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Insolvencies and SMEs: the role of Second Chance

Internal Market, Industry, Entrepreneurship and SMEs

Insolvencies and SMEs: the role of Second Chance

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1. Introduction

The present special study is a companion document to the 2015-2016 SME Annual Report. It contains more detailed empirical and technical information in support of various parts of the Annual Report.

In particular, it provides:

1. a short literature review on bankruptcy, entrepreneurship and innovation;

2. write-ups of 12 case studies of entrepreneurs who have created a new business after their previous business went bankrupt or was voluntarily closed because it was failing. The case studies focus on the issues and challenges faced by these re-starters;

3. an empirical analysis of the impact of various characteristics of a bankruptcy regime (such as the existence of a discharge, length of period before one is discharged, etc.) on entrepreneurship. The latter, based on the academic literature, is proxied by the ratio of self-employment to total employment, business births and the number of new businesses being created. A panel approach across all Member States is used in the empirical analysis; and,

4. an empirical analysis of the impact of a higher number of SMEs in the EU28 on EU28 GDP (at constant prices). A three-variables vector autoregressive approach (VAR) is used to estimate this impact.

2. Bankruptcy, Entrepreneurship and Innovation – a short literature review

Bankruptcy laws and the provision for insolvency constitute the institutional setting put in place to regulate debtors/creditors relationships in case the debtors become insolvent. Hart (2000), in his paper on different approaches to bankruptcy, highlights how, in the absence of such an institutional framework, creditors can seize secured assets of the debtors if the latter become insolvent. In the case of unsecured loans, creditors can ask a court to order the sale of insolvent debtors' assets to satisfy their claim.

This procedure may run into serious difficulties when/if insolvent individuals or firms face several creditors with different priority claims. A race by creditors may ensue with detrimental societal effects. These may include the dismantlement of perfectly salvagable enterprises with repercussions on employment or the stripping of assets from families who will then be left to fend for themselves. Even after such procedures, a loss for many creditors may occur (Hart, 2000).

For these reasons, bankruptcy has been one important field of study by jurists with an interest in economic matters and economists interested in law and institutions.

Bankruptcy regimes and the provision for insolvency differ greatly from country to country; however, usually bankruptcy laws are concerned with the impossibility of repaying debts. Debtors may include states and regions as well as corporations, unincorporated and individual firms and personal insolvency.

Regarding the logic behind the use of bankruptcy, there are two main schools of thought. The first is concerned with the upholding of creditors rights to the full, arguing that contractual obligations of the debtor with the creditor constitute a legal entitlement of the latter and therefore the role of bankruptcy law is one of enforcing this right of the creditor; a second school of thought argues that the role of bankruptcy law is not only one of upholding the rights of the creditors but is also part of a country's system of social protection and therefore should take into consideration a wider array of social interests (Mann, 1995).

Obviously, the consideration of the type of debtor and the logic behind the interventions that may exist can be summarised in the form of a set menu (as described in the following matrix.)

Table 1: Matrix of .bankruptcy interventions

	Area of intervention – Consequences	
Level Of intervention	On assets and firm to restore viability and/or fair liquidation	Personal and professional responsibility and fresh start
State/region	…	…
Corporate-limited responsibility	Restructuring, Administration, Liquidation – company's assets	Management*, stakeholders (limited to company's assets and shares)
Firm-unlimited responsibility	Administration and liquidation of personal assets (apply also to partnerships)	Ownership extended to personal and partners
Personal – business	Liquidation of personal assets	Personal consequences
Consumer credit/household	…	…

Note: * = It may or may not include limitations on the continuation of professional duties.
Source: University of Manchester Manchester Institute of Innovation Research.

The object of this study is the bankruptcy of SMEs. We therefore exclude from the analysis issues related to the bankruptcy of states/regions and personal/household consumer credit insolvencies. More precisely, we focus on bankruptcy affecting SMEs incorporated as limited companies and entrepreneurial ventures either in partnerships or solo entrepreneurs.[1]

The elements of a bankruptcy legal framework can be summarised in three main elements spelt out by Hart (2000). They are based on the legal and economic antecedents.

Goal 1) bankruptcy procedure should deliver an efficient outcome

Reason: to avoid further losses in an already detrimental situation, a procedure should try to maximise the total value (in monetary terms) for all parties concerned including the debtor. Of course, measures that penalise or discourage reckless behaviour in borrowing - against the alternative or raising equity capital – should be provided for. This introduces the next goal:

Goal 2) the bonding role of debt should be preserved via penalising provisions

Reason: this objective is based on the idea of creating positive ex-ante incentives to avoid reckless behaviours that may favour bankruptcy.

Goal 3) whilst striving to preserve priority, bankruptcy procedures should also reserve a portion of the outcome to the debtor

Reason: the rule of law, according to which priorities should be respected in bankruptcy and insolvency proceedings, satisfy this objective: however, a balance must be struck between a reasonable system whereby creditor priorities and fate of the debtor after the bankruptcy do not involve too much social loss. In other words, strong pro-creditor procedures, on the one hand, will preserve the absolute priority claims and, on the other hand, by excluding all positive outcome for the debtor, provide incentives to "go

[1] Obviously, the characteristics of a bankruptcy regime also affect an economy's capacity to deal with debt overhangs and, hence, the performance of the economy when it moves through a deleveraging phase following a cycle of excessive credit creation (see Claessens and Klapper (2005) and Bricogne et al. (2016).

for broke". That is, pro-creditor bankruptcy provisions will incentivise high risk investments in a particularly delicate phase in an attempt to delay or avoid insolvency.

The application of these objectives varies from country to country depending on the country' institutional setting and the legal tradition including the presence/absence of specialised judiciary, the corporate governance structure, the level of investors rights and the provision of the financial system (La Porta et al, 1998; Rowat and Astigarraga, 1999; IMF, 1999). A wide range survey of 35 countries' bankruptcy law is provided by Claessens and Klapper (2005). They show that the goals of the bankruptcy laws (summarised by Hart, 2000) are usually part of a complex system of relations balancing creditor/debtors rights, priority claims and an efficient resolution of insolvency.

The implications of the type of bankruptcy laws adopted in any country have clear repercussions for entrepreneurial activity and innovation.

2.1 Bankruptcy and SMEs

The literature investigating bankruptcy and SMEs is varied; three main streams look at the root-causes of bankruptcy, the consequences of SMEs bankruptcy and empirical approaches to predicting SMEs insolvency (which eventually help also in identifying the causes of SMEs bankruptcy).

Root-causes of SMEs bankruptcies

What sets apart SMEs heading towards bankruptcy from healthy small firms?

Throughout the 1990s and the early 2000s a host of studies have tackled this question and provided some answers. The reasons for SMEs to run into insolvency may be either internal or external to the firm.

Reasons for failing which are directly attributable to the characteristics of the firm and its operations comprise the level of education of the owner, the size and the type of the company and the skills of their employees (Bates and Nucci, 1989). The authors highlighted how a group of small firms was responsible for the higher incidence of failures amongst the SMEs and that larger and growth-oriented SMEs were more likely to fail.

Bruderl et al, (1992) confirmed the findings of Bates and Nucci (1989). Head (2003) added also that firms whose ownership had previous experience in running a business, small firms with a wide range of partners and limited overheads were less likely to fail than other firms (also Boden and Nucci, 2000).

Lack of entrepreneurial skills and of formal strategic planning – which are usually correlated – has been also indicated as causes of SMEs bankruptcy (Sullivan et al, 1999; Perry, 2002; Gibbons and O'Connor, 2005).

Thornhill and Amit (2003), studying a set of Canadian corporate bankruptcies, came to the conclusion that failure amongst young firms may be attributable to internal factors such as a deficiency in managerial knowledge and a lack of financial management skills. On the other hand, external factors are more important in older firms' insolvency. Older firms may undergo bankruptcy or insolvency because of their inability to adapt to changes in their competitive environment.

Generally, failing because of reasons external to the firm include a demand deficiency (Smallbone, 1990), the lack of capital investment (Bruderl et al, 1992; Gaskill et al, 1993), adverse market conditions (Kacharakis et al, 1999) and lack of start-up capital (Head, 2003).

More recently, there has been an upsurge of studies on this issue. looking in more details at the characteristics of the firms that may contribute to higher failing rates and the characteristics of external conditions that may increase such rates.

Carter and van Auken (2006), for example, set out to answer this question looking at two samples of SMEs, one comprising bankrupt firms and one including healthy SMEs. Their findings highlight that older firms with low innovation capacity and operation modes unresponsive to external stimuli were more likely to fail than younger firms (in accordance with Thornhill and Amit, 2003). Moreover, the segments of the market targeted by the firm and the sector of operation have effect on the failure rates: firms

engaged within a local market and operating in retail were more likely to fail than manufacturing firms supplying a larger market.

Carter and van Auken (2006) identified a host of 25 potential factors that may have an effect on small firms' bankruptcy (see Table 2 below). They found significant differences for variables such as promotional strategy, long-term business planning, target market, knowledge about pricing, management skills, accountancy skills, relationship with suppliers and firm's growth strategy. The authors also found that the type of ownership has an effect on bankruptcy: sole proprietors or partnerships are more likely to fail than limited liability companies (see Table 2 below).

Table 2: Potential causes of bankruptcy

Respondents Rank the Impact of 25 Potential Business Problems (Impact Variables)

Question[a]	Bankrupt Firms (n = 57) Mean[b]	Nonbankrupt Firms (n = 55) Mean[b]	Differences[c]
Availability of Business Loans	3.56***	3.54***	−0.02
Availability of Equity Capital for Business	3.48***	3.31	−0.17
Availability of Personal Loans for Business	3.56***	3.39	−0.17
Difficult Competitive Conditions	2.73	2.58**	−0.14
Federal Regulations	1.93**	2.62**	0.69
Fraud or Disaster	1.91**	1.92**	0.01
High Cost of Borrowing	3.33***	3.00	−0.33
High Operating Expenses	3.24***	3.31	0.07
High Taxes	3.09	3.69***	0.60
Inadequate Sales	3.38***	4.31***	0.93
Ineffective Promotional Strategy	1.91**	3.54***	1.63***
Inventory Difficulties	1.66**	2.15**	0.50
Lack of a Long-Term Business Plan	2.06**	3.17	1.11**
Lack of a Specific Target Market	1.80**	3.42	1.62***
Lack of Knowledge about Pricing	1.75**	3.08	1.33***
Lack of Management Skills	2.02**	3.17	1.15***
Lack of Money	4.40***	4.54***	0.14
Personal Guarantees for Business Loans	3.50***	3.46	−0.04
Personal Problems	2.20**	2.08**	−0.12
Personnel Problems	2.26	3.23	0.98*
Poor Cash Flow	4.15***	4.31***	0.16
Poor Economy	3.09	3.33	0.24
Poor Financial Records	2.07**	3.08	1.00**
Problems with Suppliers	1.53**	2.46**	0.94***
Rapid Growth	1.71**	3.17	1.49***
Mean Rank	**2.65**	**3.19**	**−0.54**

Source: Carter and van Auken, 2006, p.503.

