportion of GDP, all investor types



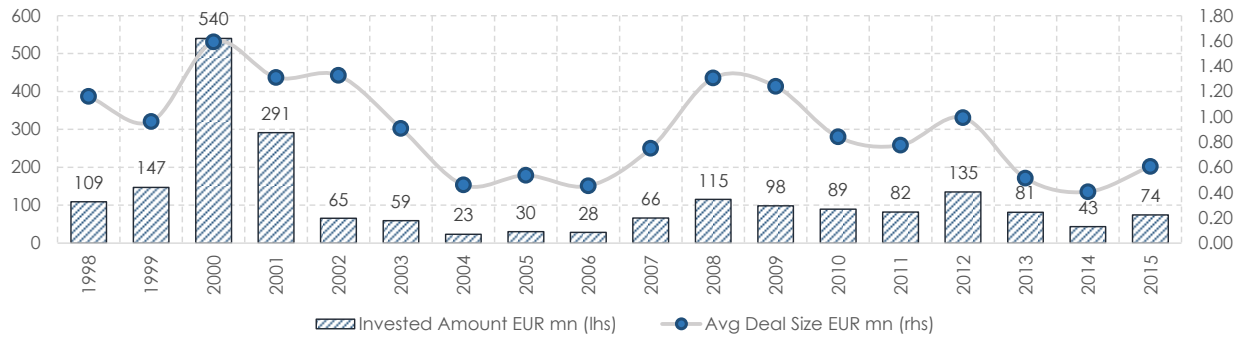
Source: AIFI, OECD data elaborated by the author

Exhibit 3.07 shows the same data broken down by invested amount and average deal size. Here, the data shows that the invested amount has not yet returned to its 1999 level of €147, which we see as a

²⁶ AIFI measures the amount invested in early stage companies by a host of different investor types, not only VCs.

realistic pre dotcom level. Press speculates²⁷ that investments in 2016 have totaled €178mn. If confirmed, this would establish a post dotcom high and would show the second increase in a row since 2014, increasing the confidence in the sector’s momentum.

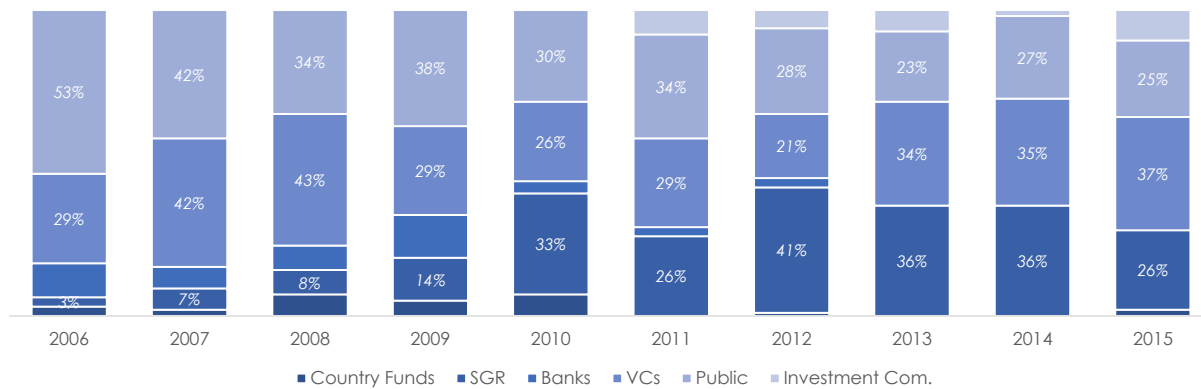
Exhibit 3.07 Investments in early stage companies and average deal size, all investor types



Source: AIFI, data elaborated by the author

AIFI also provides the breakdown by investor type, which we show in Exhibit 3.08. Here we see the interesting role that public funds have provided since 2006. From a high of 53% of investments coming from the public sector, they stand at 25% in 2015. This has opened up the chances for both traditional VCs, representing the bulk of investments (37%) in 2015, as well as “SGRs” (Italian for Investment Management Company) today representing 26% of investments in early stage companies.

Exhibit 3.08 Investor type, by year

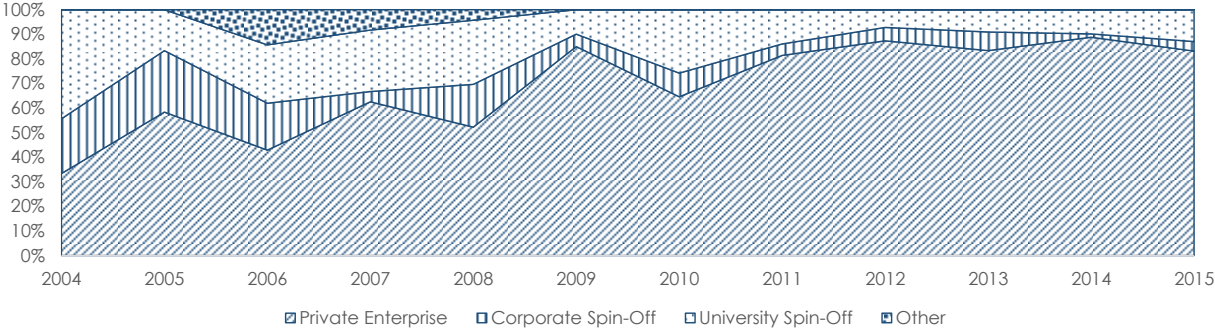


Source: AIFI, data elaborated by the author

²⁷ See <http://startupitalia.eu/67248-20161231-investimenti-round-startup-italia-2016>

We conclude this section with Exhibit 3.09, showing the origin of startups in Italy. It shows that private enterprises have taken the bulk of startups originating in Italy, while both university and corporate spin offs have faded over time to historical lows.

Exhibit 3.09 Startups VC deal origination, by year.



Source: VeM, data elaborated by the author

3.5 The strange case of investments: when registered, startups obtain less VC funding

Italian startups, in order to access government incentives need to register to the Startup Registry (see Section 3.1). The following sections shows that registered startups are statistically more likely to receive less VC funding than their non-registered peers. Causality cannot be established but the fact that registered startups are less prone to be VC funded is a sign of concern for the policy going forward.

As mentioned in Section 3.1, the Italian startup policy revolves around the definition of what constitutes a startup. This definition grants access to tax incentives, tailored labor laws, cut of red tape, and access to government-sponsored debt guaranteed (see Section 3.2)

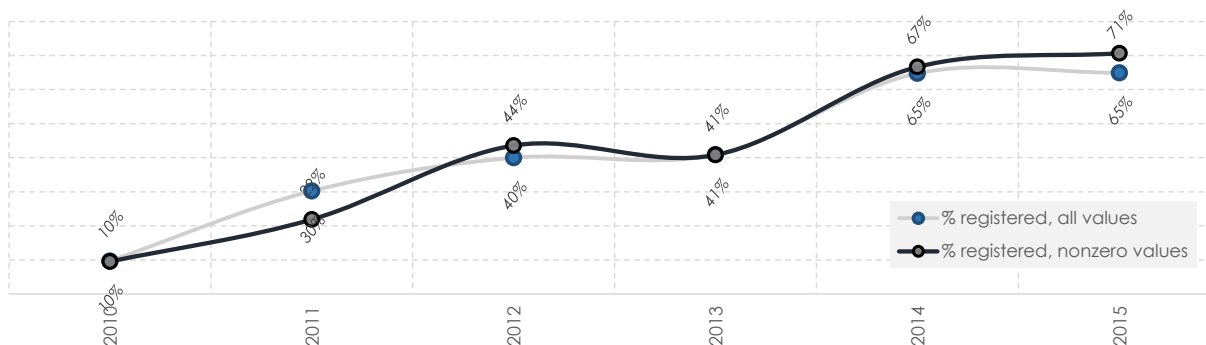
The following analysis aims to detect whether there is any significant difference between the population of startups that are registered and those that have decided (or do not have the requisites) not to do so. To assess this, we merged two different databases: (1) the database of all registered startups and (2) the database of all VC transactions since 2004. As explained in Section 3.3, we call this newly formed database “Monitor”. The Monitor basically defines three different populations: (a) VC funded non-registered startups; (b) VC funded registered startups and (c) non-VC funded registered startups.

The Monitor will help us determine whether these populations exhibit different characteristics. We will first review them descriptively, then gradually increasing the level of statistical scrutiny. This section will further help determine if the Italian Startup Policy is capturing the right “type” of startups, i.e. highly innovative firms which are VC funded, as discussed in Section 1.

3.5.1. Descriptive anomalies

Exhibit 3.10 shows how well the Registry captures VC funded startups. For example, the chart shows that in 2012, the Registry captured ~44% of VC funded startups or that 56% of VC-funded startups, for reasons to investigate, decided or could not register.

Exhibit 3.10 Share of registered startups over the total number of VC backed startups, per year.



Source: VeM, Infocamere, data elaborated by the author

Note: even if the Policy starts in 2012, the Registry was able to capture startups that had VC rounds in 2010 and 2011. It means that those startups registered at the inception of the Policy even if they were born earlier.

Since inception in 2012 the Registry has gone from capturing ~40% of VC backed startups to ~65% in 2015. Importantly, even if the Registry was formally started in 2012, it could still capture startup that had been created up to four years prior, reason why we included data for 2010 and 2011.

While the trend is positive, it is still impossible to ascertain whether the Registry will capture a share higher than 2015 or has reached its natural limit. This doubt arises from taking a deeper look into our dataset.

Table 3.01 VC backed startups by deal origin, region, and sector, nonzero entries, summary for all years

VC Backed Registered startups, nonzero entries, all years					VC Backed non-Registered startups, nonzero entries, all years						
#	Origin	No	%	Total \$	Avg \$	#	Origin	No	%	Total \$	Avg \$
1	Private Enterprise	95	81%	70.30	0.74	1	Private Enterprise	105	90%	281.80	2.68
2	University Spin-off	18	15%	18.90	1.05	2	University Spin-off	12	10%	13.50	1.13
3	Corporate Spin-off	4	3%	12.70	3.18	3	Corporate Spin-off	10	9%	21.60	2.16
--	Total	117	100%	101.90	0.87	--	Total	127	109%	316.90	2.50

#	Region	No	%	Total \$	Avg \$	#	Region	No	%	Total \$	Avg \$
1	Lombardia	45	38%	50.80	1.13	1	Lombardia	33	26%	84.60	2.56
2	Lazio	14	12%	5.30	0.38	2	Toscana	19	15%	24.80	1.31
3	Campania	11	9%	9.10	0.83	3	Campania	11	9%	16.80	1.53
4	Sardegna	10	9%	12.50	1.25	4	Sardegna	10	8%	45.80	4.58
5	Emilia Romagna	8	7%	9.20	1.15	5	Sicilia	8	6%	39.70	4.96
6	Piemonte	6	5%	1.60	0.27	6	Lazio	8	6%	24.90	3.11
7	Veneto	6	5%	0.90	0.15	7	Emilia Romagna	8	6%	7.60	0.95
8	Sicilia	4	3%	1.90	0.48	8	Piemonte	6	5%	18.10	3.02
9	Calabria	4	3%	2.90	0.73	9	Veneto	6	5%	20.60	3.43
10	Puglia	3	3%	2.40	0.80	10	USA	5	4%	15.00	3.00
11	Toscana	3	3%	0.70	0.23	11	UK	3	2%	2.90	0.97
12	Trentino Alto Adige	1	1%	0.50	0.50	12	Puglia	2	2%	4.80	2.40
13	UK	1	1%	3.50	3.50	13	Friuli	2	2%	1.90	0.95
14	USA	1	1%	0.60	0.60	14	Svizzera	2	2%	3.30	1.65
15	Abruzzo	0	0%	0.00	--	15	Calabria	1	1%	0.80	0.80
16	Friuli	0	0%	0.00	--	16	Abruzzo	1	1%	2.50	2.50
17	Svizzera	0	0%	0.00	--	17	Paesi Bassi	1	1%	0.20	0.20
18	Paesi Bassi	0	0%	0.00	--	18	Umbria	1	1%	2.60	2.60
19	Umbria	0	0%	0.00	--	19	Trentino Alto Adige	0	0%	0.00	--
--	Total	117	100%	101.90	0.87	--	Total	127	100%	316.90	2.50

#	Sector	No	%	Total \$	Avg \$	#	Region	No	%	Total \$	Avg \$
1	ICT	59	50%	49.60	0.84	1	ICT	47	37%	77.80	1.66
2	Other professional and soci	18	15%	13.90	0.77	2	Other professional and soci	16	13%	19.10	1.19
3	Pharmaceutical and biophc	7	6%	19.80	2.83	3	Cleantech	13	10%	81.10	6.24
4	Industrial products	7	6%	4.30	0.61	4	Industrial products	10	8%	17.20	1.72
5	Consumer goods	4	3%	1.20	0.30	5	Pharmaceutical and biophc	9	7%	27.80	3.09
6	Retail and wholesale trade	4	3%	2.20	0.55	6	Health care and social serv	7	6%	12.10	1.73
7	Health care and social serv	4	3%	5.30	1.33	7	Financial services	6	5%	27.70	4.62
8	Food and beverages	3	3%	0.70	0.23	8	Retail and wholesale trade	5	4%	4.10	0.82
9	Media and communication	3	3%	1.60	0.53	9	Media and communication	5	4%	13.80	2.76
10	Financial services	2	2%	0.60	0.30	10	Consumer goods	3	2%	13.20	4.40
11	Leisure	2	2%	1.20	0.60	11	Leisure	2	2%	1.80	0.90
12	Transportation	1	1%	0.20	0.20	12	Food and beverages	2	2%	6.20	3.10
13	Nanotech	1	1%	0.40	0.40	13	Nanotech	1	1%	3.00	3.00
14	Construction	1	1%	0.60	0.60	14	Construction	1	1%	12.00	12.00
15	Cleantech	1	1%	0.30	0.30	15	Transportation	0	0%	0.00	--
--	Total	117	100%	101.90	0.87	--	Total	127	100%	316.90	2.50

Source: VeM, Infocamere, data elaborated by the author

Table 3.01 shows summary statistics for VC backed startups whose transaction value is nonzero (some transactions are in fact recorded without the transaction value, which we excluded for this summary only) for years 2010 to 2015.

As it is possible to see, there seems to be no meaningful discrepancy between the **deal origination** and the **regional** composition of startups, with the sole exception of those based in Tuscany that, for some reason, are mostly non-registered. Even the **sectoral** composition of the two populations doesn't seem to be meaningfully different, except for cleantech startups that are mostly non-registered.

There is however a quantitatively large discrepancy in the invested amount. Registered startups have received €0.87mn in equity funding on average versus €2.50mn for the non-registered ones. Table 3.02 investigates this discrepancy further.

Table 3.02 VC transaction number and amount, per year.

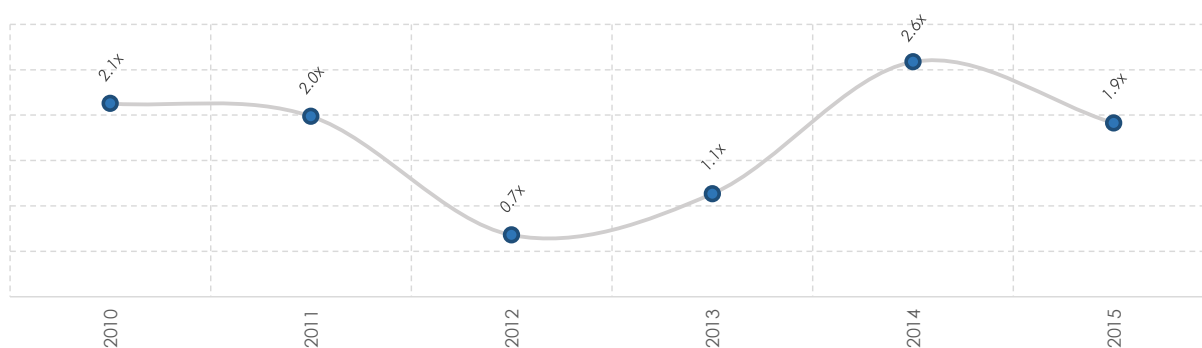
Year	Transactions				Registered Transactions						Non-Registered Transactions				
	No	No, cum €	Total inv.	Avg.	No.	No, cum €	Total inv.	Avg.	reg/tot	reg/tot €	No.	No, cum €	Total inv.	Avg.	Delta regi'd
2015	77	58	€100mn	€1.7mn	50	41	€45mn	€1.1mn	65%	71%	27	17	€55mn	€3.2mn	1.9x
2014	71	45	€49mn	€1.1mn	46	30	€17mn	€0.6mn	65%	67%	25	15	€31mn	€2.1mn	2.6x
2013	66	49	€56mn	€1.1mn	27	20	€14mn	€0.7mn	41%	41%	39	29	€42mn	€1.5mn	1.1x
2012	55	39	€51mn	€1.3mn	22	17	€16mn	€0.9mn	40%	44%	33	22	€35mn	€1.6mn	0.7x
2011	43	32	€77mn	€2.4mn	13	7	€7mn	€0.9mn	30%	22%	30	25	€70mn	€2.8mn	2.0x
2010	31	21	€86mn	€4.1mn	3	2	€3mn	€1.4mn	10%	10%	28	19	€83mn	€4.4mn	2.1x
2009	20	16	€38mn	€2.4mn	--	--	--	--	--	--	--	--	€38mn	€2.4mn	--
2008	23	16	€136mn	€8.5mn	--	--	--	--	--	--	--	--	€136mn	€8.5mn	--
2007	24	15	€28mn	€1.9mn	--	--	--	--	--	--	--	--	€28mn	€1.9mn	--
2006	21	16	€27mn	€1.7mn	--	--	--	--	--	--	--	--	€27mn	€1.7mn	--
2005	12	7	€35mn	€5.0mn	--	--	--	--	--	--	--	--	€35mn	€5.0mn	--
2004	9	3	€5mn	€1.5mn	--	--	--	--	--	--	--	--	€5mn	€1.5mn	--

Note: Averages are calculated on the number of nonzero transactions only.

Source: VeM, Infocamere, data elaborated by the author

Table 3.02 shows how, for every year analyzed, non-registered startups receive on average more funding per transaction, compared to registered startups. For example, in 2015, registered startups have received an average of €1.1mn whilst non-registered have received an average of €3.2mn or 1.9x higher. The chart below shows the evolution of this higher average invested amount over time. Besides evident fluctuations, we cannot yet speculate on whether this series exhibits a particular trend or fluctuates in line with systematic variables.

Exhibit 3.11 Delta in average invested amount between registered and non-registered startups.



Source: VeM, Infocamere, data elaborated by the author

3.5.2 Statistical anomalies

To further investigate this descriptive anomaly, we have conducted several tests to ascertain whether the difference in invested amounts between the two populations is statistically significant.

We conducted two sets of tests, one assuming that the two population have equal variance and another assuming they do not. Then, for each of the two sets, we tested whether there is a significant difference in means for all years, for 2015 to 2013, for 2015 to 2014 and for 2015 only, for a total of 8 tests, with an alpha of 5%.

Table 3.03 shows the results for these tests. Assuming equal variance, all the tests are significant at a 5% confidence level. The tests seem to lose some significance as the number of years captured decreases, which is well explained by the observation that the number of VC backed startups included in the registry has increased from 10% to 65% over the years analyzed. The test however remains significant, meaning that there indeed is a difference in invested amount in the two populations.

As we are not aware of the correct distribution of the two underlying populations, assuming equal variance might be an overstatement. We hence tested the same samples assuming their underlying populations exhibit unequal variance. Here the picture changes slightly.

All tests but one are significant at the 5% level. If we only take data from 2015, the test is not significant. The lack of significance is not equivalent however to the claim that there is no difference in invested amount. We can only claim that we cannot reject the hypothesis that there is no difference indeed.

The reasons behind this result might be that we are using too few data if we only consider 2015 or that indeed in 2015 the situation has normalized and registered and non-registered startups face a similar funding market.

The fact however that the test is significant for all other years demands caution in rejecting the hypothesis that there is no difference in funding among the two groups. So far, we can claim that, for 7 tests out of 8 there is indeed a difference in the funding amount, and registered startups get less funding than those that have not registered.

Table 3.03 t-Test for difference in average invested amount between VC backed registered and VC backed non-registered startups.

t-Test: Two-Sample Assuming Unequal Variances			All dates		
	Registered	Not Registered		Registered	Not Registered
Mean	0.870940171	2.482786885	Mean	0.870940171	2.482786885
Variance	1.489665488	17.4060649	Variance	1.489665488	17.4060649
Observations	117	122	Observations	117	122
Hypothesized Mean Difference	0		Pooled Variance	9.615759701	
df	142		Hypothesized Mean Difference	0	
t Stat	-4.088758487		df	237	
P(T<=t) one-tail	3.61478E-05		t Stat	-4.017037011	
t Critical one-tail	1.655655173		P(T<=t) one-tail	3.958E-05	
P(T<=t) two-tail	7.22957E-05		t Critical one-tail	1.651308391	
t Critical two-tail	1.976810994		P(T<=t) two-tail	7.91599E-05	
			t Critical two-tail	1.97002401	

t-Test: Two-Sample Assuming Unequal Variances			2015/2013		
	Registered	Not Registered		Registered	Not Registered
Mean	0.83956044	2.13	Mean	0.83956044	2.103278689
Variance	1.73619536	8.678067797	Variance	1.73619536	8.576989071
Observations	91	60	Observations	91	61
Hypothesized Mean Difference	0		Pooled Variance	4.472512845	
df	75		Hypothesized Mean Difference	0	
t Stat	-3.189300037		df	150	
P(T<=t) one-tail	0.001040988		t Stat	-3.611089717	
t Critical one-tail	1.665425373		P(T<=t) one-tail	0.000207581	
P(T<=t) two-tail	0.002081975		t Critical one-tail	1.6550755	
t Critical two-tail	1.992102154		P(T<=t) two-tail	0.000415161	
			t Critical two-tail	1.975905331	

t-Test: Two-Sample Assuming Unequal Variances			2015/2014		
	Registered	Not Registered		Registered	Not Registered
Mean	0.883098592	2.684375	Mean	0.883098592	2.684375
Variance	2.02828169	14.35684476	Variance	2.02828169	14.35684476
Observations	71	32	Observations	71	32
Hypothesized Mean Difference	0		Pooled Variance	5.812296097	
df	35		Hypothesized Mean Difference	0	
t Stat	-2.607483766		df	101	
P(T<=t) one-tail	0.006658431		t Stat	-3.509070123	
t Critical one-tail	1.689572458		P(T<=t) one-tail	0.000336557	
P(T<=t) two-tail	0.013316862		t Critical one-tail	1.66008063	
t Critical two-tail	2.030107928		P(T<=t) two-tail	0.000673113	
			t Critical two-tail	1.983731003	

t-Test: Two-Sample Assuming Unequal Variances			2015 only		
	Registered	Not Registered		Registered	Not Registered
Mean	1.104878049	3.217647059	Mean	1.104878049	3.217647059
Variance	3.20047561	23.74779412	Variance	3.20047561	23.74779412
Observations	41	17	Observations	41	17
Hypothesized Mean Difference	0		Pooled Variance	9.071138041	
df	18		Hypothesized Mean Difference	0	
t Stat	-1.739632696		df	56	
P(T<=t) one-tail	0.04949719		t Stat	-2.431775745	
t Critical one-tail	1.734063607		P(T<=t) one-tail	0.009124276	
P(T<=t) two-tail	0.09899438		t Critical one-tail	1.672522303	
t Critical two-tail	2.10092204		P(T<=t) two-tail	0.018248553	
			t Critical two-tail	2.003240719	

Source: VeM, Infocamere, data elaborated by the author

3.5.3 Statistical anomalies, tested

The previous results, though telling, are not yet sufficiently robust to draw any clear cut conclusion about the relationship between the Registry and the amount of VC funding that startups receive.

In order to shed more light on the issue, we have run two different models. The first one aims to measure the **probability** of startups being registered to the Registry given the amount of VC funding and a set of dummy variables. The second model aims to measure the **amount** of VC funding based on whether startups are registered or not.

We have created a set of dummies to control for categorical effects:

- Location: both the probability of registering and the amount of VC funding can depend on the location of startups. It is easy to imagine that a startup located in Milan might have better knowledge of the policy or better networks of investors than startups based in rural areas. Our dummies capture location in the north, center, and south of the country.
- Sector: similarly, it is possible to imagine that startups focusing on different sectors might receive different amount of funding or would have different incentives to register. We have clustered startups by Hardware, Healthcare (containing Biotech and Pharma too), Fintech, and ICT.
- Origination: depending on the origin of a startup, be it a corporate spin-off, a university spin-off or simply a private initiative, firms might receive different amounts of funding or show different probabilities of registering.

Table 3.04 shows the results of the models. **Model (1) shows that, for an increased unit of VC funding, a startup is 0.052 less likely to register to the Startup Registry, *ceteris paribus*.** The effect is statistically significant at the 1% level. Moreover, the model shows that regional effects are also significant, with startups located in Northern Italy more likely to register than their central and southern counterparts²⁸.

The effect captured in Model (1), while interesting and confirming our earlier results, helps us little in determining whether there is a real funding gap between registered and non-registered startups. Model (2) aims at improving our understanding on this issue.

Model (2) finds that, *ceteris paribus*, registered startups seem to receive ~€800k less in VC funding than their non-registered peers. While the exact coefficient might be a noisy figure, the direction of the effect is very clear as, even within two standard deviations, the effect is negative. In short, regardless of the specific amount, registered startups do indeed receive less VC funding than their non-registered counterparts.

²⁸ The model shows all regional effects. This might draw some confusion as the Monitor database contains a handful of startups that, while being registered in Italy have received funding from abroad or that are nominally Italian but registered elsewhere. This is why the model runs all regional effects.

In conclusion, the three regression seem to support the descriptive and statistical difference we observe between VC investments in non-registered and registered startups, where the latter seems to receive less funding.

Table 3.04 Summary of models run on the Monitor database, (1) probability of registering and (2) amount of VC funding

Notes: data include observations after 2012 (year when the policy starts) only and those that report nonzero transaction values (sometimes VeM reports VC transactions but without knowledge of the invested amount, we exclude those). Logit Model (1) represents the probability of being a startup registering to the Startup Registry. Model (2) measures instead the amount in euro millions of VC funding that startups receive. Model (2) r is the same as Model (2) with robust standard errors. () p-value < 0.1 (**) p-value < 0.05 (***) p-value < 0.01*

	(1)		(2)	(2) r
Invested Amount	-0.052^{***} (0.018)	Registered Startup	-0.840^{***} (0.294)	-0.840^{***} (0.268)
North dummy	0.476 ^{***} (0.143)	North dummy	-0.481 (0.593)	-0.481 (0.930)
Center dummy	0.393 ^{**} (0.153)	Center dummy	-0.787 (0.626)	-0.787 (0.939)
South dummy	0.359 ^{**} (0.151)	South dummy	-0.005 (0.617)	-0.005 (0.981)
Corporate origination dummy	-0.252 (0.186)	Corporate origination dummy	1.034 (0.750)	1.034 (0.996)
Private origination dummy	-0.109 (0.115)	Private origination dummy	0.337 (0.464)	0.337 (0.278)
ICT sector dummy	0.272 (0.181)	ICT sector dummy	-2.125 ^{***} (0.717)	-2.125 (1.742)
Hardware sector dummy	0.163 (0.209)	Hardware sector dummy	-1.909 ^{**} (0.833)	-1.909 (1.785)
Health sector dummy	0.232 (0.215)	Health sector dummy	-0.907 (0.868)	-0.907 (1.760)
Other sector dummy	0.246 (0.184)	Other sector dummy	-2.193 ^{***} (0.729)	-2.193 (1.727)
Number of observations	191	Number of observations	191	191
R-squared	0.146	R-squared	0.163	0.163
Root MSE	0.472	Root MSE	1.902	1.902

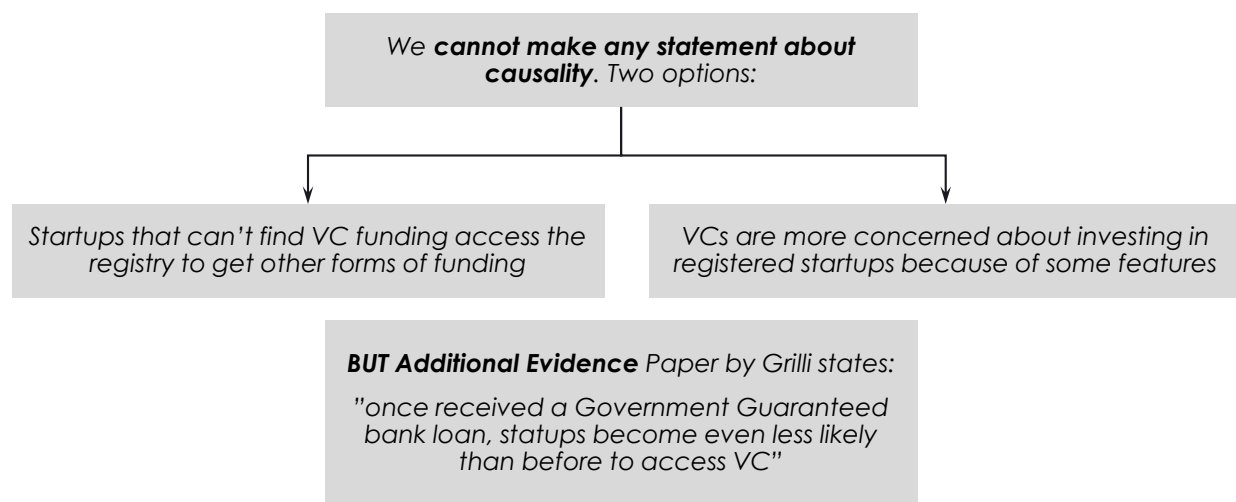
Source: VeM, Infocamere, Stata, data elaborated by the author

3.5.4 Interpretation

We cannot explain the observed phenomenon with statistical tools. We are not sure in fact whether a startup's registration is the effect of lesser VC funding or whether it is its cause.