Further analysis brought the authors to conclude that lack of, or inadequate, knowledge in strategic areas, inaccessibility to debt financing and the general economic climate are the principal factors responsible for SMEs bankruptcy.

In the following years, other studies were undertaken to verify and refine these findings. For example, Madrid-Guijarro et al (2011) looked at non-financial factors associated with financial distress.

The authors considered a large sample of Spanish manufacturing SMEs, split in high- and low-technology intensity industries. The authors confirmed that some environmental conditions and strategic variables are significantly linked to companies' financial distress. In particular they found that manufacturing firms may experience significantly more financial distress if they operate in low-tech sectors which are demand-dominated and their niche is particularly crowded with competing companies.

Within the low-tech sectors, the more technology-endowed firms (and those with superior technological equipment) experience less financial distress than the less technology-endowed firm within the same category. This means that innovative firms will likely undergo less financial distress than other companies even in low-tech manufacturing sectors.

In high technology sectors, firms with formal quality control procedures in place experience less financial distress than those firms which do not have quality control certification. Moreover, experience, innovation and quality of the products are discriminant variables for assessing the likelihood of financial distress. The correlations between financial distress and these variables are negative and significant.

2.2 Bankruptcy and entrepreneurship

Exit is part of the life-cycle of a firm and bankruptcy is part of the firm exit process. Bankruptcy laws, a part of the institutional setting within which firms in a country operate, constitute a particularly important policy lever that may affect directly the opportunity cost of entrepreneurship. With a keen view on the societal effect of entrepreneurship, and other complementary observations, it is possible to elaborate on the opportunities arising from particular elements of the bankruptcy legal framework.

Lee et al, (2007) argue very strongly in favour of an entrepreneurship-friendly bankruptcy law. In detail, the extent to which a bankruptcy law may be punitive towards the insolvent entrepreneur on the one hand, curbs firms entry within the economy since only entrepreneurs with a high risk predisposition may be enticed to set up business. Moreover, on the other hand, firms that may be in financial distress have the perverse incentive of 'going for broke' and engage in high-risk investments rather than opt for bankruptcy, restructure or start anew (Hart, 2000).

Lee et al. (2007) argue that the propensity-to-risk threshold of entrant entrepreneurs may be lowered through entrepreneur-friendly bankruptcy laws so that less risk prone individuals may consider the option of starting up. Translating real option theory to a societal level, Lee et al (2007) support the idea that a society would be generating much more real options by entrepreneurs if more and varied entrepreneurs are allowed to enter and set up business. Variety, they argue, would be assured by the entrance of increasing number of firms with high growth potential and a decrease of the relative number of failing firms (compared to the total pool of firms in operation).

In this case, increasing variety of firms would work for an economy in the same way as a real option portfolio would work in investment decisions. In particular, from a societal perspective, the firm portfolio can be seen as a bundle option whereby the failure or exit of firms is compensated by the overall increasing activity of firms that continue operation and new entrants. Moreover, it is argued, failure may also provide relative societal benefits especially when considering that in tackling failure, managing the costs of bankruptcy may reveal to be the most efficient option.

Armour and Cumming (2008) tested these hypotheses using data from self-employment over 16 years in 15 countries in Europe and North America.

Controlling for GDP, GDP growth and stock returns and other legal and social variables, the authors set out on a methodology to assess the severity of the bankruptcy laws in the various countries. The authors considered the possibility and time to discharge – 'fresh start', that is the amount of time that a bankrupt individual may have to spend before being able to resume entrepreneurial activity (if at all). The scope of the exemptions, i.e. assets owned by the debtor that cannot be seized by the creditors, is another indicator of the severity of the bankruptcy law as well as disabilities or restrictions imposed on the

insolvent individual during the bankruptcy process. The final factor considered by the authors is the complexity of the decision process in reaching an agreement with creditors.

Significant differences between countries were identified in the time to discharge. Their empirical results show that a 10-year reduction in the time to discharge is associated with some 1.03% increase in the rate of self-employment. In the period considered, the most forgiving bankruptcy law (the USA) and the least forgiving one (Italy) would produce a difference in self-employment rates of almost 4%. More details about this study and some updates are provided in Chapter 4.

Lee et al, (2011) expand further on the study by Armour and Cumming (2008) by analysing more countries (29) over a longer period (19 years) and considering also changes/reforms in the period.

The variables considered by the authors are: 1) the length of the bankruptcy procedures; 2) the cost of the procedure; 3) a fresh start in liquidation; 4) automatic stay of asset; 5) the possibility for the management team to retain their position after the process.

In this case the authors also use a host of control variables in order to assess the incidence of external variable on the new-firms entry (dependent variable).

The authors found a strong positive and statistically significant effect of fresh start on new entries with a marginal effect of 0.113. Moreover, advancing on Armour and Cumming (2008), Lee and colleagues found that both the absolute cost of bankruptcy and the time spent in dealing with the procedures are negatively and significantly linked to new entries (with a marginal effect of 0.1 and .113 respectively).

These results support the view of Lee et al., (2007) and others (Hoetker and Agarwal, 2007; Peng et al., 2010) who argue that failure, though detrimental for the bankrupt entrepreneur, may involve economic and societal advantages since it contribute to lower barriers to entry and encourage the entrepreneurs to take risks that creditor-friendly bankruptcy laws would discourage. Moreover, it may in fact increase the number and variety of firms within a country leading to higher entrepreneurship and growth according to the real option theory.

2.3 Bankruptcy and innovation

Akin to the case of real option theory, Acharya and Subramanian (2009) argue that in economic systems with a creditor-friendly bankruptcy code, firms have an incentive in investing in conservative technologies rather than in innovative ones. This happens because higher risk is associated with innovative technologies which, in pro-creditor bankruptcy systems are crowded out by low risk and also low tech/conservative technologies.

The authors set out to test this hypothesis looking at the changes in the Bankruptcy Laws in about 50 countries, using patent indicators (patents applied for in one year in an industry, number of patents citations and number of firms filing for patents) obtained from the USPTO and subdivided by industry according to the ISIC classification, as proxy for innovation. Information on creditor rights indices and within country changes of such indices are obtained from Djankov et al (2007). The patent indicators constitute the dependent variable. Various control variables are also used: 1) a country's bilateral trade with the US; 2) a country's comparative advantage for ISIC industries; 3) GDP per capita.

The authors found that a change in creditor rights has a large and significant effect on the three indicators of patenting. In countries where creditors rights decreased, the more innovative industries generated substantially more patents (11.5%), 29.3% more citations per patents and more firms (10.5%) began to patent compared to adjacent classes of less innovative industries.

Given the lack of data for all 50 countries, the authors proceeded to analyse the effects of bankruptcy laws on leverage choices only for the G7 countries. They found that in pro-creditor systems, innovative industries, compared to less innovative ones, leverage less capital from debts (either operative debts, bank loans, non-equity market debt etc) showing a stronger preference for keeping cash reserves rather than investment. This preference constitutes a detrimental environment for innovation.

Manso (2011) further examined these findings in a corporate context. The author found that incentive schemes that favour and motivate innovation have a substantial tolerance – sometimes even reward -

for early failure (fail fast, fail cheap) in the short-term whilst exhibiting long-term reward schemes for success. The latter consist in long-term compensation plans, job security, and feedback to individuals' performances.

In relation to financing R&D, Brown et al (2012), analysing a large European sample of firms, found that external sources of finance are used by companies in order to smooth their R&D financing process in tandem with company's cash reserves and equity capital. Similar findings have been obtained by Hsu et al, (2014) looking at a large set of firms from 32 countries comprising developed and emerging economies.

These studies extend and highlight the importance of the findings by Acharaya and Subramanian (2009) whereby negative incentive on leveraging debt capital might be detrimental for innovation since this kind of resources are put to good use (in a mix with own cash and equity capital) by high-tech intensive companies with disproportionately higher innovation capabilities.

3. Case studies of re-starters

The write-ups of the 12 case studies provided in this section focus on entrepreneurs who have created a new business after their previous business went bankrupt or was voluntarily closed because it was failing.

Key points in the case studies are the issues and challenges faced by these re-starters.

Case study 1: Timothee Bardet: RELYING ON INVESTORS RATHER THAN BANKS

1. TIMOTHEE'S PROFILE

Timothee Bardet is a **young entrepreneur** who co-founded a first enterprise project – a company specialized in **IT servers** – around 18 years-old. He left it just before it "*really started to work out and take off*". The company which was based in Paris was eventually taken over by another IT company for "*a lot of money*" 8 years later.

After having completed his MSc. in Management and Entrepreneurship, Timothee founded his second enterprise "Time2Market" in **Switzerland**. Together with his two associates, he wanted to develop a visual **e-commerce platform** based upon the capture of real places all over the world. Unfortunately, his second entrepreneurial adventure was not successful. Time2Market stopped its activities 1 year and 5 months after its creation.

There were three main reasons that had led to the failure of Time2Market:

1) **Diverging strategic vision:** at one point, the three associates did not share the same vision for the company. They could not agree anymore on developing the company's activities along a particular market segment, neither could they develop a common strategy to seek new sources of financing.
2) **Wrong product:** The product they wanted to sell was too costly to develop and was not really adapted to the market they targeted.
3) **Wrong allocation of time:** Timothee and his associates were spending most of their time raising funds instead of focusing on their clients and developing their core activities.

Just after Time2Market, Timothee worked for a growing start-up "WISeKey" in Geneva. "*It helped me to recover*". Nevertheless, 2 years after he decided to found an enterprise again: "*I was hooked. Entrepreneurship is like having a virus*". He created "Up-to-Wine" – a company specialized in the **e-commerce of wine** – in 2012. Since then, Up-to-Wine has merged with Wiine.Me and is running smoothly. It now employs 10 people, has office space in Switzerland and Germany and sells its wine subscriptions in eight European countries.

2. HIS EXPERIENCE OF FAILURE

"*It is bits by bits"* that Time2Market started to accumulate financial problems. "*First, we saw that it was getting more and more difficult to find new clients who were willing to pay for our service at a high price. We decided therefore to take another orientation. We did that once, twice, three times, but at the end, it became complicated as we had not enough cash. At the end, we were short in money and had to lay off our three technicians. We could not pay ourselves neither*".

Timothee and his associates thought that "*it was better to stop*" and each moved to another path. They did not have to declare for bankruptcy as they had **not contracted debts**. "*We had only attracted private capital. The investors had accepted to take some risk. We hadn't taken any loans or credits*". They therefore avoided the legal proceeding that is usually associated with bankruptcy. Nevertheless, this failure had an important "*moral impact*" on Timothee. It took time for him to recover.

3. AVAILABILITY OF A SECOND CHANCE IN SWITZERLAND

According to Timothee, Swiss investors start to **see failure differently**. "*It is valued especially if the entrepreneur can explain it. For example, if the entrepreneur says that the market was not ready, it is not going to work. Such classical answer means that the entrepreneur has made a strategic error and that it might happen again. But if he says that he didn't go fast enough or that there was a problem within the team, the investor will understand him better*".

Timothee mentions that this change is especially present in the case of what he calls "**strategic investors**", that is investors who are themselves often entrepreneurs, with a good track-record, and who "*bring not only money but also their expertise and knowledge in a young start-up*". In his opinion, "*failure might still have a negative impact when approaching **public investors** because they will give you less opportunity to explain yourself […]. The selection procedure they use is still quite mechanical, for example with a background check in case of a start-up competition*".

Besides, entrepreneurs, in particular entrepreneurs under 40, dare to share their experience of failure more and more. There is a "*generational effect*", but not only. "*Today, a new enterprise can be created quite fast because it doesn't' necessarily need huge investments. This allows the entrepreneurs to recover faster, and therefore they dare to speak about their experience of failure more easily*".

4. FUTURE IMPROVEMENTS

Timothee has raised mainly one area for improvement as regards second chance in Switzerland, which relates to the **access to unemployment money. "***Once an entrepreneur found his company, he loses his right to access unemployment money while he must pay taxes to finance it. This does not make any sense […]. A minimum of security should be given by the state to entrepreneurs, both at the end but also at the beginning. There are lot of people who would like to start a business activity but who cannot as they didn't save sufficiently to sustain themselves during the first months of the company, when they aren't able to make any profit yet*".

Case study 2: Alex Christodoulou: FAILURE IS WHEN YOU GIVE UP, NOT WHEN YOU CLOSE A PROJECT

1. A FIRST TRIAL

Alex is a **Greek entrepreneur** who founded his first venture "**Locish**" in April 2012 in Athens. Together with a friend, he wanted to develop a **Q&A mobile app** that would enable users to ask like-minded people for real-time recommendations on new places to eat, drink, and have fun. "*We always said we wanted to do something on our own, something big. We decided to quit our jobs and everything. We sold all our belongings to have some money to start up".*

After 5 months, Alex and his partner managed to obtain a Greek fund (Open Fund) to develop their business idea further. As they wanted to deploy their app in other cities than Athens, they decided to head to San Francisco and New-York City. Once in the US, they raised a second round of capital and obtained a total of 600k from two American business angels and two Greek funds (Open Fund and Odyssee). From that moment, they focused on scaling up their business and offer. Unfortunately, after 2 years and many trials and changes of approach and strategy, Alex and his partner came to the conclusion that "*the value we offered with our app was not big enough*". They could simply not attract enough users. "*When we saw that there was nothing else to try, we decided to give back the money that was left to the investors and stop with the company*".

In November 2015, they had no business and money left. "*We had to decide what we would do with the rest of our life*". They borrowed money from friends and took 3 months off to rest in Greece and think about the next step. After their break they decided to start a new business and headed to London.

2. STARTING OVER

In February 2015, Alex and his partner founded their second venture "**Weengs**". They chose London as the city could offer them more opportunities than Athens or any other European cities. "*The business we wanted to start was about **shipping**. We started to do some research in Greece to see if we could start in Greece, eventually with a smaller starting capital. But we found out that Greece was not a good environment for that business. On top of that, we wanted to be the first to offer this specific shipping service in Europe. So we needed to choose the biggest possible market in Europe, and that was London. So we came here and started a business here*". From London, they looked for capital and raised some seed money from angel investors to support the development and launch of their new app.

Today, they are closing the second round of funding and their business seems to take off. They even plan to recruit a whole business team in the coming month. "*The business is now doing very well, so I don't think that this time we will fail. Nothing is sure yet, but we feel it is going properly. The service we offer is something very useful, customers are getting crazy about it. They pay, so it's good. We start to have a large base of customers, many transactions and good growth.*"

3. KEY FACTORS FOR SECOND CHANCE

While reflecting on his experience as entrepreneur, Alex mentioned four elements that have helped him to start afresh:

- **Draw a red line at the start**: Before starting his business, Alex took the time to discuss with his partner about what they would do in case their project would not take off as expected. "*When we started our venture, we had discussed about when we would stop. We had agreed we would stop only if there was nothing else to try. As you will be confronted to a lot of pressures for example from investors, you have to set a red line for yourself before starting. If you didn't, there will be no red line to cross, and you will end up trying and trying and lose time. And time is the most important aspect*".
- **Take time to reflect**: Taking a break right after the failure of Locish has helped Alex to not rush in anything he might have regretted afterwards. "*After the failure, we were both thinking for taking a job*

in a start-up or something similar. But then we thought, let's take the time to avoid taking a wrong decision. We both borrowed money from friends. We didn't work to take some time to see what we were going to do next. This was really a very useful period in our lives."

- **Investors who believed in them**: Even though Alex's first project did not work out, some of the investors continued to believe in him and his partner and therefore were ready to invest in their new idea. "*He was calling us saying 'guys, enough of getting rest, move to your next venture and I will invest in you'. He still believed in us. He thought that we, as a team, could still make something successful. And this is an important thing with business. In my opinion, there was no failure, because failure comes with the team and not with the project. It comes when the team stops, not when the product stops (…) the investor knew that*."
- **Don't let yourself get depressed:** According to Alex, having a second chance will only depend on the entrepreneur and how he handles his failed experienced. "*There is a lot of money available at the moment in Europe. There is also the free market so it is possible to try new products more easily. It is actually very easy to start over and over again. People stops because they get depressed. You have sacrificed everything and you have to do it again (…). Some people simply can't handle a second stressful period again*".

4. FUTURE IMPROVEMENTS

Alex has raised two main areas for improvement as regards to second chance in Greece:

1) **Better conditions for start-ups:** less bureaucracy, lower starting capital, and no tax below a certain revenue like in the UK
2) **Limited liability of the entrepreneur in case of failure.**

Case study 3: BRUNO DELCAMPE: A SECOND LIFE DEDICATED TO HELP ENTREPRENEURS IN DISTRESS

1. BRUNO'S PROFILE

Bruno Delcampe is a French entrepreneur who was hit by the **2008 financial crisis** severely. In 6 months' time, his **construction company** that employed more than 100 employees and reported a turnover of 10 million euros and an annual profit of 400,000 euros went bankrupt and sold for the ridiculous amount of 10,000 euros. After an 18 months long in-court insolvency procedure, Bruno had lost everything: his company which he had ran for 25 years of his life, but also the majority of its personal assets. As he says himself, without the unconditional support of his wife he would not have survived. He was alone, depressed, and could not see a way out of his misery. He did eventually and, since then, has dedicated his life to help other entrepreneurs to never experience such a tough situation.

2. ACTION!

SOS Entrepreneur:

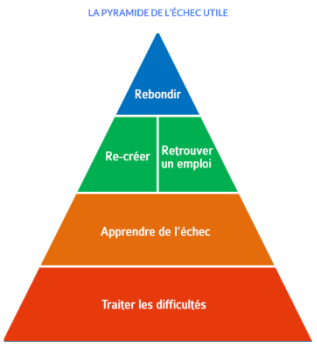
In 2011, Bruno created the non-profit association *SOS Entrepreneur* in the northern part of France. *SOS Entrepreneur's* objective is to help entrepreneurs in financial distress find solutions to overcome their problems. Four services are proposed:

1) An emergency line 24/7
2) An emergency face-to-face meeting within 8 hours
3) An emergency support within 24 hours during which an "**anti-crisis strategy**" is developed. This support can last between 3 to 6 months.
4) A ***SOS entrepreneur press agency*** that helps entrepreneurs in financial distress to increase their visibility on the web.

With these range of services, SOS entrepreneur aims to **support the entrepreneur in distress BEFORE the liquidation** of his/her company, either by helping him/her to:

1) Renegotiate with the creditors his/her company's repayment timetable, etc.
2) Restructure his/her company by following a merger and acquisition strategy
3) Found a new company or business activity while letting his/her failed company slowly going through the liquidation process.

According to Bruno, this is the best, most efficient strategy to help an entrepreneur in financial difficulties: "*it is simpler to recreate value from something that does exist already especially if its economic model is solid [...]. Besides, an entrepreneur who went through the whole judicial bankruptcy process is a man/woman who is completely broken, devitalized. It is therefore very difficult for him/her to restart at that moment*".



Lobbying against the 040 listing:[2]

Together with other associations, SOS entrepreneur worked closely with the cabinet on the abolition process of the 040 listing in France. "*We were closely involved with the cabinet during the whole procedure*".

Portail du rebond des entrepreneurs[3]**:**

In 2014, *SOS Entrepreneur* created the *Portail du rebond des entrepreneurs* with three other non-profit associations (*60,000 Rebonds*, *Recréer* and *Second Souffle)* and the support of the Ministry of Economic Affairs, SMEs and Innovation. "*We developed this portal to force things to change*".

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[2] The Banque de France used to put a special 040 code next to the names of bankrupt clients in its credit database, accessible by commercial banks and other lenders.

[3] Portal for second chance entrepreneurs.

Thanks to this portal, entrepreneurs in distress can easily find the associations most able to fulfil their needs. It also has for objective to convey the concept of "***useful failure***", a concept that is detailed in the ***Pyramide du rebond***[4].

3. AVAILABILITY OF A SECOND CHANCE IN FRANCE

Lack of public initiatives:

According to Bruno, not many initiatives have been taken by the state recently as regards SMEs and second chance. The last one he knows of is the abolition of the 040 listing with "*Fleur Pélerin being the first Minister to concretely do something about this issue*". On the contrary (and as illustrated above), the world of societies is very active. Nevertheless, "*things start to change slowly in the political arena*".

Inefficient public assistance:

In France, there is a series of public and/or private organizations that provide services to entrepreneurs in distress (e.g. regional council, intervention and prevention centres, chambers of commerce, court committees). However, according to Bruno, these organizations do not provide the support entrepreneurs need: "*they give them information about the law and the bankruptcy process but cannot provide them with advice. From the moment an entrepreneur get into financial difficulties, the system leaves him alone. Luckily, some associations are there for example SOS Entrepreneur or Second Souffle who provide financial support to the entrepreneur to meet his/her family's needs*".

4. FUTURE IMPROVEMENTS

A few months ago, Bruno has submitted, on behalf of *SOS Entrepreneur,* a detailed list of propositions as regards second chance to the Minister of Economic Affairs and Industry, Emmanuel Macron. His main propositions relate to:

1) **Securing the entrepreneur against long term unforeseeable risks**
2) **Creating a compulsory company health insurance** in order to pay the anti-crisis experts helping the entrepreneur in time of financial difficulties
3) **Setting up a minimum salary** for entrepreneurs whose company has been liquidated (based on the company's history e.g. number of employees and bounded in time)
4) For entrepreneurs who chose a multi-year debt repayment plan over liquidation: Enabling the **conversion of the entrepreneur's judicial debt into a conventional debt** after a 2-3 years' period
5) **Rewarding and providing financial support to associations and other organizations helping second chance entrepreneurs to get a fresh re-start**.