Simply put, a startup that cannot find VC funding could be incentivized to register in order to access alternative funding mechanisms, first and foremost the Government Guaranteed debt. Alternatively, VCs could be less prone to invest in already registered startups because those startups are characterized by less appealing qualities (and debt again might be one of the reasons why VC would not want to invest in an early stage company).

Exhibit 3.12 The uncertain direction of causality: two possible explanations



Bottom Line: no clear direction of causality but it seems that access to cheap debt funding might be creating a market with two startups "types": registered and debt funded and nonregistered and VC funded. Is this an issue? According to our initial logic yes.

Source: compiled by the author

In a recent paper Giraudo, Giudici, and Grilli find a weak statistical evidence that “once received a Government Guaranteed bank loan, YIC [startups] become even less likely than before to access VC [funding]²⁹”. This paper is useful in providing a first clue about the causal direction of the observed relationship. The interviews in Section 3.7 will shed further light.

Whatever the reasons for such phenomenon, the observation that registered startups are less likely to receive VC funding is important: it means that registered startups are indeed a different population from the non-registered ones.

²⁹ See [4] Giraudo, Giudici, Grilli (2016)

If the aim of the policy was to kick start an efficient and innovative startup environment, and we repeat, this usually and predominantly happens in conjunction with a thriving VC sector, then the policy might need fine tuning.

3.6 Difference in Performance (Aggregate): the case of employment

The following section reviews some aggregate performance data of startups and compares to the performance of the overall corporate sector in Italy. Comparing startups with traditional corporates in Italy is not extreme: Italian corporations are on average small, and employ fewer than 15 people.

The following descriptive statistic can shed some light on the startup regime's performance vis-à-vis the corporate sector, especially with regards to employment and income.

Table 3.05 Numbers, Equity and Employees of startups, quarterly data.

	2Q14	3Q14	4Q14	1Q15	2Q15	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16
Startups											
Total number of startups	2,227	2,630	3,179	3,711	4,248	4,704	5,143	5,439	5,943	6,363	6,745
Growth rate(annualized)	--	72.4%	83.5%	66.9%	57.9%	42.9%	37.3%	23.0%	37.1%	28.3%	24.0%
Total Equity	88mn	106mn	153mn	192mn	212mn	236mn	259mn	278mn	328mn	336mn	351mn
Average Equity	39,479	40,396	48,126	51,751	50,022	50,142	50,271	51,024	55,266	52,731	52,063
Growth rate(annualized)	--	9.3%	76.5%	30.1%	-13.4%	1.0%	1.0%	6.0%	33.3%	-18.3%	-5.1%
Number of startups with employees	819	989	1,152	1,363	1,710	1,939	2,261	2,356	2,593	2,698	--
Share of total	36.8%	37.6%	36.2%	36.7%	40.3%	41.2%	44.0%	43.3%	43.6%	42.4%	--
Employees	2,200	2,607	3,025	3,924	4,891	5,351	6,524	8,193	9,042	9,169	--
Growth rate(annualized)	--	74.0%	64.1%	118.9%	98.6%	37.6%	87.7%	102.3%	41.5%	5.6%	--
Avg No employees	2.7	2.6	2.6	2.9	2.9	2.8	2.9	3.5	3.5	3.4	--
Growth rate (quarterly)	--	-1.9%	-0.4%	9.6%	-0.6%	-3.5%	4.6%	20.5%	0.3%	-2.5%	--
Median No employees	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	--
Number of startups with shareholders	--	2,574	3,095	3,623	4,144	4,582	5,001	5,304	5,801	6,217	6,580
Shareholders	--	10,646	12,556	14,862	16,861	18,677	19,957	21,118	23,045	25,622	27,003
Avg No shareholders	--	4.1	4.1	4.1	4.1	4.1	4.0	4.0	4.0	4.1	4.1
Avg Eq per shld	--	9,767	11,863	12,616	12,294	12,301	12,597	12,815	13,912	12,795	12,686
Growth rate(annualized)	--	--	85.8%	25.4%	-10.2%	0.2%	9.6%	6.9%	34.2%	-32.1%	-3.4%
Median No shareholders	--	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0
Median Eq per shld	--	13,465	16,042	17,250	16,674	16,714	16,757	17,008	18,422	17,577	26,031
Employees per shareholder (avg)	--	0.6x	0.6x	0.7x	0.7x	0.7x	0.7x	0.9x	0.9x	0.8x	--
Employees per shareholder (median)	--	0.3x	0.3x	0.7x	0.7x	0.7x	0.7x	0.7x	0.7x	0.7x	--

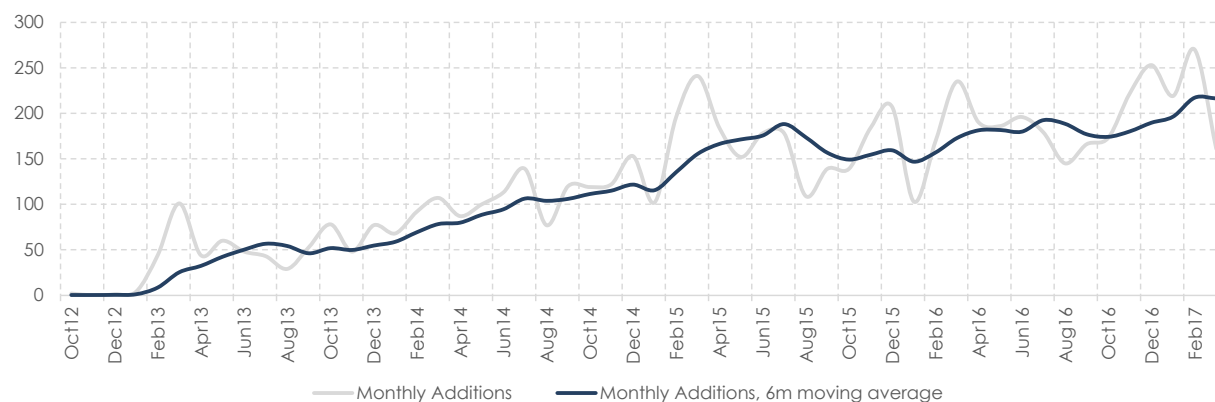
Source: Infocamere, data elaborated by the author

Table 3.05 illustrates the evolution of startups since the start of the dataset. For the table it is possible to see that the growth rate in registered startups has been decelerating and hovering around six thousand startups for the past two quarters.

A closer look at monthly additions, summarized in Exhibit 3.13 below, shows that monthly additions have stabilized around 170 per month in 2015 and 2016, a sign that the sector might have reached a sustainable rate of additions. Recently, however, additions have started to grow at a higher pace.

The share of startups with employees has also been rising, from 37% of total in 2Q14 to 42% of total in 3Q16. The ratio of employees to shareholders has also been rising from 0.6x average and 0.3x median to a healthier 0.8x average and 0.7x median, a sign that startups have been increasing in size, albeit moderately. Italian startups now employ an average of 3.4 people.

Exhibit 3.13 Startup registry monthly additions and monthly 6m additions moving average



Source: Infocamere, data elaborated by the author

Corporations on the other hand, as it is evident from the table below, have been growing only moderately in numbers, employee size and added a total of ~500k employees over the course of two years. Interestingly, the equity has been shrinking at an average 5% on an annualized basis, probably due to losses occurred during the global financial and sovereign debt crisis.

Table 3.06 Numbers, Equity and Employees of corporations, quarterly data.

	2Q14	3Q14	4Q14	1Q15	2Q15	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16
Corporations											
Total number of corporations	1,484,667	1,461,111	1,487,014	1,497,561	1,515,626	1,528,539	1,539,965	1,552,886	1,570,861	1,580,912	1,591,590
Growth rate(annualized)	-	-6.3%	7.1%	2.8%	4.8%	3.4%	3.0%	3.4%	4.6%	2.6%	2.7%
Total Equity	3,430bn	3,425bn	3,401bn	3,373bn	3,361bn	3,350bn	3,340bn	3,333bn	3,301bn	3,280bn	3,244bn
Average Equity	2.3mn	2.3mn	2.3mn	2.3mn	2.2mn	2.2mn	2.2mn	2.1mn	2.1mn	2.1mn	2.0mn
Growth rate(annualized)	-	5.9%	-9.6%	-6.1%	-6.2%	-4.6%	-4.2%	-4.1%	-8.3%	-5.1%	-7.1%
Number of corporations with employees	557,826	570,296	583,189	545,736	574,366	589,509	612,820	577,627	604,686	617,716	--
Share of total	37.6%	39.0%	39.2%	36.4%	37.9%	38.6%	39.8%	37.2%	38.5%	39.1%	--
Employees	8,199,696	8,280,187	8,344,204	7,925,158	8,201,210	8,319,791	8,473,097	8,267,626	8,644,312	8,763,043	--
Growth rate(annualized)	-	3.9%	3.1%	-20.1%	13.9%	5.8%	7.4%	-9.7%	18.2%	5.5%	--
Avg No employees	14.7	14.5	14.3	14.5	14.3	14.1	13.8	14.3	14.3	14.2	--
Growth rate (quarterly)	-	-1.2%	-1.5%	1.5%	-1.7%	-1.2%	-2.0%	3.5%	-0.1%	-0.8%	--
Median No employees	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0	3.0	--
Number of corporations with shareholders	-	1,351,476	1,360,165	1,371,534	1,390,061	1,402,020	1,413,399	1,427,342	1,445,311	1,455,628	1,466,681
Shareholders	-	3,696,683	3,632,625	3,644,970	3,676,509	3,693,776	3,707,828	3,727,484	3,756,199	3,772,046	3,784,775
Avg No shareholders	-	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Avg Eq per shld	-	856,873	856,478	847,496	838,364	831,889	826,659	821,828	808,600	800,706	789,803
Growth rate(annualized)	-	-	-0.2%	-4.2%	-4.3%	-3.1%	-2.5%	-2.3%	-6.4%	-3.9%	-5.4%
Median No shareholders	-	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Median Eq per shld	-	1,171,900	1,143,707	1,126,146	1,108,676	1,095,852	1,084,304	1,073,096	1,050,730	1,037,456	1,019,044
Employees per shareholder (avg)	-	5.3x	5.4x	5.5x	5.4x	5.4x	5.3x	5.5x	5.5x	5.5x	--
Employees per shareholder (median)	-	2.0x	2.0x	1.5x	1.5x	1.5x	1.5x	1.5x	2.0x	1.5x	--

Source: Infocamere, data elaborated by the author

The data presented so far shows startups relatively outperforming traditional corporations in terms of growth (in numbers) and employees per firm.

The table below calls for some caution, however. We calculated quarterly employees' additions and compared to quarterly firms additions for both corporates and startups. The figures are raw as they compare two numbers (employee and firm additions) that need not refer to the same entity: a corporation that is not new might have added employees while a new startup might have added none. On average, however, this should **show how many new employees per new firm are added**.

This is a measure of how well different types of incorporation are at adding jobs, a traditional measure of growth. 1Q16 outliers aside, new startups have added on average 2.8 employees, counting reporting startups with employees only, or 1.4 employees counting all startups. This is 6.0 and 2.4 employees less than what corporations have added respectively. Mind, existing corporations might have added more employees in the same time due to changes in labor laws or economic recovery, but the difference is still telling, given that macroeconomic conditions apply to both aggregates.

Moreover, what is cause of some caution is the slowdown in net employees' additions, down to a historical low of 127 in 3Q16 for startups.