[4] Second chance pyramid (from down to top): (1) treat difficulties, (2) learn from failure, (3) recreate – find a new job, (4) restart.

Case study 4: PHILIPPE DUHAMEL: A SUCCESSFUL SERIAL ENTREPRENEUR WITH A FALSE START

1. PHILIPPE'S PROFILE

Philippe Duhamel is an **internet software entrepreneur** who has founded and co-founded several IT service providing companies in **France**, including Ilixo, Kadeal, One Clic Conseil and CLUSTAAR. His **last entrepreneurial adventure** is CLUSTAAR: a start-up founded in 2012 that helps companies extract marketing knowledge from what consumers search for on the internet. Today, CLUSTAAR employs 14 people, mainly engineers and data-scientists, and has offered its services to a wide range of clients across industries such as Danone, BNP Paribas and Louis Vuitton.

2. A FALSE START WITH CONSEQUENCES

Philippe's first entrepreneurial attempt goes back to Ilixo (2005-2009), a company that they "*virtually closed down*" to set up a new one, Kadeal (2009-2012).
With LLixo and especially its unnecessary bankruptcy, Philippe encountered his first difficulties as "failed entrepreneur". Back then, filing for bankruptcy was going hand in hand with being listed in the France's Central Bank (040 listing) and with the "*whole cascade of barriers*" that this implied.

i. No right of opening a bank account

In summer 2012, Kadeal went bankrupt because of a lack of funds. Having lost his income, Philippe started to provide IT consultancy services as a freelance professional, but could not get paid for the services he provided as he was unable to open a professional bank account: *"all the banks in France didn't allow me to open a bank account because they had seen I was listed at the France's Central Bank" (040 listing). "It was an absurd situation: I had clients who wanted to pay me but were not able to because I had not a proper bank account".*

ii. A bank account, yes, but with limitations

Eventually Philippe found a way to partially circumvent this problem via the "Deposits and Consignments Fund". The public financial institution enabled him to open a bank account at the bank of his choice where I could deposit my clients' cheques, but could not benefit from the bank's payment services (i.e. credit cards, online banking and cheque book).

iii. Absence of transparency

Finding a solution for his banking problem was not easy. It costed him a month of intensive research. "*It was a very big wall. I got some information from my own network and needed to dig deeper on my own. It wasn't written anywhere. It is actually how the system works: there is a solution but you don't have to show it, to shout it from the rooftops".*

iv. A sticky label

Three years after Ilixo's bankruptcy, Philippe's 040 credit score was deleted. However, his bank still didn't want to grant him access to the whole package of services. "*With us, you will never have that*". A change of bank was therefore required.

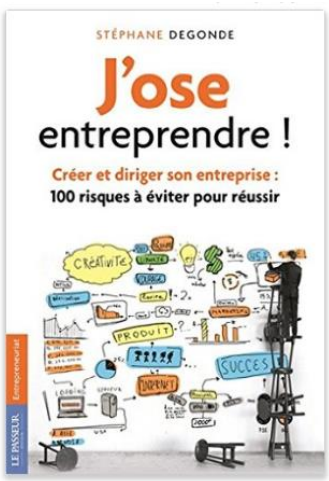
3. AVAILABILITY OF A SECOND CHANCE IN FRANCE

An unsupportive system:
Philippe has noticed positive changes in the availability of a second chance for honest entrepreneurs in France. For example, since the difficulties he faced in 2012, the 040 listing was abolished: entrepreneurs

who have failed once do not have to bear the heavy consequences of being listed at the France's Central Bank anymore. However, there is still a long way ahead. According to Philippe, « *the system punishes entrepreneurs who have failed instead of supporting them to start anew* […] *People still do not like failure, and the banks' conception has not changed*".

The youth on the move:

Philippe clearly sees changes in the way today's entrepreneurs perceive failure, especially in the new generation. **The taboo is fading away**. Younger entrepreneurs now perceive failure as a "*prerequisite*", "*an experience from which you learn*". "*The younger generation speaks about it in a very positive way […] while people from my generation (born in the 70's) feel embarrassed*". "*It becomes a bit like in the US*". **Constructive initiatives start to develop**, **particularly in start-up environments**. For example, events have been organized around the topic of failure such as the *Fuckup Nights*. Failed entrepreneurs also wrote or contributed to books on the topic (e.g. *Stéphane Degonde, J'ose entreprendre !*).



According to Philippe, this trend is due to a **different teaching approach** in business schools and other higher education institutions. Entrepreneurship is now perceived as a "*discipline in its own right while it was not the case earlier*". Also "*we see more entrepreneurs, people who founded start-ups in the years 2000, now teach in business schools. They know what it is. This prompts changes*". The **social Medias** play a big role also. "*Lots of people write about failure". "Experiences are shared and all of this gets into people's minds*".

A strong network of entrepreneurs

Since the crisis, Philippe has witnessed that French entrepreneurs are better organized and more able to speak with a unified voice. New clubs of entrepreneurs have been created, for example *France Digitale*, which are less politicized and more transparent than the older ones. Meet-ups for entrepreneurs have mushroomed in Paris but also elsewhere. New non-profit associations have also been founded, for example, *60,000 Rebonds*. According to Philippe, all these initiatives, and their media coverage, force politicians to act and create a better, more supportive environment for entrepreneurs in France. For example, *60,000 Rebonds* seems to have played a big role in the abolition process of the 040 listing in 2013. Nevertheless, Philippe fears it will take time to develop such environment. Politicians still do not know enough what an entrepreneur's daily life and struggle look like.

4. FUTURE IMPROVEMENTS

Philippe has raised three main areas for improvement as regards to second chance:

i. **Stronger support and reduction of the stigma of failure;**

ii. **Financing for honest failed entrepreneurs, e.g. development of special loans;**

iii. **Simplifying procedures and lower the administrative burden associated with starting a new business: "***Actually I believe that the administrative burden associated with starting a new business has been simplified quite a bit. It's the banks' attitude that need changing. An area of improvement would be to integrate into the administration structure (like Pôle Emploi) services or help to get failed entrepreneurs to connect and exchange information and tips. That would be a big step toward acknowledging that failure is OK.*"

Case study 5: Oleg Fomenko: EUROPE NEEDS TO START CELEBRATING ITS ENTREPRENEURS

1. OLEG'S PROFILE

Oleg is a Russian entrepreneur who has created three **mobile apps start-ups in the UK** between 2004 and today.

Oleg doesn't consider his first start-up "**SMS Parking**" (2004-2005) as a company as such. For him, it was more a product which he tried to develop and market with his partner, but unfortunately without success. "*We tried to sell our product but we could not go around it, and we were right because the first system like that appeared in 2012. So we were 8 years too early. In 2004, there was no business angels, no crowdfunding etc., so it was difficult to find investors. The product was an app that would enable people to pay for their parking with their mobile devices so they didn't have to pull out cash from their pocket and feed it into the machine (…). Unfortunately, we didn't find people who wanted to buy it. We had to work with the government who owned parkings. But there are not so many technology savvy people in the administration (…). They were interested, excited, loved the demo, but they were not about taking risk. At some point we could not continue like that anymore.*"

After SMS Parking, Oleg worked for a private company in order to "improve his balance sheet". Yet after a year and half, he launched his second company called "**Bloom.fm**". Bloom.fm was a mobile music streaming service which at its best attracted 1.2m registered users in the UK. During 6 years, Oleg managed to raise £16m, built a team of 32 people, and offer great services to users. Yet, in 2014, he needed to close down the company as the major investors decided to pull-out and no alternative investors could be found. "*We had to close it because it was mainly funded from Russia. At that time, Europe and the UK put sanctions on Russia. It just became politically impossible for my investors in Russia to continue funding a business that was creating jobs in Europe. They had significant stake in the business. It was easier to liquidate the business than to go to look for other investors and go through transactions*."

Today, Oleg is working on developing his third company "**Sweatcoin**" which he created mid-2015. It is an app that aims at improving people's health. It pushes them to do sport by "*converting their sport activities into a virtual currency to maintain their motivation*". Sweatcoin now employs 8 people and "i*s in a good shape*".

2. HIS EXPERIENCE ABOUT BANKRUPTCY

Oleg explains that the liquidation is a "*very, very long process*". The liquidation process of Bloom.fm started in 2014 and is still not closed. He doesn't know why it has to take so long. Besides, he is required to provide curators with documents or information once in a while, something he "*would rather avoid but can't prevent it to happen*".

He also tells that the liquidation is a very costly and difficult process. "*I ended up in a very, very difficult situation because I needed to take the whole responsibility for liquidating the business while the business was not paying me a penny. I could see that liquidators as well as lawyers wanted to make lots of money, which frankly is a very unfortunate situation today (…). Personally, I had to move out, put my kids out of the school because I could not afford to pay it anymore. There was no unemployment, and health insurance I could tap into because I was an entrepreneur.*"

3. AVAILABILITY OF A SECOND CHANCE IN THE UK

In the UK, failure is still not well perceived which impede entrepreneurs to rebound right away. "*Here if you fail, you fail. It took quite some time for my new ideas to crystalize. I started this business only in September*

2015. So it took one year and a bit to crystalize the idea and put together my family and friends' funding to basically start working on it."

4. FUTURE IMPROVEMENTS

Oleg has raised three main areas for improvement as regards to second chance in the UK, and more in general Europe:

i. **Liquidation process should not require entrepreneurs' time:** "it has been a drain, psychologically and time wise"

ii. **Financial support for entrepreneurs in the process of bankruptcy**

iii. **Ease the access to private loans from banks (e.g. mortgage to buy a house):** "I could not get a mortgage to buy a house because I am an entrepreneur (…). Entrepreneurs are considered as a high risk by banks. They don't give us a mortgage. It really, really annoys me (…). Young graduates actually now prefer to work for a private company, just to be able to buy a house. It does not encourage them to start up their own business".

iv. **Celebrate entrepreneurs in Europe like in the US:** "The culture in the US is inspiring and amazing for entrepreneurs. Here in Europe, if people leave the university, they are not going to become entrepreneurs. It's not the same. If we want more things happening here and have more innovations, culturally, we have to change. In the US, people talk about entrepreneurs. Here, it is not the case. Entrepreneurs here are not pushed as role model to young people as they are in the US. Governments can help by pushing forward this role model (…). They should celebrate them more".

Case study 6: Sylvain Tillon: A FAILURE OF A YOUNG ENTREPRENEUR

1. SYLVAIN'S PROFILE

Sylvain is a **French entrepreneur** who founded his first company at a **very young** age. He was only 22 and had just finished his degree in business management when he started "Lucyf'Hair" – a company specialized in the **manufacturing of luxury hair jewelleries**. It was in 2003. According to him, his age in combination with his lack of knowledge about the market and a project that was too novel were the factors which led to Lucyf'Hair's failure in 2009. "*We made it very complicated for ourselves, but at the end it was an amazing experience*". He explains that 2008 was his first positive year. Together with his associates and team, they had reached a turnover of €500,000.

However, in 2009 they could feel the effects of the crisis. The trade fair where they had managed to make most of their business the year before was cancelled for lack of exhibitors. They knew that in 2009, they would only be able to make 40% of their 2008 turnover. As a consequence, they decided to declare for bankruptcy "*while there was still a bit of money on the bank accounts. We paid all of our employees, but we knew we would not be able to repay the credits we had contracted with some banks. We also knew that our investors had lost the money they had invested in us. It was not funny".*

Since Lucyf'Hair, Sylvain has founded two other companies. He founded "Sydo" – an agency that proposes innovative solutions to facilitate learning – in 2009. More recently, he founded "Tilkee", a company that proposes to its clients a **software** that helps them to track their business proposals and boost their prospect follow-up.

2. HIS EXPERIENCE WITH THE BANKRUPTCY PROCEDURE

"*The court, it was worse than I had expected*". Sylvain explains that the judge took his dossier and decided in two seconds to stop everything. For Sylvain, "*it felt very strange as there is suddenly nothing going on anymore*". Sylvain also found the behaviour of the **curators inhuman**. "*When I met the curator, I was still totally ashamed. It was not cool what was happening. He knew I had started a new company and told me "if I asked you a question, I want an answer within 24 hours otherwise you will not be allowed to be involved in the management of any company". That freaked me out because I had given everything for Lucyf'Hair*".

Sylvain was also shocked by the **behaviour of the auctioneer**. "*He was like a shark. He called some of his friends saying they could make a good deal by buying my company […]. I didn't know them […]. They offered €2,500 for the company while there was still jewelleries for about €20,000, a patent we had bought for €80,000 and a client database. I was really shocked […]. Luckily somebody else made a better offer whom we knew before*".

Sylvain had problems with a bank also concerning a **guarantee** that had not been properly explained to him. At the start of Lucyf'Hair, he had subscribed for a special guarantee, the guarantee OSEO - that would protect him in case of problems. With that guarantee, he would only be liable for 30% of the credits. When Lucyf'Hair went bankrupt, Sylvain informed the two banks where he had contracted loans about his situation. The first bank didn't pose him any problem. He needed to repay only 30% of what he still owned. The second didn't agree. "*They attacked me while I didn't have anything anymore, they wanted me to pay 100%. At the end, I won but not because they were wrong, but because they had made a mistake in the contract*".

3. AVAILABILITY OF A SECOND CHANCE IN FRANCE

In 2009, there was still the **040 listing** in France. For Sylvain, this listing had actually a positive impact in the way he handled the start of his second company. "*I had access to nothing, so I needed to do it on my own without any support of the banks. I needed to have a new project that was less innovative but that could*

make money quite fast. Luckily, I also had opened a bank account just before declaring for bankruptcy. Otherwise I would not have been allowed to open one once the bankruptcy was declared".

Once Sylvain started to make money, banks and investors started to **trust** him again. He could ask for a new credit. Nevertheless, he learned that the investors of Tilkee had made a research about him and his personality before deciding to invest in his company "*because of the failure that had happened 8 years ago*". "*Me I thought that my failure was going to be seen as something positive. I thought "ok I already messed it up once, they know I will not do the same mistakes again", but it was not the case. For them, there was something suspicious".* He also mentioned that he had many difficulties getting a loan for buying an apartment, "*even after 3 good, positive years*".

In Sylvain's opinion, people are a bit **less ashamed** to say they failed nowadays. "*We speak more about it. Maybe it's because people start to realize that being a successful entrepreneur is tough […]. But banks haven't changed. For them, if you fail, you fail no matter whether there is the 040 listing or not […]. I had the need to speak about it, to write about it […]. I even wrote a book with other "failed" entrepreneurs that will be published soon […]. It is about the mistakes that we have done*".

Sylvain thinks that there is **not much information available about the bankruptcy procedure** and that it would be good if there was. "*Luckily, I knew quite a lot about it because I have friends who are lawyers. They told me to stop while I still had money, and especially sufficiently to pay a lawyer […]. Actually, there are plenty of solutions available when an entrepreneur is confronted to financial difficulties but has not declared bankruptcy yet. But we don't know them. It is crazy to think that having access to this information can help you to not make the biggest error of your life and go in the red indefinitely […]. The more you have anticipated it, the easier it will be to start afresh […]. I know that there are some efforts that are made for explaining the procedure to entrepreneurs, but more should be done".*

Case study 7: Geoff Read:
THE FORGOTTEN START-UPS OF THE MANUFACTURING SECTOR

1. GEOFF'S PROFILE

Geoff is an **Irish serial entrepreneur** with over 30 years of experience in the **food and drink industry**. He founded the **Ballygowan Spring Water Group** in Ireland in 1983. Over the next 12 years, he built it into the number one brand of bottled water in Ireland and UK before selling it in 1993. In 1995, he set up a wine business called **Grape Expectations** which created a new concept of selling wine in small quarter bottles, something new at that time and which is now an established part of the market for wine worldwide. After the financial crisis in 2012, it became difficult to generate sufficient revenues from Grape Expectations, so Geoff decided to sell the business in 2012.

In 1995, Geoff also led the acquisition of the **London Irish Rugby Club**. He stayed as executive chairman of that company for 6 years and contributed to shape the future of rugby in England and Europe as a professional sport and business. "*That was the beginning of the professional rugby era (…), and in that period we made most of the core rules that apply today*".

After a year of serving on the board of the **Alban Group**, a major outdoor advertising group in the UK which was eventually sold in early 2000, Geoff was asked to become the chairman of a new, innovate company called **Green Drinks Company**. This was in 2005. "*I invested in that business. It was a business which developed a new technology for vending drinks in situ. It was very cutting edge and very different to what exists. The product is made in the machine rather than you bringing a finished product in a giant fridge*." Although the company had a lot of potential, Geoff and the founders decided to close it down due to a lack of funding.

Since 2013, Geoff is busy developing his breakfast drinks company, **Nosh beverages**. The company is still in an early stage of development. Yet, in 2015, they began trading in multiple stores in the UK and market chains in Ireland. The company now employs 3 people.

2. HIS EXPERIENCE ABOUT FAILURE

"The failure was not in the business model. It was largely due to a funding crisis when the main investors decided to back away."

The vending sector is very capital intensive. Geoff explains that to develop Green Drinks Company, they first obtained some funding from a private investor. As this was not enough, they decided to raise further funds through a venture capital business. Unfortunately, they didn't manage to complete this second round of fund raising and had no other choice than to liquidate the company and sell the intellectual property in the process. "*That was a pity (…) the IP was sold as part of the liquidation process and the shareholders received a part of their sum back. It was a significant loss for the investors, but no institution lost money, only private investors.*"

According to Geoff, working with private investors entailed risk as they could suddenly decide to change their investment priorities. "*It is really a punt that they had put in. They had really an opportunity to write the investment off against other gains they had in their portfolio. I guess they lost interest in the business. They had other priorities. And that is the risk you take sometimes with private investors.*"

Yet, he explains that there were not really other alternatives. "*There isn't any public institutions that can help businesses with lower revenues or at early stages. There are things like the business growth fund (…) but revenues have to be in excess of 5 million pounds or something for one to benefit. I approached them and I didn't even get to have a meeting with them. There are more interested in later stage businesses of greater scale.*"

According to him, it was a missed opportunity. "*That was a business I suppose which could have benefited from the assistance of any entity that might support small and medium sized enterprises because it was a technology that had a global application. Vending machines is a global business, there is a lot of intellectual property developed in that machine, so it was a shame to lose that possibility. The company was in the UK, but we had customers in the United States, and potential significant customers. The machines were in development and we sold some machines on trials to a US company*."

3. AREAS FOR IMPROVEMENT

While reflecting on his experience as an entrepreneur in the UK and Ireland, Geoff mentioned two areas that deserve the attention of policy-makers if they want to create an environment where entrepreneurship can flourish:

- **Lack of early-stage funding:** Geoff is not aware of any early stage funding in the UK. Only enterprises with higher revenues and good potential for growth can access funding while in his opinion "*it's the business with zero revenue which needs funding rather than the ones that are already on the good track*". He explains that he did seek such funding when he started up Nosh beverages but he did not find any. As a consequence, he had to finance his business himself. "*I have sought private investors without getting sufficient investment at this stage to pursue that, so I have been funding the business myself primarily*".

- **Lack of effective support and difficult access to grants**: According to Geoff, there are private organizations e.g. business accelerators and incubators that seek to help entrepreneurs, but there are not effective. "*There is no government back entity that actually sits down with early stage businesses, reviews the concept and opportunity and supports them from scratch. None that I am aware of. I know there are various grants like marketing funds grants, but in my view there are far too complicated to access and tend to be administered by agents who actually know how to go through the system but who take large commissions.*

  They used to have intermediaries that were kind of state supported but these have become commercial enterprises, as the state withdrew its support a couple of years ago. And as a consequence, they help people just access grants to pay themselves (…). I think they are self-serving. I understand why the state decided to not support them. Lots of them were run by people who weren't properly qualified."

- **Over-reliance on the tech-sector**: The manufacturing sector seems to be forgotten in the UK. For example, it is getting almost now impossible to put products on shelves in supermarkets without significant funding.

According to Geoff, in order to foster entrepreneurship, the government should "*set up a board with entrepreneurs who understand the difficulties of early stage business and get them to make recommendations (…) that would bring relevant experience (…). Opportunities for example should be created to allow new entrepreneurs to show their products and bring them to the market*". It should also ensure access to funding "*without jumping through hoops*".

Case study 8: André Vanyi-Robin: CROSSING BORDERS TO GRASP OPPORTUNITIES

1. ANDRE'S STORY

André is a **world citizen**. He has a Hungarian father and a French mother, was born in the US and currently lives in Spain, Barcelona. He founded his first company "**Visualcom**" in 1995. He was 28 years old when he sold it to a large corporation that was listed on the stock exchange. "*I sold it for 4.5 million while I could have sold it for 19 million a year earlier. On top of that, I sold it not in cash but in shares (…) and I lost everything when the large corporation eventually went bankrupt 6 months later forcing me to also file for bankruptcy*".

Having "*lost everything*", André decided with his family to head to Barcelona where his wife comes from. In Spain, he took the decision to buy a company "**Servidores**" that was in financial distress. "*The company was more or less active in the same sector as my former one. I decided to buy it, sell what was not needed, challenged the business model, and I eventually managed to put the finances on a sounder and more sustainable footing*."

Yet, André wanted more. He started to raise funding, obtained up to 3 million euros to transform his company into a Spanish Virtual Operator. Unfortunately, it did not go as planned and in 2005, André put the company into bankruptcy. "*I lost everything for the second time*". At that moment, André received a proposal from a friend to join him in his new enterprise.

During the summer 2005, André and his friend spent all their days developing their product and fund raising. "*We needed 2 million euros, it was tough. We decided to split the product into different components which all deserved some funding according to previously defined and achieved benchmarks (…). After 18 months, we succeeded by combining public funds with private investments from the Netherlands, UK, France and USA*." Yet, it was not enough. "*The product was perfect, our business model wasn't. We needed more*". They managed to get an extra 2 million euros from a Spanish bank and that made the trick. They finally had revenues and also a patent. Still, they were exhausted. The company "**BestTv**" was sold in October 2010 at a valuation of 9.3 million euros.