Table 3.07 Employees additions comparison, quarterly data

	2Q14	3Q14	4Q14	1Q15	2Q15	3Q15	4Q15	1Q16	2Q16	3Q16	Avg
Employment Study											
Total Employees	8,199,696	8,280,187	8,344,204	7,925,158	8,201,210	8,319,791	8,473,097	8,267,626	8,644,312	8,763,043	--
o/w Startups additions	2,200	2,607	3,025	3,924	4,891	5,351	6,524	8,193	9,042	9,169	--
o/w Corporates additions	8,197,496	8,277,580	8,341,179	7,921,234	8,196,319	8,314,440	8,466,573	8,259,433	8,635,270	8,753,874	--
total additions	--	80,491	64,017	(419,046)	276,052	118,581	153,306	(205,471)	376,686	118,731	--
startup contribution	--	0.51%	0.65%	-0.21%	0.35%	0.39%	0.77%	-0.81%	0.23%	0.11%	0.22%
Total Startups with employees additions	819	989	1,152	1,363	1,710	1,939	2,261	2,356	2,593	2,698	--
Employees per new startup	--	2.4	2.6	4.3	2.8	2.0	3.6	17.6	3.6	1.2	2.8
Total Startups additions	2,227	2,630	3,179	3,711	4,248	4,704	5,143	5,439	5,943	6,363	--
Employees per new startup	--	1.0	0.8	1.7	1.8	1.0	2.7	5.6	1.7	0.3	1.4
Total Corporations with employees additions	557,007	569,307	582,037	544,373	572,656	587,570	610,559	575,271	602,093	615,018	--
Employees per new corporation	--	6.5	5.0	11.1	9.7	7.9	6.6	5.9	14.0	9.2	8.8
delta with startups	--	4.1	2.4	6.9	6.9	5.9	3.0	-11.7	10.4	8.0	6.0
Total Corporations additions	1,482,440	1,458,481	1,483,835	1,493,850	1,511,378	1,523,835	1,534,822	1,547,447	1,564,918	1,574,549	--
Employees per new corporation	--	-3.3	2.5	-41.9	15.7	9.5	13.8	-16.4	21.5	12.3	3.8
delta with startups	--	-4.4	1.7	-43.6	13.9	8.5	11.2	-22.0	19.8	12.0	2.4

Source: Infocamere, data elaborated by the author

The picture on revenues and assets is more positive. While the share of profitable startups remains constant over the three year horizon that we were able to analyze, and is surprisingly high given the risky nature of startups, average revenues for this categories have been stable in 2014, but growing 42% in 2015. Profitable corporations, on the other hand, saw their average revenues shrink by 21% over the same year.

Table 3.08 Revenues and Assets, startups and corporates, yearly data

	2013	2014	2015	14/13	15/14		2013	2014	2015	14/13	15/14
Startups						Corporations					
Number (reporting)	1,737	2,860	4,049	65%	42%	Number (reporting)	758,184	748,124	727,246	-1%	-3%
Revenues	203mn	326mn	584mn	61%	79%	Revenues	2,250,696mn	2,113,370mn	1,516,631mn	-6%	-28%
Avg Revenues	116,631	113,840	144,207	-2%	27%	Avg Revenues	3.0mn	2.8mn	2.1mn	-5%	-26%
Median Rev.	26,627	21,303	30,000	-20%	41%	Median Rev.	240,000	231,350	235,931	-4%	2%
Assets	392mn	613mn	1,080mn	57%	76%	Assets	3,531,943mn	3,384,939mn	2,113,269mn	-4%	-38%
Avg Assets	225,527	214,402	266,819	-5%	24%	Avg Assets	4.7mn	4.5mn	2.9mn	-3%	-36%
Median Ass.	62,550	62,034	72,614	-1%	17%	Median Ass.	0.5mn	0.5mn	0.5mn	-4%	-2%
Operating Income	(46)mn	(61)mn	(86)mn	32%	41%	Operating Income	56,391mn	64,739mn	58,147mn	15%	-10%
Operating Margin	-22.9%	-18.8%	-14.8%	4.05%	4.01%	Operating Margin	2.5%	3.1%	3.8%	0.56%	0.77%
Fixed/Total Assets	29.64	29.97	29.36	0.33%	-0.61%	Fixed/Total Assets	5.92	6.00	3.31	0.08%	-2.69%
o/w profitable						o/w profitable					
Number (reporting)	736	1,243	1,734	69%	40%	Number (reporting)	450,361	461,892	472,637	3%	2%
Share	42%	43%	43%	1.09%	-0.63%	Share	59%	62%	65%	2.34%	3.25%
Revenues	118mn	194mn	384mn	64%	98%	Revenues	1,643,889mn	1,584,885mn	1,285,262mn	-4%	-19%
Avg Revenues	160,768	156,292	221,503	-3%	42%	Avg Revenues	3.7mn	3.4mn	2.7mn	-6%	-21%
ROE	17%	21%	25%	4.00%	4.00%	ROE	1%	3%	4%	2.00%	1.00%
ROI	10%	10%	10%	0.00%	0.00%	ROI	2%	2%	3%	0.00%	1.00%
o/w unprofitable						o/w profitable					
Number (reporting)	1,001	1,617	2,315	62%	43%	Number (reporting)	307,823	286,232	254,609	-7%	-11%
Share	58%	57%	57%	-1.09%	0.63%	Share	41%	38%	35%	-2.34%	-3.25%
Revenues	84,268,859	131mn	200mn	56%	52%	Revenues	606,807mn	528,485mn	231,368mn	-13%	-56%
Avg Revenues	84,182	81,209	86,299	-4%	6%	Avg Revenues	2.0mn	1.8mn	0.9mn	-6%	-51%

Source: Infocamere, data elaborated by the author

Overall this quick high-level overview of startups shows a mixed picture. While revenues have increased and operating margins improved somewhat, employment has been lagging their more traditional counterparts.

We however stress that, given the highly innovative nature of the legislation, data on performance is encouraging.

3.7. Testing our hypothesis live: result of interviews

We interviewed 14 market operators in the USA and Italy. Overall, operators are positive to the government's efforts and see in tax incentives and labor laws the main contributors to the sector. Operators however point to structural issues (Italian's risk aversion, culture, government R&D spend, and universities), funding issues (lack of seed capital, large shareholder bases, debt funding, exit options) and policy issues (more tax relief needed). We see the result of these interviews as positive as it leads us to better understand where the bottleneck in the Italian Startup Policy lies.

We conducted 14 interviews with academics, investors, practitioners, and founders. Names are to remain anonymous for privacy purposes.

Interviews have highlighted a general sense of puzzlement around the lackluster performance of the Italian system. Incentives have been made available, the government has helped, Italy is a wealthy country where people are used to start small businesses, and yet no big sign of a startup surge has emerged. Once the conversations run in depth, however, interviewees have found a set of problems surrounding: (1) structural issues; (2) financing and (3) policy.

Structural Issues

- (1) **Risk Aversion:** many interviewees have alluded to the risk-averse nature of Italian investors. The source of concern is twofold: on the one hand investors are less willing to invest in high risk ventures, *ceteris paribus* and on the other, even when they invest, they tend to be impatient with the return profile of startups. We point out that risk-aversion is a problem only when the investor class is retail, as larger, diversified investors, are able to take on larger risks, if incentivized appropriately. Hence, in our view, the risk aversion point speaks more to the retail and unprofessional nature of investors, rather than representing a structural issue *per se*.
- (2) **Culture of Entrepreneurship (focus, testing, drive, language).** The cultural element is the largest source of concern for interviewees. Investors lament the lack of focus of startups and their limited entrepreneurial skills, especially on the product side. Others have pointed to the university system as a barrier to smart engineers pursuing a career in entrepreneurship: universities still consider startups as less fulfilling than pure academia or a stable job. Language is also a large barrier. All in all, it seems to us that what interviewees are lamenting is a larger structural cultural ecosystem that would focus not only on the idea of entrepreneurship, which is slowly spreading thanks to government efforts, but on the skills that are needed for it to succeed. Moreover, as pointed out in Section 1, startup ecosystems are based on networks: the absence of an established network makes the culture problem a chicken and egg issue.
- (3) **Non-existent government agencies' R&D:** some interviewees pointed to the difference in government R&D spending as the main source of Italian underperformance. They pointed to American, Israeli, and French government's defense and research spending as the fundamental underpinning of their respective startup ecosystems. The dearth of such funds makes Italy uncompetitive to start with, as no one is willing to finance large risky projects with high technological content. We see large merit in this claim. Sadly, however, the topic of government's R&D is outside the purview of this research paper.

- (4) **University and territory.** Academic excellence is the source of innovation, as discussed in Section 1 and confirmed by interviews. The fragmented nature of both Italian academia and the Italian product market make it hard for startups to cluster around either an excellent higher institution or a product market center. Fragmentation stifles the emergence of a cluster that forms the important network spillovers that we mentioned before.

Financing

- (1) **Seed bottleneck:** almost all interviewees agree on the existence of a bottleneck at the seed investments level. Startups that start large or those that are well connected make it to successive rounds, but it is very difficult for those without a track record to start a business. The absence of seed funding, or even sufficient grants/hackathons, make it hard for entrepreneurs to focus on their idea as they need to find alternative jobs. Slowly the startup becomes a hobby rather than a fully time occupation as it should be. Some interviewees disagreed on the grounds that successful ideas have been funded, and point to the cultural point as the source of lack of funds. The right idea pitched to the right network can win. From our standpoint the seed bottleneck issue morphs into an issue of access and opportunity, which we see as serious.
- (2) **Large shareholder base:** some interviewees have mentioned that in order to continue working on one's ideas in absence of seed funding or grant options, entrepreneurs need to resort to their immediate network for shareholders. This implies that some start with a large shareholder base already at the seed level. According to them, it disincentives later stage investors as they will have to buy too many existing shareholders out. Moreover, these shareholders are not professionals, are risk averse and do not exhibit the right type of mentorship or patience for this kind of investment.
- (3) **Debt funding:** entrepreneurs unable to access VC funding, sometime register in order to obtain debt funding via the government's guarantee scheme, interviewees claim. Some investors and founders saw debt as the wrong way to finance startups as it does not create the right set of incentives for entrepreneurs: if the idea cannot find funding sources, it is more probable that idea is wrong, than the funding. It disincentives constant iteration, which is at the core of a startup activity. Debt makes entrepreneur complacent, interviewees claim. We agree with this statement.
- (4) **Exit:** almost all interviewees lamented a lack of exit options, as corporate buyers and IPOs have not materialized in significant form yet. When pressed on whether Italian startups had the right type of product/market fit to appeal to international investors, however, interviewees had to concede that targeting too small a market might be a source of concern for growth and exit. From our standpoint, exit is a secondary issue: once Italian startups start addressing the right (global) market and are in front of the right investors, exits will happen, as it occurs in Israel and elsewhere.

Policy

- (1) **Incentives and labor laws are game changers:** interviewees had high praise for what the government had done when it comes to tax incentives and labor laws. One interviewee called it a game changer as it allows for a different corporate structure, more flexible, more modern, more in line with the kind of risks that a startup is supposed to take. We are in agreement with this view. What the government has done to prepare the ecosystem has been remarkable, given the Italian legislative context.
- (2) **More tax relief needed:** some interviewees suggested that the government should give full tax relief for the first two years of activity; that burdens are still too high; that once the protection of four years that the Policy warrants is over, they will have to face unsustainable costs. We view this claim as justified but point to the fact that the total spend of the government on startups to date is ample.

Table 3.09 Summary of issues highlighted by our interviews

Structural	Financing	Policy
<p>Risk Aversion</p> <p><i>Italians are culturally risk averse. In our view this reflects the absence of sophisticated investors in startups rather than impossibility.</i></p>	<p>Seed bottleneck</p> <p><i>Bottleneck at seed level means founders cannot spend whole time on idea (need a job) and lack mentorship to transition to VC.</i></p>	<p>Policy game changer</p> <p><i>New rules, especially on red tape, jobs, and tax incentives have been a game changer. Without them it would be impossible.</i></p>
<p>Culture of Entrepreneurship</p> <p><i>Lack of entrepreneurship skills formation (focus, testing, drive), especially on the product/market side and iteration.</i></p>	<p>Too many shareholders</p> <p><i>Lack of seed means startups need several small shareholders, potentially disincentivizing future VC rounds.</i></p>	<p>More tax relief needed</p> <p><i>Some interviewees lament high corporate tax rates as disincentive to start a company or maintain it in Italy.</i></p>
<p>Government R&D</p> <p><i>Differently from France, Israel and USA, Italian startups do not benefit from a pre-existing high government R&D spend.</i></p>	<p>Debt funding</p> <p><i>Startups that cannot find VC funding register in order to take on debt. Wrong incentives, as startups need VC to strengthen ideas.</i></p>	
<p>Territorial fragmentation</p> <p><i>Universities (human capital) and markets are fragmented, which prevents optimal clustering of startups.</i></p>	<p>Exit Options</p> <p><i>Limited exit options create negative incentives to start a company - prisoner's dilemma.</i></p>	

Source: compiled by the author

In conclusion, we view these interviews as extremely positive. First of all, they help us better understand the direction of causality we could not establish in Section 3.5. Interviews assert that startups that cannot find VC funding decide to look for funding alternatives, and hence debt.

Moreover, these interviews point to the parts of the funding chain that are more likely to be bottlenecks. It also help us shed light on the type of improvement that the Italian Startup Policy needs.

3.8. Conclusion of the Evaluation

Section 3 has reviewed the Italian Startup Policy in detail, mostly focusing on the funding side. We believe it is useful to assess the policy on two dimensions, the extensive and intensive margin.