Today, André is busy developing his new company in the field of remote cloud access in the UK. After a difficult start in Spain and several rounds of funding in the UK, André's IoT cloud-based company is on the path of revenue generation. He is also supporting his wife´s company which has developed an app for single mums to help each other in child caring. The Barcelona based company has recently closed a seed round from international investors.

2. ENABLERS OF SECOND CHANCE

André explains that in order to be able to have a fresh restart, **entrepreneurs must anticipate their (potential) failure** and save. "*A lack of foresight can be disastrous for an entrepreneur. It is good to have saved in order to be able to survive without any income for 6, 12 or even better 18 months. If we didn't save enough, we will continue doing things as there are because there is no other options (…). If things are not according to plans, taking the decision to stop is actually a success. To stop a business on time is a success. The mentality must change. Besides, filing for bankruptcy is costly in Spain. You need to have at least 5,000€ to correctly file for bankruptcy and get services providers help you with it. Otherwise, it can be a disaster*".

3. BARRIERS FOR SECOND CHANCE AND ENTREPRENEURSHIP

According to André, there are four areas that deserve improvement to create a better environment for entrepreneurs in Spain:

i. **Social security**: Once an entrepreneur has created his company, he is obliged to pay his social security, regardless of whether he makes money or not. "*350€ per month is expensive for a company that does not generate revenues yet. In the UK, this is not the case. The best would be to create a sort of public fund to help entrepreneurs to start up*".

ii. **Access to finance:** In Spain, an entrepreneur who went bankrupt can't get loans from banks. "*Even if you did everything properly and followed the legal procedure, banks will not give credits (…). In my case, I didn't encounter problems because I went abroad to look for investors, but if I had stayed in Spain, it would have been impossible. Besides, Spanish investors often demand a fixed return when they agree to invest in a start-up. This doesn't make sense if you think about the start-up context (…). They don't want to risk their capital at all. It is different abroad like in Austria or the Netherlands*."

iii. **Taxation system:** Many entrepreneurs who sell their start-up get paid in company shares rather than in cash. This can seriously impact entrepreneurs' future ability to finance other activities as the tax authorities often base the amount due in respect of the value of the transaction and not of the cash really available. "*I sold my company in 2010. As I had a third of the company, I was supposed to get 3 million euros. I was paid in shares and a bit in cash. Actually, I didn't receive all the money I was supposed to get. I had to settle for a lesser amount… Still, the tax authorities calculate how much I owe them on the total value of the exit instead of on the amount collected which is ludicrous"*.

iv. **Better, more effective support for start-ups**: Different support organizations exist that support entrepreneurs and start-ups with, for example, access to funding, etc. Yet, according to André, these organizations, mostly private, just aim at "*making money at the expense of the entrepreneurs (…). For example, certain incubators say they invest in start-ups. They propose a place to work. They allow entrepreneurs to use their facilities and attend the mentoring programs and networking events they organize. They also help entrepreneurs to access to some public funds. Yet in exchange they impose hefty fees that tend to weigh down a start-up and substantially reduce the funding received. That doesn't really make sense."*

Case study 9: Ignace Wils: A GOOD NETWORK IS KEY

1. IGNACE'S PROFILE

Ignace is an **industrial engineer with a specialization in environmental technology**. He joined the Dutch **family business** in 1995 and bought it in 1999. At the beginning, the company – which had been run already by three successive generations – was "*just a regular printing company*". However, in 2005, it became a **sustainable printing company**. Driven by his passion for sustainable development, Ignace wanted to adapt the printing process so it would become more sustainable. Together with this wife, he decided to invest massively in the production facilities. He extended the production hall and developed a new printing press that would not require the use of iso-propyl alcohol. "*That was really new back then*". He also started to implement all principles of Corporate Social Responsibility (CSR). "*We were pioneers […]. We published sustainability reports […]. We won prices*".

Although these changes and their mediatisation increased the company's popularity and attracted new customers, it did not succeed properly. "*Economically, it was not a big hit […]. The prices were too low, the competition too fierce and the cost structure was too high. Eventually, we could not make it*". In 2012, Ignace and his wife had to sell their brand "De Duurzame Drukker" and had to declare bankruptcy one year later. Eight persons were then employed by their company which had an annual turnover of 1 million euro.

Today, Ignace works for "Olivia & Julius", a **consultancy company** he founded with his wife during the bankruptcy procedure.

2. A STRONG NETWORK AS THE MOST VALUABLE ASSET

According to Ignace, there are two things that have helped him to ease his (pre-) bankruptcy experience. First, he and his wife did **dare to share** their financial problems with their network. "*We played it very open […] everyone knew that we were having a rough time*". Second, they had **built a valuable and strong network** throughout the years. "*We were very lucky to have a good network of people around us that just wanted to support us and give us advice freely […]. The advice we got from the people in our network were better [in comparison of those of financial advisors] because either they had gone through the process of bankruptcy themselves or their father did*".

Thanks to that, Ignace received valuable advice, that is advice that were "*to-the-point*" and "*based on experience*". He also got to know the "dos and don'ts" in a bankruptcy process:

- Although Ignace knew his company was doomed to fail, he knew that he had managed to build a very **strong brand** that might interest other printing companies. He thought about selling it but did not know how to start. "*I thought I needed to make a file where I would list the background of all companies involved with takeovers, the experts specialized in negotiating takeovers, and so on*". By discussing the matter with a trustworthy supplier about his financial difficulties, Ignace realized it could be much simpler. His supplier told him: "*everyone knows you in the sector, so just call and make them a proposition*". Eventually this "*simple advice*" paid off: the biggest printing company in Belgium bought his brand. For Ignace and his wife, "*this was a success as it meant that the idea we had was not that bad*".

- Ignace's network also warned him about the **danger of being formally listed** as a bankrupt entrepreneur. "*They told us: if you want to start something new, if you have plans, if you want to stay entrepreneurs or continue as consultants or whatever, you should avoid being on that list. We knew that once we would be on that list […] it would be tough to start over again*". Ignace therefore anticipated the consequences of his unavoidable listing and founded his new company

"Olivia & Julius" more than half a year before declaring for bankruptcy. As Ignace says: "*luckily we did it [...] it was not easy to start a new company especially because we had no money [...] but today it is important we have it [...] it offers us a lot of opportunities*".

3. BARRIERS TO SECOND CHANCE IN BELGIUM

i. Lack of transparency in the bankruptcy process:

According to Ignace, few entrepreneurs know what the bankruptcy procedure really entails. "*We know really little about this process [...]. There are a lot of things that are going on in the background [...] and amazingly the entrepreneur, the former owner of the company, is not informed*". In Ignace's opinion, the fact that entrepreneurs do not know what the bankruptcy procedure is pushes them to postpone their decision to stop their activities when they start to face serious financial difficulties. "*And going on means that every day, you build more debts. This is crazy. But everyone is anxious because it is like stepping in a black hole*".

ii. Unknowledgeable support organizations:

For many years, Ignace was very active in the Flemish **association of entrepreneurs** called VOKA. He was for example member of the board of the association at the regional level. When he started to face some difficulties with his company, Ignace thought he could rely on the association: "*I hoped they had experience or knowledge about what to do"*, but eventually could not. "*Nobody from VOKA called me asking how I was doing, how they could help me or do something. For me, this was a disillusion*". In his opinion, they did not because "they concentrate on the successful companies or those who managed to sustain themselves and hence ignore the dark side of the entrepreneurship and the need for assistance for companies sailing in rough seas. Therefore they lack the experience and knowledge for supporting entrepreneurs in the hard times of their professional life."

iii. The burden of unnecessary financial guarantees:

According to Ignace, it is common that banks in Belgium ask for an extra, personal guarantee from entrepreneurs when they ask for a credit above a certain amount. With this guarantee, the entrepreneur becomes personally liable of the debts that the company may still have in case it fails. For Ignace, "*it is insane [...]. At the very moment I signed that paper, I had a very bad feeling about it. But again they just ask you: do you want that investment, do you want to go on? If you don't sign it, it is not possible to go on*".

He explained that with the bankruptcy, they had to sell the real estate they had bought to extend the production hall in order to repay their debts. "*That was bad [...] we also lived there, but ok it is a risk you take. I can live with that as an entrepreneur".* But on top of that, they also needed to pay "*huge amount of money to the bank from their own pocket [...] and the process is not finished*". This probably impacts the capacity of entrepreneurs to start afresh.

For Ignace, this method should be forbidden because it goes beyond the corporate identity. Besides, "*banks should know that with this system, entrepreneurs will be personally confronted to a severe crisis [...] especially if they signed that document long ago and had forgotten about it*". He also questions what the responsibility of the bank is. "*They had access to our files and also did their calculations. Like us, they also thought that it was a good decision and that we could make it"*. Instead of this system, he suggests that banks should "*include some kind of audits in the agreement, ask reports [...] work with the information and data that are now easily available*".

4. POSITIVE CHANGES IN BELGIUM REGARDING SECOND CHANCE

Following Ignace's experience, some public supporting organizations have realized that failure is an issue that needs to be taken care of. The entrepreneurs' organization UNIZO for example has set up a **program** three years ago that aims at guiding companies through the process of failure and (pre-) bankruptcy.

Case study 10: Barry Wijnen: THE BANKRUPTCY PROCESS CAN BE IMPROVED

1. BARRY'S PROFILE

Barry is an entrepreneur in the **sanitary business** who went **bankrupt twice**:

- He started his first enterprise in 2005 and ended it in 2010. His core activity was to sell bathrooms. He employed 6 persons at the start and 16 at the end.

- He founded a new company more or less in the same branch of activity as his first in 2010. He had to close it down in 2014. This second company employed 6 persons at the beginning and 3 at the end.

Today Barry works for his third company "Concrete Applications" which he founded in 2012. He now employs 6 persons and sells different materials such as concrete to be used on walls in bathrooms.

2. HIS EXPERIENCE ABOUT THE BANKRUPTCY PROCESS

As for any bankruptcy, Barry's bankruptcy "*didn't go smoothly*". The procedure is **very demanding**. He says: "*I always say to people that bankruptcy is "hard work", you have to work even more than if you would work for your own company […]. The curator*[5] *is your boss. If he says: "I want to have that information within 2 days", then you have to make it happen. You must let everything fall out of your hands because you need to comply with his request otherwise by Law, you can be convicted*".

Besides, the whole **bankruptcy procedure can be quite long**. For Barry, the whole procedure took 3 years for his first company and is still running for his second company. He explains that the length of the procedure mainly depends on the curators. "*They can take 1, 3, 4 or 10 years to do that and close it. So it is up to them, you have to wait until they are ready*".

Another problem also relates to the **power the curators** have in the bankruptcy procedure. According to Barry, there are curators who take advantage of the power they have in order to get as much as possible from the company, thereby assuring a better income for themselves. "*In the Netherlands, it works like that: once all creditors have been paid, a big percentage of what is left in the company in terms of value goes to the curators […]. So curators try to get as much as possible out of the company for their own benefit […]. They also get a fee from the government, but they can get these extras […]. They also try to make yourself liable of the bankruptcy as private person […] and get the money of your wife or the money you have saved for your kids […]. They can go as far as they want. I am at my second bankruptcy now and they are trying to do that […]. Of course, it is difficult to prove that you have made a mistake […]. If you have made a simple administrative mistake, for example you forgot to fill in or send a mandatory form at one point, it is enough. It doesn't have to be a fault you did on purpose or consciously*".

3. AVAILABILITY OF A SECOND CHANCE IN THE NETHERLANDS

Barry explains that to start up a new company after a bankruptcy is "*on one side difficult and on the other side very simple*". By just going to the Chamber of Commerce, giving them the name of the new company and its number, a new company can be created "*just one day after having declared bankruptcy*". Nevertheless, starting afresh is difficult for different reasons:

- **Keeping a level of trust among your network, especially with your suppliers:** trust is a crucial element when doing business with suppliers. According to Barry, this trust is at stake when suppliers see that from one day to the other, they must deal with another company because the first went bankrupt, but still with the same person. This raises suspicion. In order to keep a good relation with his suppliers, Barry went to his suppliers to explain to them what his situation was: he was closed to bankruptcy. He explained to his suppliers that he would get bankrupt in a few months' time and asked whether they could agree on a way to repay the debts he owned them.

[5] A curator is an insolvency practitioner in the Netherlands.

According to Barry, "*it is very difficult to take this initiative for most entrepreneurs*" but it is "*crucial for continuing doing business with the same suppliers*". Barry further explains that it is not required by Law, as an entrepreneur owning a limited liability company is not personally liable for his company's debts. Nevertheless, he "*wanted to do it*" and is therefore still repaying today two suppliers and a bank with which he had contracted a credit as a private person.

- **Getting new credits:** In order to finance his new company, Barry wished he could have contracted a new loan but could not. He explains that he is on a black list and that his name will remain on it as long as the bankruptcy procedure of his second company is not closed.

4. POINTS TO BE IMPROVED

Barry has the feeling that in the Netherlands, entrepreneurs who have failed are the "*biggest criminals*". In his opinion, "*someone who killed another person doesn't receive as much attention as an entrepreneur who went bankrupt does*". He understand that "entrepreneurs should be controlled to check whether the bankruptcy is of someone's mistake or done on purpose". Nevertheless, he thinks that the **procedure should be shortened**. "*For small companies, 3 to 4 weeks would be sufficient. This has to happen, so the employees and the entrepreneurs can go further with whatever they want to do, with their life, with their business, etc.*"

Besides, Barry also mentioned that the bankruptcy is not transparent enough. "*It is difficult to follow the process, but after two times I know my way. But a normal citizen doesn't know what to look for and therefore is not able to follow any bankruptcy*". According to him, this lack of transparency contributes to the bad image that people usually have about entrepreneurs who went bankrupt. "*Because it takes so much time and nobody knows what is happening because it is not transparent, everybody has his own opinion. This is a problem. […]. When you say to another person that you went bankrupt, they look at you as if you murdered someone*".

Case study 11: Anonymous 1 - Bert van Geert[6]: SAVING WHAT CAN BE SAVED

1. BERT'S PROFILE

Bert van Geert is a **60 years old Dutch entrepreneur** who dedicated most of his professional life to run and develop the **family business** "van Geert Co[7]". He joined the family business – a **transport company** – when he was 25, developed the necessary skills to advance and became the CEO in 1989.

Until 2008, his company employed more than 60 people and had 10 millions of turnover. In 2009, as a consequence of the financial crisis, things started to turn bad: "*I lost 2 million of revenues. I still had all my clients but there was just no business to do anymore*". In the years after, it got worse and worse and in 2013, Bert had to declare bankruptcy. While dealing with the bankruptcy procedure of van Geert Co, Bert managed to save "VW van Geert[8]" a smaller, specialized transport company he had created in the meantime. Today, VW van Geert employs 3 people and is running smoothly: "*I know it is a small company but at my age, I don't need to have a company with 60 people any longer. If I can earn my living like that, then I find it totally ok*".

2. HIS EXPERIENCE ABOUT THE BANKRUPTCY PROCESS

When Bert understood he could not overcome his financial difficulties, he thought "*what will happen now? I felt in a black hole and I didn't know how I could get out of it*".

For two years, Bert tried his best to save his family business from bankruptcy, even if it involved "*doing a bit some* ***tricks with the taxes***". But after two years, it was not possible anymore and he needed to declare bankruptcy. "*This did really hurt as it was a family-owned business for many years*".

Bert had prepared a whole plan to avoid unnecessary losses and assure that a part of the company could be taken over. Eventually his plan didn't receive the expected support from the taxes and van Geert Co had to be **restructured**. Van Geert Co was sold to another company while Bert could keep VW van Geert. During one year, Bert still worked for van Geert Co on planning. He quickly stopped as "*it didn't work out because it was a totally different mentality*". He then continued solely with VW van Geert that employs 3 people today.

When van Geert Co went bankrupt, Bert had €1.5 million debts. "*In 2002, we had invested in a new location and building and had therefore asked for a loan".* By selling his assets, Bert thought he could repay them to its creditors "easily", that is without any extra cost: "*The bank told me that they would quickly receive what I owed them, and this without problem*". Nevertheless, at the end, it turned out that Bert needed to pay an **extra fee** of 50,000€. Although Bert realizes that "*it is regulated like that, that the fee is based on a certain percentage*", he finds it **unjust**. "*At that time, they told me that it would be resolved easily, and suddenly I had to pay 50,000€. For that amount of money, somebody could have worked a whole year [...] It is just stealing [...] and I have filed a complaint which is still being processed*."

Still, Bert finds himself "*lucky*" as he managed to repay its main creditor, a bank. He therefore didn't "*run any risk"*. Nevertheless, if it had been worse, he realizes he could have "*lost everything*" including his house as he was the **guarantor** of its company.

3. AVAILABILITY OF A SECOND CHANCE IN THE NETHERLANDS

[6] False name to respect the respondent's wish to stay anonymous.
[7] False name to respect the respondent's wish to stay anonymous.
[8] False name to respect the respondent's wish to stay anonymous.

Bert did not encounter major problems when he decided to continue with his smaller company. He continued working with some of his older clients and invested a little to buy new material. He is now trying to earn enough so that he can live on.

Still, he needed to do it **on his own**. "*It is not that you will get subsidies to start over in the Netherlands [...]. I had asked a small credit of 10,000€ to a bank. They told me they believed in my project and in me but still didn't give me the loan. Basically, they start to lie because they don't trust you. Nevertheless, today I am happy I did it without the help of the banks and I don't need them at all now. For me, they are "scum" and I get very angry when I think about how it all went*".

Case study 12: Anonymous 2 - Andras Molnàr[9]: AVOIDING LIQUIDATION AT ALL COSTS

1. ANDRAS' PROFILE

Andras owns a **bakery company** that sells exclusively products on the **Hungarian market**. His company – which he founded with another partner in 2011 – employs more than 20 people today.

Before his bakery company, Andras co-owned the company "Financial Co[10]" that provided **financial services** to banks. Financial Co was created by one of Andras' friends in 2006-2007. Andras joined the company soon after its creation in order to better organise its processes. This was much needed as the company was steeply growing: "*at the beginning, there was only one person, my friend, who was working for the company. I joined it when there was more and more work […]. We reorganized the processes and also hired a lot of people. At the end, we had more than 200 employees*". With the **financial crisis**, the revenues of Financial Co dropped dramatically. At one point, the financial situation had become too critical and Andras and his partner had no other choice than stopping with their business activities. They realise they were bankrupt in 2010.

2. EVERYTHING BUT THE BLACK LIST

When Andras realised they could not cope with their financial difficulties and needed to declare bankruptcy, he told his partner that they should report it to the court. "*We had a lot of credits and had no money. We were basically bankrupt.*"
Having more experience, his friend advices him to **avoid a formal in-court bankruptcy procedure**. "*He said: if we do it, we will not be able to start again a new business on the financial market. In Hungary, there is a black list which everybody can read on the internet. Everybody will know about this and it will be very hard to continue on the financial market in Hungary. To obtain credits as a small company is already difficult. So if you say that you had a company that went bankrupt, you will have no chance.*"

To **avoid the "black list"**, Andras and his partner **opted for an out-of-court settlement procedure**:
"*We went to our suppliers and told them what the situation was: we didn't have enough money to pay the credits back. We also told them the two possibilities they had:*

1. *You either agree that we repay you now but with the risk that it will not be the full amount,*
2. *Or, you can go to the court. But then the process will be long and its outcome uncertain as the company was founded based on a small capital (2,000€).*"

Eventually Andras' suppliers agreed to **negotiate** Financial Co's **size of debt** and **repayment timetable**: "*we could really negotiate the amounts […]. They were flexible. We also proposed to reschedule our debts in order to get sufficient time to sell our equipment and assets. We had an office building so we could sell it. We told our suppliers that we will pay them back but we didn't know how much money we would get from our assets. Unfortunately, it was not the right moment because everybody was trying to sell. At the end, we sold the office, some company cars, etc. We also paid the employees and after that we paid the taxes. At the end we could repay all our suppliers.*"

Later, Andras decided to sell his share of the company to his partner for the symbolic amount of 1€. "*At the end my partner took over the credit from me because he wanted to save the name of the company in order to continue on this market. The name was very important for him. […] I sold my part to my partner for 1€ because he took over the credit.*"

3. AVAILABILITY OF A SECOND CHANCE IN HUNGARY

[9] False name to respect the respondent's wish to stay anonymous.
[10] False name to respect the respondent's wish to stay anonymous.

i. **Access to finance**

Today, Andras owns a company in the food industry. When he started it up in 2011, he "*only had the usual problems associated with founding a new company*". His reputation had not been damaged because of his previous failed company: he had managed to repay his suppliers and therefore wasn't listed on the black list.

Still, he had difficulties to find external support for launching his new business idea. As many start-ups, he could not access credits or loans. He therefore needed to rely on his own capital. "*In Hungary, you have to rely on your own network actually. In the Hungarian news, you can always hear guys that say "we are supporting small companies", but this is only politic and only in the news*".

Andras also mentioned that in the last couple of years, new companies were created in order to help to the creation of start-ups. "*These are private initiatives like business angels. They want to make profits. They give money to start-ups to sell them after 4-5 years. This is quite new on the Hungarian market but it only covers a small part of the market, mostly IT companies that target an international market. Therefore I couldn't use these services as I am active in the national food market*".

ii. Changes in bankruptcy procedures

Since his bankruptcy experience, new laws and rules have been created in Hungary that prevent failed entrepreneurs to restart too easily. For example, failed entrepreneurs have to wait 1 or 2 years before being able to register a new company. Also, an entrepreneur who failed twice cannot be a CEO anymore. In addition, personal assets can be collected to repay debts in case the bankruptcy was caused by the manager himself/herself (management mistake, etc.).