In economics, extensive margins refer to the number of usable inputs, while intensive margins refer to the efficiency of inputs used that are already in place. Using this analogy, **we believe the Italian Startup Policy to have exceeded expectation in its extensive margin:** startups, entrepreneurship, Venture Capital were concepts known only to specialists before the reform. The Policy has created a culture and movement that shows young Italians an alternative path for their future. Incubators, accelerators, labs and university startup groups have started to emerge in larger and larger numbers. **The momentum is encouraging.**

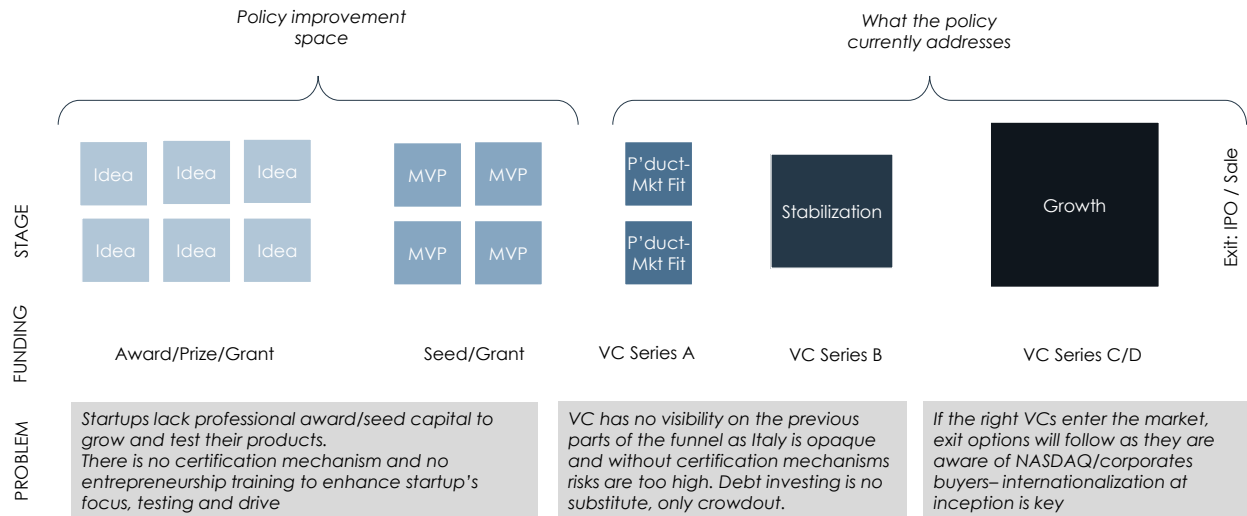
With the same analogy, however, **this review has highlighted some critical points on the intensive margin of the policy. In other words, the policy needs some fine tuning to bring the Italian Startup Ecosystem to its next level.**

In particular, our review has highlighted the following critical points:

- **Funding has not reached European averages (yet):** the Italian Startup Policy has been unable to attract a larger share of investors into Italian startups. We acknowledge that startup policies require patience to bear fruits; the outcomes might just be too far away to be captured yet. The irresponsiveness of investors might however suggest that some actions are needed on this front, if only to change market expectations.
- **Firms register to access debt funding:** in Italy, startups need to register with the Government in order to get a package of benefits. Among those, startups can access government debt guarantees to then access inexpensive debt funding. There is statistical evidence that access to debt funding via debt guarantee schemes might incentivize small firms with suboptimal business ideas, thus incapable of getting VC funding, to register. Debt, in our view, removes a large incentive to innovate, offering incentives to firms that might not “deserve it” and posing a large risk to the state’s coffers as the government guarantees loans that are inherently high-risk. Moreover, debt also removes the checks and balances of shareholders, so vital for a startup to grow. The debt funding might be creating a dual market for startups where those that register are of “lesser quality”. We find this result, if confirmed, concerning.
- **Startups still employ few people per firm:** startups, albeit having a positive revenue and earnings profile, employ far fewer employees than traditional firms. This need not be a critical issue, given the more innovative (and efficient) nature that a startup is supposed to embody, but might not offer as many opportunities to young people as initially envisaged.
- **Bottleneck at seed and skill formation:** our interviews have highlighted that Italian entrepreneurs seem to lack the focus and techniques that require them to succeed. We believe this to be linked with a dearth of skills formation at the seed level: Italians don’t have mentors with significant prior experience or cannot reach them. Moreover, the funding they receive

(mostly insufficient) doesn't come with appropriate constraints and lessons. Accelerators and incubators do not seem as effective as their international counterparts in solving this dilemma. The arrival in the country of companies like Endeavour is an encouraging sign, as they aim to solve this critical juncture, but more should be done in this space. Italian startups need to receive more funds and guidance to experiment and get their product market fit right.

Exhibit 3.14 Policy Successes and Challenges along the startup journey



Source: compiled by the author

The exhibit above summarizes the critical points of the startup journey in Italy. It seems to us that the Italian policy is already sufficient to deliver performance at the later stages of a startup, while there seems to be a bottleneck between the idea generation and a workable MVP. That iteration stage is where, in our view, the policy should focus.

4. Policy recommendations

The existing policy environment has had tremendous success in the extensive margin (getting more firms to become startups) while more needs to be done in the intensive margin (making the system more efficient). We suggest the government should: (1) keep and reinforce the current working policy tools (cut to red tape, tax incentive, flexible labor laws); (2) remove the debt guarantee option, as it is distortive and risky; (3) broaden the definition of startup (only in conjunction to the removal of debt guarantees) and start a government sponsored and privately run international accelerator program that would borrow international credibility, improve the entrepreneurial skillset of Italian firms, and give them access to international networks and funding. This set of fine-tuning measures has the potential to generate further momentum and provide a catalyst for the sector, in our view.

The previous Section concluded the evaluation of the Italian Startup Policy by highlighting what is working and what needs improvement, in our view. This section, that aims to suggest policy options going forward, starts by listing the policy interventions that, in our view, are working and should not be modified.

As stated at the beginning of this paper, however, we caution against believing that startup policies can work with a magic wand. This is still much of an unexplored policy field. Our suggestions are tentative and experimental. The government should continue experimenting small and then scale-up. We also believe that our suggestions could help solve some wholly Italian problems.

What works

We find value in existing “preparatory” policies. **Targeted labor laws, cut to red tape, and especially tax incentives go a long way in “setting the table” for a successful startup ecosystem.** The government, especially after the 2017 budget law, has created an impressive fiscal and regulatory architecture that lays the ground for a startup ecosystem to take off. **None of those policy tools should be corrected, in our view.** Startup policies require time to come to fruition and this part of the policy needs patience.

What should change

On the improvement front, we believe that some policies could potentially be distortive. In particular, Section 3 has highlighted concerns on the debt guarantee scheme. **We believe that the debt guarantee might be creating the wrong soft of incentives for startups in Italy. As politically unpalatable as it may sound, we advise for the interruption of such policy, as it is distortive and risky.**

We also note that the government has spent significant efforts in promoting startup activities across the national territory. Research points to universities and tech clusters as the best predictors of an ecosystem’s success. In other words, **chances of success are higher where human capital clusters; regions without human capital clusters need indeed development policies and government support, but startup policies might be wasteful in those instances and divert resources from**

more efficient interventions. The government should focus where startups have the best chances of success, not spreading the money too “thin” on the national territory.

What could be done next

We propose two complementary actions:

1. **Definition:** the current legal definition of startup (see Section 3) has so far helped in attracting young talents to a launch new venture. The definition is however restrictive. **Our suggestion is to broaden the tax incentives to more young firms, making the definition *de facto* irrelevant.** By eliminating the debt financing option, this would mean that the private market will autonomously sort between *deserving* and *non-deserving* small firms while the government will basically incentivize investments into young firms altogether, on the likes of the Enterprise Investment Scheme in the UK.

Outstanding debt guarantees currently amount to ~€270³⁰ while tax incentives have totaled just ~€10mn in 2014. The elimination of debt guarantees might free significant resources (currently or going forward) to broaden the tax incentive scheme. We believe such reallocation of fund will improve the overall efficiency of the ecosystem.

In the context of the definition, we stress that **simplicity is the best ally for policy makers**. Being too specific on what a startup should or should not be might produce adverse selection and distortions. The definition should not be set by the government, but rather by the investor. If a firm is funded by a VC, then we can comfortably say that the firm is indeed a startup by all international standards. If a firm is invested by a government agencies, we cannot be as sure. This is why broadening the definition and leaving private investors decide who is and who is not a startup might be the best policy direction to take.

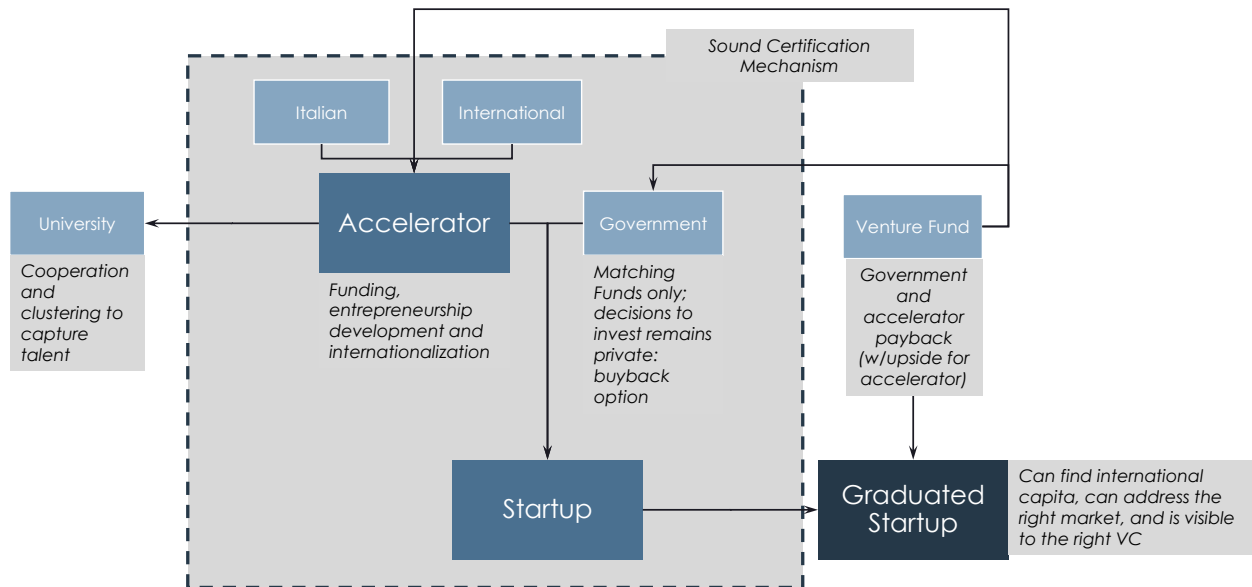
2. **International accelerators:** The previous section stressed how universities, culture, and skills formation are important for the overall performance of a startup ecosystem. We believe this to be a critical point in the evolution of Italian startups.

In particular, recalling from Section 1, Italy doesn't seem to have a viable *certification* mechanism yet. Venture Capitalists' search costs are relatively high and Italian entrepreneurs, albeit possessing the right “raw intelligence”, don't seem focused enough to bring startups to true success. Interviews also confirmed this view.

We believe that the government should focus its attention on this issue and suggest the following proposal for experimenting on workable solutions.

³⁰ Counting the guarantees on existing non-defaulted exposures. See http://www.sviluppoeconomico.gov.it/images/stories/documenti/10%C2%B0_rapporto_Fondo_di_Garanzia_startup_innovative%2031_12_2016.pdf

Exhibit 4.01 Attracting international accelerators as a policy option combining certification, funding and skill formation



Source: compiled by the author

In our view, the government should target the creation of one or two high level international accelerators in the country (Exhibit 4.01). Those accelerators should be

- **International:** the government should spend ample time inviting the best-in-class accelerators to start a branch in Italy, together with an Italian counterparts of their choice. Accelerators would welcome startups from all Europe, borrowing the international investors' reputation.
- **Educational:** accelerators, in order to access government incentives, have to create a program of skills formation targeted to Italian and European corporates. In particular, they should improve on product management skills, language skills, internationalization, product/market fit.
- **Privately managed:** government should try to attract the best-in-class and should incentivize them with match funds a-la Yozma (40% matching equity with buyback options in five years at face value plus inflation) but every decision about location, investments and teaching should be left private. Investors know what is needed for a startup to be more successful than not. The government should however cap the investor downside to incentivize market penetration, as explained with the matching funds structure.
- **Partner with Universities:** another requisite of the accelerator is to partner with a university in order to help them with skills formation for students. In return, the accelerator will receive

preferential treatment to the university's IP. The accelerator is to decide which university they will partner with. This will incentivize the clustering that is so necessary for the formation of an ecosystem.

- **Give access to international funding:** international accelerators and operatives would bring along a strong international network of funders and investors that is so needed in Italy to help Italian startups grow internationally. Internationalization is hence not only of skills, but of networks.
- **Provide a *certification*:** as discussed in Section 1, certifications are an important element to trigger a startup ecosystem. This structure has the potential to grant such certification to graduating startups, thereby offering that needed trigger for the ecosystem.

Practically, the Italian Government should negotiate an incentives package with an international best-in-class accelerator to establish their European branch in Italy. The accelerator should choose the location based upon human capital clusters and the Government should not interfere.

This structure is in itself wholly insufficient to fill the funding gap in the Italian VC market, but it can serve as a strong catalyst. By borrowing international credibility, networks and improving the skills of Italian startups, it has the potential to establish best-in-class norms for the ecosystem and attract founders and investors around its edges. Convincing an international accelerator to open their first European branch or campus in Italy might go a long way in attracting not only the best Italian startups, but also their European counterparts to work in Italy. Moreover, this policy is a high-potential small-scale experiment, building on the experimental nature of the policy. Instead of devising large programs that might not work, an experiment allows for fine-tuning before scale-up.

This set of fine-tuning measures has the potential to generate further momentum and provide a strong catalyst for the sector, in our view.

5. Conclusion: a country of innovators in need of an architecture

The present policy analysis reviewed the Italian Startup Ecosystem as modified by the Startup Act of 2012.

We began by reviewing the rationale for government intervention in startup ecosystems. We believe Governments should target the innovation-content of their economy, as it leads to economic growth. Moreover, it is in Italy's interest to focus on innovation as a potential solution to the persistent lack of productivity growth. Lastly, no startup ecosystem has even been started without Government intervention. The actions that help trigger such ecosystems are usually more connected to “setting the table” rather than direct intervention as risky ventures are better selected by actors with a clear profit motive. **Governments are highly justified to intervene in the sector, as long as their intervention is (1) closely tied with increasing the innovation content of the economy and not only the number of small firms and (2) is non distortive.**

We then proceeded to benchmark Italy vis-à-vis its peer OCED states and observed that Italy ranks poorly in comparison. Innovation supply (patents approved per researcher) is less effective than in other OECD countries and innovation demand (R&D spend per patent) is also suboptimal. **Overall, we cannot say that Italy possesses a healthy innovation ecosystem as of now.**

Afterwards, we evaluated the policy as it currently stands with the help of the existing literature, statistical analysis and interviews. The redundancies we build in the analysis reassure us that the results are robust. That being said, startup policies are novel, and track records hard to establish. Notwithstanding the rigor of the present analysis, our conclusions should thus be taken with a “pinch of salt.”

The review concludes that the Italian Government has been successful in the *extensive margin*, i.e. in increasing the number of startups, the awareness of the policy and in general promoting a cultural revolution among young Italians and startups. We also conclude that measures that aim to simplifying the ecosystem are net positives: cut to red tape, targeted labor laws, and tax incentives are a “game changer”. **The policy has generated momentum.**

Our analysis is less positive on the *intensive margin*, however. In other words, while more and more startups are launched, the landscape has not significantly improved in terms of VC investments or exits. VC funding is largely flat since the inception of the policy four years ago, while government investments made available to startups seem, in our view, ample. **There is thus an issue of efficiency.** In particular, we find that debt guarantees offered by the Government to startups might be distortive, expensive and counterproductive, putting the whole policy at risk. **The policy, in other words, now needs to be fine-tuned and improve in efficiency.**

We then proceeded by putting forward some policy options. We believe the government should be patient on what is working, such as cut to red tape, tax incentives, and targeted labor laws. These policies should not be modified, but rather strengthened. We also believe the government should amend what, in our view, is working less well: **it should phase out the debt guarantee scheme**, as it is distortive and expensive, and it should also **avoid distributing its interventions around the national territory.** Instead, it should focus on existing human capital clusters, a reliable pre-requisite for the emergence of startup ecosystems. We also suggest **two avenues for expansion.** First, we

recommend **broadenings the definition of startup**. By saving on debt guarantees, the government can reliably increase the tax incentives, following the British example. In addition, we suggest that the Government should **attract international accelerators to address Italian entrepreneurs' lack of skills, focus, and seed capital**. We believe this policy could address the current bottleneck in the whole ecosystem (the path from idea to MVP) and be a powerful trigger to build on the existing momentum.

Italy, in our view, is a country of innovators, entrepreneurs and risk takers. There is no reason why a startup ecosystem should not exist. Perfecting the existing policy architecture where it is most needed might indeed help build on emerging momentum and further nourish the nascent startup ecosystem. As for startups, policy requires boldness and novelty. Italy needs both.

We hope that this review will be helpful to those in charge of moving that needle of novelty and bring Italy to the next stage of its development.

Appendix 1: OECD Innovation Ecosystem's benchmarks

OECD Peer Tables on main innovation metrics, 2014 – Italy highlighted in gray

BERD, % of GDP			PSERD, % of GDP			PSERD, financed by industry, % of GDP			ICT investments, total, % of GDP			Tertiary education expenditure, % of GDP			Adult population at tertiary education level, % total			Top performers in science among 15-year olds, % total			Top adult performers in problem solving in technology-rich environments, % of 16-64 year old adults		
#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%
1	Korea	3.40	1	Iceland	1.15	1	Germany	0.11	1	Denmark	3.51	1	United States	2.67	1	Russia	53.31	1	Japan	18.24	1	Sweden	43.98
2	Israel	3.32	2	Finland	1.09	2	Iceland	0.09	2	Switzerland	3.28	2	Korea	2.62	2	Canada	52.69	2	Finland	17.06	2	Finland	41.56
3	Japan	2.57	3	Sweden	1.09	3	Lithuania	0.09	3	Japan	3.23	3	Canada	2.60	3	Japan	46.62	3	China	16.68	3	Netherlands	41.53
4	Finland	2.44	4	Denmark	1.01	4	Netherlands	0.08	4	Sweden	3.23	4	Malaysia	2.49	4	Israel	46.44	4	Australia	13.56	4	Norway	40.98
5	Sweden	2.31	5	Germany	0.96	5	Russia	0.08	5	New Zealand	3.22	5	Chile	2.44	5	United States	43.05	5	New Zealand	13.35	5	Denmark	38.67
6	Chinese Taipei	2.27	6	Netherlands	0.94	6	Finland	0.07	6	United States	3.17	6	Colombia	2.11	6	Korea	41.73	6	Estonia	12.81	6	Australia	37.97
7	Switzerland	2.17	7	Estonia	0.91	7	New Zealand	0.07	7	Austria	3.13	7	Finland	1.94	7	Australia	41.28	7	Germany	12.16	7	Canada	36.56
8	Germany	2.02	8	Korea	0.91	8	Australia	0.06	8	Belgium	2.95	8	Denmark	1.90	8	United Kingdom	40.98	8	Netherlands	11.81	8	Germany	35.98
9	Slovenia	1.99	9	Switzerland	0.90	9	Belgium	0.06	9	Netherlands	2.78	9	Netherlands	1.84	9	New Zealand	40.58	9	Korea	11.68	9	Japan	34.59
10	Denmark	1.96	10	Austria	0.87	10	Canada	0.06	10	Korea	2.73	10	Australia	1.75	10	Ireland	39.70	10	Canada	11.31	10	Czech Republic	33.14
11	Austria	1.95	11	Australia	0.86	11	Australia	0.06	11	Australia	2.62	11	Sweden	1.74	11	Finland	39.66	11	United Kingdom	11.19	11	Austria	32.47
12	United States	1.95	12	Czech Republic	0.86	12	Slovenia	0.06	12	United Kingdom	2.61	12	Estonia	1.71	12	Luxembourg	39.11	12	Poland	10.83	12	United States	31.14
13	OECD - Total	1.63	13	Canada	0.80	13	Turkey	0.06	13	Portugal	2.50	13	Israel	1.65	13	Norway	38.56	13	Ireland	10.74	13	Korea	30.41
14	Belgium	1.52	14	Norway	0.79	14	Israel	0.05	14	France	2.49	14	Belgium	1.64	14	Estonia	36.87	14	Slovenia	9.58	14	Slovenia	27.56
15	China	1.51	15	France	0.78	15	Latvia	0.05	15	Spain	2.30	15	Japan	1.63	15	Switzerland	36.59	15	Switzerland	9.31	15	Slovak Republic	25.63
16	France	1.48	16	Chinese Taipei	0.78	16	Norway	0.05	16	Canada	2.27	16	Greece	1.61	16	Sweden	35.70	16	Belgium	9.06	16	Ireland	25.29
17	Iceland	1.38	17	Japan	0.74	17	Japan	0.05	17	Spain	2.22	17	France	1.56	17	EU28	35.32	17	OECD - Total	8.51	17	Poland	19.20
18	Estonia	1.26	18	United States	0.73	18	China	0.05	18	Czech Republic	2.14	18	Argentina	1.56	18	Iceland	35.20	18	Chinese Taipei	8.34	18	--	--
19	EU28	1.24	19	EU28	0.72	19	Austria	0.04	19	EU28	2.05	19	New Zealand	1.50	19	Slovenia	35.20	19	Lithuania	8.18	19	--	--
20	Australia	1.23	20	OECD - Total	0.71	20	France	0.04	20	Finland	1.77	20	Austria	1.48	20	Denmark	34.78	20	France	7.90	20	--	--
21	Netherlands	1.22	21	Belgium	0.70	21	Hungary	0.04	21	Italy	1.57	21	Ireland	1.48	21	Netherlands	34.40	21	Austria	7.85	21	--	--
22	Ireland	1.20	22	New Zealand	0.69	22	Slovak Republic	0.04	22	Germany	1.56	22	Czech Republic	1.46	22	Spain	32.31	22	Czech Republic	7.62	22	--	--
23	United Kingdom	1.10	23	Portugal	0.68	23	Sweden	0.04	23	Greece	1.45	23	Germany	1.39	23	OECD - Total	31.51	23	EU28	7.56	23	--	--
24	Czech Republic	1.01	24	Lithuania	0.66	24	United Kingdom	0.04	24	Ireland	1.39	24	Russia	1.39	24	Latvia	31.00	24	Norway	7.55	24	--	--
25	Luxembourg	1.00	25	Slovenia	0.64	25	Chinese Taipei	0.04	25	Mexico	1.25	25	Portugal	1.37	25	France	30.86	25	United States	7.46	25	--	--
26	Canada	0.88	26	Spain	0.61	26	Denmark	0.03	26	Slovak Republic	1.23	26	Slovenia	1.36	26	EU28	28.40	26	Denmark	6.76	26	--	--
27	Norway	0.86	27	United Kingdom	0.60	27	Estonia	0.03	27	Luxembourg	1.08	27	Poland	1.35	27	Germany	28.12	27	Sweden	6.34	27	--	--
28	Hungary	0.85	28	Israel	0.57	28	Greece	0.03	28	--	--	28	United Kingdom	1.33	28	Slovenia	26.44	28	Italy	6.08	28	--	--
29	Portugal	0.70	29	Argentina	0.57	29	EU28	0.03	29	--	--	29	Mexico	1.32	29	Greece	26.27	29	Hungary	5.93	29	--	--
30	Italy	0.69	30	Poland	0.56	30	Czech Republic	0.02	30	--	--	30	Spain	1.32	30	Poland	24.51	30	Israel	5.83	30	--	--
31	Spain	0.69	31	Italy	0.54	31	Japan	0.02	31	--	--	31	Turkey	1.32	31	Hungary	22.05	31	Iceland	5.21	31	--	--
32	Russia	0.66	32	Latvia	0.51	32	Luxembourg	0.02	32	--	--	32	Switzerland	1.27	32	Costa Rica	20.90	32	Lithuania	5.10	32	--	--
33	Malaysia	0.61	33	Turkey	0.51	33	Poland	0.02	33	--	--	33	Norway	1.26	33	Austria	19.99	33	Slovak Republic	4.87	33	--	--
34	New Zealand	0.57	34	India	0.50	34	United States	0.02	34	--	--	34	Latvia	1.17	34	Colombia	19.75	34	Spain	4.81	34	--	--
35	Turkey	0.42	35	Slovak Republic	0.48	35	South Africa	0.02	35	--	--	35	Iceland	1.16	35	Czech Republic	19.28	35	Portugal	4.54	35	--	--
36	South Africa	0.36	36	China	0.47	36	Chile	0.01	36	--	--	36	Slovak Republic	1.15	36	Slovak Republic	18.60	36	Latvia	4.37	36	--	--
37	Slovak Republic	0.34	37	Russia	0.47	37	Ireland	0.01	37	--	--	37	Italy	1.14	37	Portugal	18.53	37	Russia	4.25	37	--	--
38	Poland	0.33	38	Ireland	0.46	38	Italy	0.01	38	--	--	38	Brazil	0.98	38	Mexico	18.07	38	Greece	2.48	38	--	--
39	India	0.26	39	Luxembourg	0.46	39	Portugal	0.01	39	--	--	39	India	0.98	39	India	17.81	39	Chile	1.80	39	--	--
40	Greece	0.24	40	Malaysia	0.46	40	Mexico	0.00	40	--	--	40	Indonesia	0.66	40	Malaysia	16.37	40	Chile	1.00	40	--	--
41	Lithuania	0.24	41	Greece	0.45	41	Argentina	0.00	41	--	--	41	South Africa	0.58	41	Turkey	15.29	41	Malaysia	0.33	41	--	--
42	Mexico	0.17	42	Hungary	0.43	42	--	--	42	--	--	42	Hungary	0.00	42	Italy	14.98	42	Brazil	0.30	42	--	--
43	Argentina	0.16	43	Costa Rica	0.40	43	--	--	43	--	--	43	Luxembourg	0.00	43	Argentina	13.66	43	Argentina	0.24	43	--	--
44	Latvia	0.15	44	South Africa	0.39	44	--	--	44	--	--	44	--	--	44	Brazil	12.96	44	Costa Rica	0.24	44	--	--
45	Chile	0.11	45	Mexico	0.25	45	--	--	45	--	--	45	--	--	45	--	--	45	Indonesia	0.14	45	--	--
46	Costa Rica	0.08	46	Chile	0.14	46	--	--	46	--	--	46	--	--	46	South Africa	6.36	46	Colombia	0.14	46	--	--
47	Colombia	0.05	47	Colombia	0.08	47	--	--	47	--	--	47	--	--	47	China	3.58	47	Indonesia	0.01	47	--	--
48	Indonesia	0.01	48	--	--	48	--	--	48	--	--	48	--	--	48	--	--	48	--	--	48	--	--
49	--	--	49	--	--	49	--	--	49	--	--	49	--	--	49	--	--	49	--	--	49	--	--

OECD Peer Tables on main innovation metrics, 2014 – Italy highlighted in gray – cont'd

Doctoral graduation rate, science and engineering, % of cohort at typical graduation age			Fixed broadband subscriptions, per 100 inhabitants			Wireless broadband subscriptions, per 100 inhabitants			E-government readiness index			Venture capital, % of GDP			PMR - Ease of entrepreneurship index			Top 500 universities, per billion USD GDP PPPs			Top 500 corporate R&D investors, per USD GDP		
#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%
1	Switzerland	1.39	1	Switzerland	41.97	1	Finland	106.54	1	Korea	0.95	1	Israel	0.31	1	Slovak Republic	4.85	1	New Zealand	32.86	1	Switzerland	122.74
2	Sweden	1.36	2	Netherlands	39.72	2	Sweden	104.83	2	Australia	0.91	2	United States	0.17	2	New Zealand	4.82	2	Israel	26.89	2	Denmark	102.85
3	Germany	1.08	3	Denmark	38.86	3	Australia	103.36	3	France	0.89	3	Canada	0.08	3	Netherlands	4.81	3	Sweden	26.14	3	Sweden	95.05
4	United Kingdom	1.05	4	Korea	36.50	4	Korea	103.04	4	Japan	0.89	4	Finland	0.07	4	Italy	4.78	4	Finland	23.49	4	Finland	93.98
5	Finland	0.99	5	France	36.35	5	Denmark	97.51	5	Netherlands	0.89	5	Ireland	0.07	5	United States	4.77	5	Austria	18.52	5	Chinese Taipei	88.22
6	Ireland	0.95	6	Norway	36.20	6	United States	91.30	6	United Kingdom	0.87	6	Sweden	0.06	6	Denmark	4.74	6	Australia	17.76	6	Luxembourg	80.79
7	Austria	0.91	7	Iceland	34.81	7	Japan	85.44	7	United States	0.87	7	Korea	0.05	7	Austria	4.69	7	Slovenia	16.91	7	Iceland	77.22
8	Denmark	0.91	8	United Kingdom	34.18	8	Norway	84.42	8	New Zealand	0.86	8	Switzerland	0.04	8	Canada	4.66	8	Denmark	16.46	8	Japan	75.72
9	France	0.89	9	Germany	34.06	9	Luxembourg	79.42	9	Canada	0.84	9	Denmark	0.03	9	Portugal	4.65	9	Netherlands	16.44	9	Israel	57.63
10	Norway	0.83	10	Belgium	33.28	10	Estonia	74.10	10	Finland	0.84	10	Estonia	0.03	10	United Kingdom	4.52	10	Switzerland	15.91	10	Ireland	54.04
11	Australia	0.80	11	Canada	32.44	11	Iceland	72.05	11	Norway	0.84	11	France	0.03	11	Russia	4.46	11	United Kingdom	15.91	11	Netherlands	47.96
12	New Zealand	0.77	12	Sweden	32.21	12	United Kingdom	71.96	12	Spain	0.84	12	Germany	0.03	12	Finland	4.45	12	Belgium	15.24	12	United Kingdom	46.00
13	Israel	0.75	13	Luxembourg	32.11	13	New Zealand	70.94	13	Denmark	0.82	13	Netherlands	0.03	13	Estonia	4.44	13	Canada	15.11	13	United States	39.17
14	EU28	0.72	14	Finland	30.35	14	Ireland	65.66	14	Estonia	0.82	14	United Kingdom	0.03	14	Switzerland	4.44	14	Ireland	14.74	14	Germany	37.10
15	Belgium	0.71	15	United States	28.95	15	Poland	62.94	15	Israel	0.82	15	EU28	0.03	15	Lithuania	4.43	15	Portugal	14.59	15	Korea	35.91
16	Slovak Republic	0.70	16	New Zealand	28.61	16	Netherlands	61.18	16	Sweden	0.82	16	Australia	0.02	16	Poland	4.36	16	EU28	13.04	16	Norway	32.24
17	Slovenia	0.70	17	Japan	27.68	17	EU28	58.65	17	Iceland	0.80	17	Austria	0.02	17	Germany	4.34	17	Norway	11.72	17	Austria	31.74
18	Canada	0.69	18	EU28	26.88	18	Austria	58.05	18	Austria	0.79	18	Austria	0.02	18	Japan	4.33	18	Belgium	10.84	18	France	30.61
19	Czech Republic	0.68	19	OECD - Total	26.05	19	OECD - Total	56.64	19	Germany	0.79	19	Hungary	0.02	19	France	4.32	19	Italy	9.17	19	EU28	28.37
20	Netherlands	0.65	20	Australia	25.20	20	Switzerland	55.37	20	Ireland	0.78	20	Japan	0.02	20	Australia	4.31	20	United States	8.87	20	Belgium	28.31
21	Estonia	0.63	21	Austria	24.98	21	Austria	54.28	21	Belgium	0.76	21	Norway	0.02	21	Hungary	4.31	21	Hungary	8.73	21	Slovenia	16.91
22	United States	0.59	22	Israel	24.70	22	Latvia	53.70	22	Italy	0.76	22	Portugal	0.02	22	Norway	4.31	22	France	8.16	22	Portugal	14.59
23	Italy	0.58	23	Spain	24.65	23	Czech Republic	53.64	23	Luxembourg	0.76	23	Russia	0.02	23	Luxembourg	4.29	23	Greece	7.10	23	Italy	14.49
24	Portugal	0.58	24	Estonia	24.54	24	Russia	52.97	24	Switzerland	0.73	24	South Africa	0.02	24	Sweden	4.29	24	Korea	7.05	24	New Zealand	13.14
25	Iceland	0.56	25	Slovenia	24.41	25	Italy	52.18	25	Lithuania	0.73	25	Luxembourg	0.01	25	Belgium	4.22	25	Spain	6.65	25	Australia	13.08
26	Korea	0.56	26	Greece	23.74	26	Israel	51.23	26	Russia	0.73	26	New Zealand	0.01	26	Slovenia	4.19	26	Chile	5.07	26	Canada	11.17
27	Spain	0.56	27	Ireland	22.65	27	France	50.39	27	Latvia	0.72	27	Slovenia	0.01	27	Czech Republic	4.18	27	South Africa	4.57	27	Spain	10.63
28	Greece	0.40	28	Portugal	22.54	28	Canada	46.43	28	Chile	0.71	28	Spain	0.01	28	Korea	4.13	28	Japan	4.29	28	China	5.75
29	Japan	0.39	29	Italy	22.15	29	Greece	44.95	29	Greece	0.71	29	Czech Republic	0.00	29	Greece	4.09	29	Czech Republic	3.43	29	Hungary	4.37
30	Latvia	0.38	30	Hungary	21.83	30	Germany	41.10	30	Portugal	0.69	30	Greece	0.00	30	Indonesia	4.08	30	China	2.60	30	Turkey	4.14
31	Hungary	0.23	31	Latvia	21.53	31	Slovak Republic	40.00	31	Hungary	0.66	31	Ireland	0.00	31	Ireland	4.02	31	Brazil	2.48	31	Greece	3.55
32	Turkey	0.15	32	Lithuania	19.53	32	Brazil	37.27	32	Poland	0.65	32	Poland	0.00	32	Chile	3.98	32	Poland	2.21	32	Czech Republic	3.43
33	Argentina	0.13	33	Czech Republic	16.63	33	Slovenia	37.15	33	Slovenia	0.65	33	--	--	33	Latvia	3.97	33	Malaysia	1.90	33	Brazil	3.30
34	Chile	0.11	34	Poland	15.71	34	Poland	33.03	34	Belgium	0.63	34	--	--	34	Iceland	3.93	34	Argentina	1.29	34	Malaysia	1.90
35	Mexico	0.06	35	Slovak Republic	14.77	35	Portugal	32.77	35	Colombia	0.62	35	--	--	35	Spain	3.90	35	Turkey	0.69	35	South Africa	1.52
36	South Africa	0.06	36	Russia	14.48	36	Indonesia	31.86	36	Czech Republic	0.61	36	--	--	36	South Africa	3.83	36	Russia	0.58	36	Russia	1.16
37	Poland	0.00	37	China	12.97	37	Chile	28.42	37	Slovak Republic	0.61	37	--	--	37	Mexico	3.81	37	Mexico	0.49	37	Mexico	0.49
38	Brazil	0.00	38	Chile	12.40	38	Costa Rica	27.72	38	Costa Rica	0.61	38	--	--	38	Israel	3.50	38	Estonia	0.00	38	India	0.16
39	China	0.00	39	Mexico	11.69	39	South Africa	26.02	39	Malaysia	0.61	39	--	--	39	Turkey	3.22	39	Iceland	0.00	39	Chile	0.00
40	Indonesia	0.00	40	Argentina	10.88	40	Argentina	20.85	40	Brazil	0.60	40	--	--	40	Brazil	3.12	40	Latvia	0.00	40	Estonia	0.00
41	Russia	0.00	41	Turkey	10.39	41	China	17.24	41	China	0.57	41	--	--	41	China	2.87	41	Luxembourg	0.00	41	Poland	0.00
42	--	--	42	Costa Rica	10.04	42	Turkey	16.10	42	China	0.55	42	--	--	42	India	2.39	42	Slovak Republic	0.00	42	Slovak Republic	0.00
43	--	--	43	Brazil	9.17	43	Hungary	14.86	43	Turkey	0.54	43	--	--	43	--	--	43	Colombia	0.00	43	Argentina	0.00
44	--	--	44	Malaysia	8.39	44	Malaysia	13.56	44	South Africa	0.49	44	--	--	44	--	--	44	Costa Rica	0.00	44	Costa Rica	0.00
45	--	--	45	Colombia	8.36	45	Lithuania	12.45	45	Indonesia	0.45	45	--	--	45	--	--	45	India	0.00	45	--	--
46	--	--	46	South Africa	2.18	46	Mexico	10.73	46	India	0.38	46	--	--	46	--	--	46	Indonesia	0.00	46	--	--
47	--	--	47	Indonesia	1.22	47	Colombia	5.07	47	--	--	47	--	--	47	--	--	47	Lithuania	0.00	47	--	--
48	--	--	48	India	1.14	48	India	4.90	48	--	--	48	--	--	48	--	--	48	--	--	48	--	--
49	--	--	49	--	--	49	--	--	49	--	--	49	--	--	49	--	--	49	--	--	49	--	--

OECD Peer Tables on main innovation metrics, 2014 – Italy highlighted in gray – cont'd

Young patenting firms, per billion USD GDP			Publications in the top-quartile journals, per million USD GDP			International co-authorship, % of total scientific articles			Triadic patent families, per GDP billion USD PPPs			Patents filed by PRLs (universities and public labs) as % of GDP			International co-invention, % of all PCT patent applications			Trademarks abroad, per GDP billion USD PPP		
#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%	#	Country	%
1	Switzerland	3.87	1	Iceland	62.01	1	Luxembourg	77.53	1	Japan	2.91	1	Israel	0.11	1	Luxembourg	69.57	1	Luxembourg	5.27
2	Sweden	2.96	2	Denmark	56.48	2	Costa Rica	74.08	2	Switzerland	1.66	2	Korea	0.10	2	Costa Rica	66.67	2	Switzerland	4.39
3	Germany	2.48	3	Switzerland	54.96	3	Iceland	68.72	3	Sweden	1.59	3	France	0.05	3	Indonesia	50.00	3	Canada	1.77
4	Finland	2.47	4	EU28	49.08	4	Switzerland	63.89	4	Finland	1.44	4	Belgium	0.04	4	Slovak Republic	43.24	4	Iceland	1.75
5	Austria	2.45	5	Sweden	48.80	5	Belgium	59.28	5	Germany	1.38	5	Denmark	0.04	5	Belgium	43.05	5	New Zealand	1.35
6	Netherlands	2.00	6	Netherlands	47.13	6	Austria	58.63	6	Austria	1.27	6	Ireland	0.04	6	Argentina	41.79	6	Israel	1.33
7	EU28	1.85	7	Finland	45.29	7	Indonesia	58.28	7	Israel	1.12	7	Netherlands	0.04	7	Switzerland	37.73	7	Denmark	1.24
8	Italy	1.60	8	New Zealand	44.85	8	Sweden	56.62	8	Netherlands	1.12	8	Switzerland	0.04	8	Poland	37.68	8	Sweden	1.22
9	Norway	1.39	9	Israel	41.56	9	Denmark	55.53	9	Denmark	0.98	9	Denmark	0.03	9	Chinese Taipei	35.13	9	United Kingdom	1.08
10	United Kingdom	1.39	10	Australia	40.77	10	Netherlands	54.29	10	OECD - Total	0.89	10	Finland	0.03	10	Czech Republic	35.00	10	Ireland	1.00
11	France	1.36	11	United Kingdom	40.41	11	Chile	54.14	11	United States	0.78	11	Germany	0.03	11	Ireland	34.77	11	Australia	0.97
12	Belgium	1.32	12	Slovenia	39.00	12	Norway	53.32	12	France	0.76	12	Japan	0.03	12	Canada	30.43	12	Netherlands	0.91
13	Japan	1.28	13	Belgium	37.62	13	Estonia	53.14	13	Austria	0.74	13	Spain	0.03	13	Hungary	29.74	13	Korea	0.87
14	United States	1.19	14	Estonia	36.44	14	Finland	52.74	14	Belgium	0.68	14	United Kingdom	0.03	14	Greece	29.47	14	Finland	0.86
15	Ireland	1.07	15	Portugal	35.78	15	Ireland	51.90	15	EU28	0.66	15	United States	0.03	15	Portugal	29.24	15	France	0.81
16	Canada	1.05	16	Canada	34.36	16	New Zealand	50.60	16	United Kingdom	0.59	16	EU28	0.03	16	Colombia	29.17	16	Germany	0.81
17	Spain	0.81	17	Ireland	30.78	17	Colombia	49.77	17	Canada	0.35	17	Austria	0.02	17	India	27.88	17	United States	0.79
18	--	--	18	Austria	30.23	18	Hungary	49.00	18	Ireland	0.34	18	Canada	0.02	18	United Kingdom	27.85	18	OECD - Total	0.78
19	--	--	19	Norway	28.40	19	Portugal	48.92	19	Luxembourg	0.30	19	Slovenia	0.02	19	Estonia	26.67	19	Austria	0.73
20	--	--	20	Greece	28.37	20	France	48.67	20	Iceland	0.29	20	Chile	0.01	20	Mexico	26.67	20	EU28	0.73
21	--	--	21	Spain	28.35	21	EU28	47.79	21	Italy	0.26	21	Czech Republic	0.01	21	Austria	25.05	21	Italy	0.71
22	--	--	22	Italy	24.25	22	South Africa	47.19	22	Norway	0.26	22	Italy	0.01	22	Latvia	24.14	22	Belgium	0.61
23	--	--	23	France	23.96	23	United Kingdom	46.65	23	New Zealand	0.25	23	Luxembourg	0.01	23	Denmark	22.97	23	Estonia	0.59
24	--	--	24	Germany	23.35	24	Canada	46.50	24	Australia	0.19	24	New Zealand	0.01	24	Chile	22.14	24	Spain	0.51
25	--	--	25	Czech Republic	23.01	25	Australia	46.30	25	Chinese Taipei	0.19	25	Norway	0.01	25	New Zealand	21.59	25	Japan	0.48
26	--	--	26	Chinese Taipei	20.68	26	Germany	46.17	26	Latvia	0.18	26	Poland	0.01	26	Russia	21.19	26	Norway	0.47
27	--	--	27	Korea	19.97	27	Israel	45.58	27	Hungary	0.17	27	Portugal	0.01	27	Lithuania	21.05	27	Slovenia	0.34
28	--	--	28	United States	19.59	28	Slovak Republic	44.17	28	Estonia	0.12	28	China	0.01	28	Malaysia	20.77	28	Mexico	0.32
29	--	--	29	Hungary	18.84	29	Slovenia	44.08	29	Spain	0.10	29	South Africa	0.01	29	Sweden	20.34	29	Portugal	0.31
30	--	--	30	Luxembourg	14.70	30	Argentina	43.25	30	Slovenia	0.08	30	Greece	0.00	30	Iceland	20.00	30	Chile	0.25
31	--	--	31	Poland	13.05	31	Greece	43.01	31	Lithuania	0.08	31	Hungary	0.00	31	Finland	19.28	31	Czech Republic	0.24
32	--	--	32	Japan	11.65	32	Italy	41.74	32	China	0.07	32	Mexico	0.00	32	France	19.01	32	South Africa	0.24
33	--	--	33	Lithuania	11.10	33	Spain	41.43	33	Czech Republic	0.06	33	Sweden	0.00	33	Brazil	18.46	33	Turkey	0.19
34	--	--	34	Slovak Republic	10.87	34	Mexico	40.63	34	Poland	0.04	34	Turkey	0.00	34	Israel	18.16	34	Hungary	0.17
35	--	--	35	Chile	10.36	35	Czech Republic	38.96	35	Portugal	0.04	35	Brazil	0.00	35	Netherlands	17.68	35	Greece	0.16
36	--	--	36	South Africa	9.79	36	Lithuania	35.97	36	India	0.04	36	India	0.00	36	Norway	16.88	36	Slovak Republic	0.16
37	--	--	37	Malaysia	8.88	37	Latvia	35.36	37	South Africa	0.04	37	Russia	0.00	37	Spain	16.81	37	Argentina	0.16
38	--	--	38	Brazil	8.47	38	Malaysia	33.25	38	Greece	0.03	38	--	--	38	Australia	16.19	38	China	0.14
39	--	--	39	China	8.05	39	United States	30.56	39	United States	0.02	39	--	--	39	Italy	15.87	39	Brazil	0.11
40	--	--	40	Latvia	7.82	40	Russia	29.53	40	Brazil	0.02	40	--	--	40	South Africa	15.56	40	Poland	0.09
41	--	--	41	Argentina	7.31	41	Poland	29.20	41	Slovak Republic	0.01	41	--	--	41	Germany	15.47	41	Russia	0.06
42	--	--	42	Turkey	6.60	42	Korea	26.52	42	Turkey	0.01	42	--	--	42	United States	12.27	42	India	0.04
43	--	--	43	Costa Rica	4.69	43	Japan	24.80	43	Argentina	0.01	43	--	--	43	Slovenia	11.36	43	Indonesia	0.02
44	--	--	44	India	3.81	44	Brazil	24.56	44	Russia	0.01	44	--	--	44	EU28	10.82	44	--	--
45	--	--	45	Colombia	3.46	45	Chinese Taipei	21.54	45	Mexico	0.00	45	--	--	45	China	8.08	45	--	--
46	--	--	46	Mexico	3.24	46	Turkey	19.09	46	Indonesia	0.00	46	--	--	46	Turkey	7.79	46	--	--
47	--	--	47	Russia	2.94	47	India	16.28	47	--	--	47	--	--	47	OECD - Total	7.31	47	--	--
48	--	--	48	Indonesia	0.38	48	China	15.58	48	--	--	48	--	--	48	Korea	3.74	48	--	--
49	--	--	49	--	--	49	--	--	49	--	--	49	--	--	49	Japan	1.88	49	--	--

Appendix 2: Legislative Framework³¹

This appendix is based on the Government's online legislative framework.

Definition and Requirements

Definition: Companies with shared capital (i.e. limited companies), including cooperatives, the shares or significant registered capital shares of which are not listed on a regulated market nor on a multilateral negotiation system. These companies must also meet the following requirements:

- be new or have been operational for less than 5 years;
- have their headquarters in Italy or in another EU country, but with at least a production site branch in Italy;
- have a yearly turnover lower than 5 million Euros;
- do not distribute profits;
- produce, develop and commercialize innovative goods or services of high technological value;
- are not the result of a merger, split-up or selling-off of a company or branch;
- be of innovative character, which can be identified by at least one of the following criteria:
 - at least 15% of the company's expenses can be attributed to R&D activities;
 - at least 1/3 of the total workforce are PhD students, the holders of a PhD or researchers; alternatively, 2/3 of the total workforce must hold a Master's degree;
 - the enterprise is the holder, depositary or licensee of a registered patent (industrial property) or the owner of a program for original registered computers.

Support measures apply to newly established companies for the first 5 years of activity, provided that they meet the aforementioned requirements.

Registration and Publicity Regime: the innovative startups must register in the respective special sections of the Register of Companies created ad hoc at the Chambers of Commerce. Registration occurs by transmitting online a declaration of self-certification of fulfilment of all required qualifications as indicated above, to the competent Chambers of Commerce per jurisdiction. This flexibility "in entry" is balanced by two counterweights: supervision ex post by the competent authority on the effective fulfilment of all required qualifications, the duty to update twice a year (deadlines on 30 June and 31 December) the data provided at the moment of registration in the special section, and to confirm once a year, contextually to the biannual compliance, the fulfilment of all requirements, otherwise forfeiting the special status and correlated benefits.

#ItalyFrontiers: is a platform created in 2015 that gives innovative startups the opportunity to manage a public profile, both in Italian and English versions. Startups have to upload their details through their legal representative. As a whole, the profiles are intended to act as a digital showcase for innovative startups: they may be read by more traditional firms interested in setting up partnerships

³¹ Note: this section heavily borrows and often quotes the following document http://www.sviluppoeconomico.gov.it/images/stories/documenti/Executive-Summary-of-Italy-s-Startup-Act-new-format-23_02_2017.pdf

and by national and international investors looking for new opportunities.

Monitoring and evaluation: the Minister of Economic Development must report to the Italian Parliament annually on the impact of the measures in question. Moreover, the Ministry of Economic Development carries out a comprehensive reporting effort, in order to monitor the evidences of the effects of the policy on innovative startups and to share them with the public. In addition, the National Institute for Statistics (Istat) has set up a dedicated page on its website aimed at sharing, in an open and fully editable format, the raw data collected as a result of the policy. All tables can be found [here](#).

Benefits

The measures described below apply to innovative startups for 5 years after their incorporation:

1. **Incorporation:** innovative startups are able to draw up the deed of incorporation and its modifications by means of a typified standard model using digital signature.
2. **Cuts to red tape and fees:** innovative startups are exempt from the payment of stamp duty and fees incurred due to the obligation of registering to the company register, as well as the payment of the annual fee due to the Chambers of Commerce.
3. **Flexible corporate management:** even if incorporated as S.r.l. (the equivalent of an Ltd.), innovative startups can: create categories of shares with specific rights (for example, categories of shares that do not attribute right to vote or that attribute such rights in non-proportional terms to the participation); carry out operations on one's shares; issue participative financial instruments; offer to the public of capital shares. Many of these measures imply a radical change in the financial structure of the S.r.l, approaching that of an S.p.a. (the equivalent of an Inc.).
4. **Extension of terms for covering losses:** during their first few years of activity, innovative, high-risk companies may record losses. If the available capital is insufficient, such losses may have a direct impact on the company's share capital. Where losses result in the share capital being reduced by over 1/3, the shareholders' meeting must lower the capital proportionally to the losses recorded by the following financial year. A 12-month extension is applied to innovative startups, during which the capital can be reduced proportionally to the losses. While ordinary companies must lower capital by the following financial year, startups can do this for up to two financial years after they suffered losses.
5. **Exemption from regulations on dummy companies:** regulations concerning non-operational companies and companies registering systematic losses, do not apply to startups. Accordingly, in case they cannot get "appropriate" revenues, they are exempted from fiscal penalties applied to so-called "dummy companies", such as the computation of a minimum income and taxable base for corporate taxation purpose (IRAP).

6. **Exemption from the duty to affix the compliance visa for compensation of VAT credit:** the ordinary norm calling for the application of the compliance visa for compensation in F24 of VAT credits above 15,000 Euros, may constitute a disincentive to the use of horizontal compensation. With the exemption up to 50,000 Euros, innovative startups may receive relevant benefits in terms of liquidity during the delicate phase of investment in innovation.
7. **Tailor-made labor law:** in Italy, staffers can be hired through a fixed-term contracts only up to 48 months, after which the contract has to be converted into an open-ended contract. Innovative startups enjoy greater flexibility as they can write fixed-term contracts for any duration, always up to the 48 months limit. Moreover, as an exception to general regulation, innovative startups with more than 5 employees are not required to maintain a statutory ratio between fixed-term and active open-ended contracts.
8. **Flexible remuneration system:** salaries can have a variable component linked to efficiency or profitability of the company, the productivity of the employee or the team of employees, or to other objectives and parameters for output and performance as agreed upon by the parties, including what is listed below.
9. **Remuneration through stock options and work for equity scheme:** in order to foster loyalty among management, employees and suppliers such as lawyers and accountants, startups and incubators may offer them capital shares by way of additional remuneration. The revenues resulting from these financial instruments are **tax deductible** for both fiscal and contributory purposes.
10. **Tax credit for the employment of highly qualified staff:** priority access to benefits has been granted for employment of highly qualified staff in innovative startups and certified incubators. Such benefits consist in a tax credit of 35% of the company's total cost for permanent employment, even with an apprenticeship contract, during the first year of the new working relationship.
11. **Tax incentives for corporate and private investments in startups made by individuals (20% tax credit up to a maximum investment of 1,000,000 Euros) or legal entities (30% fiscal deduction up to a maximum investment of 1.8 million Euros) for the years 2013, 2014, 2015 and 2016. Conditioned to a holding period of no less than two years.** These incentives apply both in case of direct investments in startups and in case of indirect investments by means of other companies investing predominantly in startups. Tax concessions are greater if the investment concerns startups with a social goal or those operating in the energy sector (25% tax credit for people or 27% fiscal deduction for legal entities).
12. **Possibility to collect capital through authorized equity crowdfunding portals.** In July 2013, Italy was the first country in the world to enact comprehensive regulation for this instrument. In early 2015, the already mentioned Decree-Law "Investment Compact" has introduced three important amendments: innovative SMEs can now take advantage of the

instrument; CIUs and other corporations that invest predominantly in innovative startups and SMEs can use equity crowdfunding as well, an evolution that allows for the diversification of the portfolio and decreased risk towards retail investors; once again waiving ordinary norms, the transfer of shares of innovative startups and SMEs is dematerialized, and as such related burdens are reduced, aiming for fruitification of the secondary market. By a deliberation on 24 February 2016, CONSOB – the equivalent of the American SEC – has updated the Regulation, adding to the aforementioned measures new procedural simplifications. The verification of adequacy of the investment can now be carried out by the administrators of the portals themselves, and not exclusively by banks as required before, bringing the entire procedure online. Moreover, two new categories of professional investors have been added: “professional investors on request”, identified according the EU directive “Markets in Financial Services” (Mifid), and “investors in support of innovation”, which includes business angels.

13. **Fast-track, simplified and free-of-charge access for innovative startups and certified incubators to the Fondo di Garanzia per le Piccole e Medie Imprese, a Government Fund that supports access to credit through guarantees on bank loans.** The guarantees cover 80% of the bank loans up to a maximum of 2.5 million Euros and it is provided through a simplified fast-track procedure.
14. **More targeted support to the process of internationalization provided by the Italian Trade Agency** (“ICE”, dedicated website), including assistance in legal, corporate and fiscal activities, as well as real estate and credit matters. In addition, innovative startups can benefit from free-of-charge participation to selected international fairs and events, as well as to international initiatives aimed at favoring the matching with potential investors. A “Startup service card” has been released by the Agency, granting 30% reductions on its assistance services.
15. **“Fail fast” procedure:** startups are exempted from the standard bankruptcy procedure, preliminary closure agreements and forced liquidation in the event of an over-indebtedness crisis. As a result, waiting times are cut, and the administrative and reputational burden sharply reduced.

Additional support measures

In addition to the instruments forming part of the original package of regulations, the Italian Ministry of Economic Development is engaged in the following:

1. **Smart&Start Italia:** the Ministry has introduced a subsidized financing scheme for innovative startups based in Italy, regardless their region of operation. Total financing amounts to € 200 million, available until their depletion to projects whose spending in investment goods and/or management costs are between 100,000 and 1.5 million euros. The financing scheme will cover such spending programs through zero-interest mortgages for 70% of their total amount; the coverage ratio rises to 80% when a majority of business associates and employees are women

or below 35 years of age. Moreover, when the beneficiary is an innovative startup based in a Southern Italian region (Basilicata, Calabria, Campania, Puglia, Sicilia), a 20% of the funding is converted into an outright grant. Access to the measure is also open to individuals who are committed to establish a new innovative startup in the next 60 days. Startups which are less than 12 months old can also benefit from tutoring services on technical and management issues. In addition, a preferential track is provided to innovative startups which commit themselves to finance at least 30 percent of their investment plan with capital coming from institutional investors.

2. Promoting, with the collaboration of the Ministry of Foreign Affairs, the Ministry of Labor and Social Policies and the Ministry of Interior, a **visa policy dedicated to extra- EU innovative entrepreneurs**, as a strategic way to attract in Italy investment and highly qualified human capital. Startup Visa has introduced a rapid, online, centralized and simplified mechanism for granting working visas to applicants intending to set up a new innovative startup in our country or join an existing one as a shareholder.
3. Drawing up, with the collaboration of the Italian Ministry of Education, University and Research, a **pilot project for the creation of Contamination Labs**, the aim of which is to offer university students from Southern regions (including Campania, Puglia, Calabria and Sicily) a stimulating environment in which to develop innovation projects with a business dimension. These spaces encourage students from different academic backgrounds to interact, while promoting entrepreneurship, innovation, an interdisciplinary perspective and new models of learning. 4 Contamination Labs have been selected and funded: they are located in Naples, Cosenza, Reggio Calabria and Catania.
4. Moving to foster the diffusion of technological innovation within the National productive fabric with even greater effort and reach, the Decree-Law 3/2015, known as “Investment Compact”, has assigned the greater part of measures already destined towards innovative startups, to an even wider bed of companies: the innovative SMEs, that is all SMEs operating within technological innovation, irrespective of their date of incorporation, their objects stated in the Memorandum of Association, and the stage of maturity (see Executive Summary). Ultimately, achieving innovative SME status can represent a natural evolution of the growth and consolidation of an innovative startup.
5. Finally, startups and innovative SMEs can benefit from two important measures in favor of technological innovation:
 - a. **Tax credit for R&D** has redefined the discipline on tax credit for investments in research and development. The tax credit is recognized in favor of companies who invest in R&D, up to an annual maximum of 5million Euros for each beneficiary. The credit comes to measure 25% of incremental annual costs for activities in R&D with respect to the average of the costs incurred over the 3 fiscal periods previous to the one ongoing at 31 December 2015, as long as in each of the fiscal periods costs for R&D have been equivalent to at least 30,000 Euros. The fiscal benefit reaches 50%

for investments in R&D relative to: employment of highly qualified staff; or costs for research “extra muros”, meaning in collaboration with universities and entities or research organizations and/or with other companies, such as innovative startups.

- b. **Patent Box** allows companies the option to exclude from taxation 50% of income deriving from commercial use of intangible assets (copyrights, industrial patents, commercial brands). The more recent Investment Compact has enhanced such an instrument, fully including trademarks and commercial brands among the intangible activities subject to tax benefits. The Patent Box represents a powerful measure for the attraction of investment in the value of intangible capital, of brands and industrial models.

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