According to Andras, this is "*a very good rule as there were a lot of problems*". He explains that in the last 10 years, many – dishonest – entrepreneurs were declaring bankruptcy when they didn't want to pay their creditors and simply restarted a new business afterwards without any problem. According to Andras, this was possible because the company's warrantee was limited to the company's starting capital which often only amounted to 2,000€.

4. The impact of the characteristics of the bankruptcy regime on entrepreneurship

As noted in a report produced last year for DG Enterprise and Industry, which does not undertake any analysis on second chance, "There are hardly any statistics available on how many entrepreneurs have started a new company after their bankruptcy.....It is possible to search data on the number of bankrupt entrepreneurs and number of new ones, however, there is no statistical records on the relation between these figures".[11]

In the absence of quantitative data on the incidence of second chance entrepreneurs and the type of activity they undertake, it is not possible to estimate directly the impact of second chance (actual or hypothetical) on the economy.

Therefore, this part of the study focuses more directly on the impact of the bankruptcy regime on entrepreneurship. An econometric model will be used to estimate the relationship between a set of bankruptcy policy indicators (e.g. years to discharge) and a measure of entrepreneurship, in the EU28.

This chapter will begin by reporting on key findings from the literature on the topic. The following sections will then describe the data and the methodology adopted for the analysis. The final sections will elaborate on the results and the policy conclusions.

4.1 Key findings from the literature

Two key studies are used to guide the analysis: Armour and Cumming (2008)[12] and Primo and Green (2011).[13]

Primo and Green (2011) focus on the impact on inter-state differences in the USA in bankruptcy regimes on the ratio of self-employment to total employment at the state level. These authors proxy the "friendliness" of the state bankruptcy regime by the value of the personal assets that are ring-fenced from bankruptcy proceedings, the so-called exemptions.

Various small variants of the basic model explain about 92% to 93% of the variation in the incidence in self-employment rate across states and the key conclusions of the estimation results are that:

- generous bankruptcy exemptions encourage self-employment;
- the relationship is non-monotonic; and
- the relationship between "friendliness" of the bankruptcy regime and venture capital inflows is negative.

[11] Ecorys (2014)..
[12] Armour, John and Cumming, Douglas J., (2008).
[13] Primo, David M. and Green, Wm Scott (2011).

The study by Primo and Green (2011) was inspired in part by an earlier study by Armour and Cumming (2008) which examines the impact of the "friendliness" of the bankruptcy regime in a number of European countries on different measures of self-employment.

The key conclusions of the study by Armour and Cumming (2008) are that:

- the degree of friendliness of the bankruptcy regime has the most statistically and economically significant effect in explaining differences in entrepreneurship across the 15 countries and matters more than economic determinants such as GDP growth and stock market returns;
- with regards to the discharge period and being able to start afresh relatively quickly, a move from the least generous (no discharge) to the most generous (immediate discharge) is associated with an increase in the average ratio of self-employment to total employment of around 3.8%;
- high minimum capital requirements and a highly "unfriendly" bankruptcy regime (i.e., when the variables are interacted) is particularly negative for self-employment.

The model is estimated as a panel model with fixed country effects using annual variables for the period 1990 to 2005 and the countries covered by the analysis include Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, Sweden, the United Kingdom and USA.

Overall, different, albeit small, variants of their model explain about 98% to 99% of the differences in the rate of self-employment across the 15 countries.

The general conclusion from this research is that a more friendly "bankruptcy" regime will:

- have a positive effect on the number of first timers as going bankrupt does not result in stigmatisation and prolonged financial duress; and,
- stimulate the launch of new businesses by formerly bankrupt entrepreneurs (the so-called re-starters) as they can more quickly re-renter the business world.

Thus, overall the more "friendly" bankruptcy regime should in theory stimulate, everything else being equal, the level of self-employment in an economy, although it is not possible to determine the relative importance of the two effects.

4.2 Methodological approach

The analysis builds upon the work by Armour and Cumming by updating the model to the most recent years (2015) and extending the estimation to all the EU28 Member States as opposed to the 13 listed earlier in this chapter.
The basic specification is as follows:

$$(1)\,ENTR_{i,t} = a + \sum_{1}^{m} b_m\ BKRPT_{m,i,t} + \sum_{1}^{n} b_n\ CTRL_{n,i,t} + \in_{i,t}$$

Where:

- ENTR is an entrepreneurship indicator (rate of self-employment or business birth rate)
- $BKRPT_m$ is one of several (i.e., m) bankruptcy indicators
- $CTRL_n$ is one of n other economic variables (i.e., control variables)
- subscript i refers to country i
- subscript t refers to year t.

The data on self-employment and business birth rates are derived from Eurostat while the data on the number of new businesses is taken from the World Bank database.

The features of the national bankruptcy regime of interest are:

- the availability of discharge (yes or no)
- time to discharge (i.e. length of discharge period – when no discharge is possible, the authors use average life expectancy as a proxy)

- the generosity of the exemptions (scale variable ranging from 0 to 2)
- impact on the bankruptee's civil and economic rights (scale variable ranging from 1 to 4)
- the level of difficulty a debtor faces in achieving discharge by agreement with creditors (scale variable ranging from 0 to 2)
- the minimum capital requirements for creating a limited liability company – the lower the requirement, the less the incentive to create an unincorporated business and to be self-employed

All these variables were updated by a network of insolvency experts, and will be described in greater detail in the following section.

In addition, the estimation includes the following control variables:

- real GDP growth – the higher GDP growth the lower the incentives to start a business because the labour market provides enough opportunities
- real R&D growth – strong growth in R&D is expected to stimulate entrepreneurship as more funding is expected to be available for startups
- stock market growth - strong growth in the stock market is expected to stimulate entrepreneurship as it makes it easier to bring new companies to the stock market (IPOs)
- income taxes on wages – High taxes on wages may stimulate entrepreneurship because income may be earned in different forms
- a time trend

Further information on the data collection and update is provided in the Annex.

For the purpose of the estimation across the 28 Member States, some of the control variables used by the authors were replaced by proxies from alternative sources, due to lack of coverage for the EU28.

In particular:

- the R&D variable, which was originally extracted from the OECD, was replaced with the corresponding data from Eurostat;
- for some countries (Cyprus, Latvia, Malta, Slovakia and Luxembourg), historical series of the MSCI returns were not available, and were thus replaced with the main stock market index growth rate (derived from Bloomberg);
- the tax data did not show sufficient coverage for the EU28. For this reason, the variable 'income taxes on wages' was replaced with the % share of tax revenues over GDP (from Eurostat).

Prior to reaching a final EU28, up-to-date specification, the procedure involved a number of intermediate steps to ensure robustness and comparability of results:

- Step 1: replication of the paper's results→ to ensure consistency in the procedure
- Step 2a: replication of the model on the subset of 13 EU countries for the period 1990-2005, with newly updated bankruptcy variables and controls → to track the possible impact of introducing new variables
- Step 2b: replication of the model on the subset of 13 EU countries for the period 2005-2015, with newly updated bankruptcy variables and controls → to track the possible impact of new variables and the robustness of results in a different period of analysis
- Step 3: replication of the paper's results on the subset of 13 EU countries for the extended period i.e. up to 2015 → to gauge sensitivity of results to additional years, prior to the addition of other EU Member States

In addition, three other proxies for entrepreneurship were used in the last two steps:

- Step 4a: replication of the model using birth rates as opposed to the self-employment rate
- Step 4b: replication of the model using the share of new businesses per population, as opposed to the self-employment rate
- Step 4c: replication of the model using the share of new businesses per GDP, as opposed to the self-employment rate.

Further details on these changes and results are provided in the Annex.

4.3 Overview of the characteristics of the business bankruptcy regimes in the EU28

A network of PwC Insolvency Experts has provided the required information on the characteristics of the business bankruptcy regime in all EU Member States for the period 1990 to 2015.

This information is provided in the table overleaf.

Table 3 Characteristics of bankruptcy regimes	Discharge: Concerns discharge from pre-bankruptcy indebtedness available for an entrepreneur who has either been trading as a sole proprietor or guaranteed debts of a closely-held private company.		Minimum capital to form private company, in 2005 Euros (1/El).	Exemptions: Takes value 1 if exemptions of assets from the bankruptcy estate cover only personal items, tools of trade, etc. Takes value 0 if exemptions are more generous. Takes value 2 if exemptions are 'negative', i.e. spousal property can be pulled into the estate.	Disabilities: Takes value 0 if no disabilities other than loss of power to deal with assets in bankrupt estate; Takes value 1 for civic disabilities (i.e. loss of right to vote, hold elected office, membership of professional groups); Takes value 2 for economic disabilities (i.e. restrictions on obtaining credit, being involved in the management of a company); Takes value 3 for interference with mail and/or travel (i.e. prohibition on travel without consent, mail opened by trustee); Takes value 4 if debtor may be incarcerated for non-payment of debts.	Composition: The variable takes a value between 0 and 2, and is the sum of (v + c), where v is proportion of face value of existing creditors' claims and c is proportion of number of creditors, who must vote in favour to effect a compromise.
Country	Discharge Available? Takes value 0 if discharge available, 1 if not available.	Discharge Years: If discharge available, value is number of years until typical discharge; if discharge unavailable, value is life expectancy minus 40.				
Austria	1990-1994: 1; 1995-2015: 0	1990-1994: 37; 1995-2015: 7	1990-2005: €35000 2005-2015: €10000	1990-2015: 2	1990-2015: 0	1990-2009: 1.25 2010-2015: 0.7
Belgium	1990-1997: 1; 1998-2015: 0	1990-1997: 37; 1998-2015: 0	1990-1998: €6174; 1999-2005: €18500 2016: 1€ (SPRL-S), €18,550 (SPRL, SCRL), € 61,550 (SA)	1990-2015: 1	1990-2015: 3	1990-1997: 1.25; 1998-2015: 1
Bulgaria	1994-2015: 0	1994-2015: 1	1990-2009: €2,600 (5,000 BGN) 2009-2016: €1 (BGN 2) (limited liability company)	1990-2015: 0	1994 –20015: 1	1994-2015: 1
Croatia	1986-2015: 0	1986-2015: 5	1986-2015: € 2642	1986-2015: 1	1986-2015: 0	1986-2015: 1
Cyprus	1990-2016: 1	1990: 36 2005:38 2016: 42,8	1990-2016: €0 (other);	1990-2016: 1	1990-2016: 2	1990-2015: 1.25 2015 - 2016: 1
Czech Republic	1991-2014:1 2014-2015:0	1990- 2005:35 2005 – 2014: 38 2014-2015: 5	1990 – 2000: 100 000 CZK (€3 700) 2001-2013: 200 000 CZK (€7 400) 2014+: 1 CZK (€0,04)	1991-2016: 1	1991-2016: 2	1991-2016:0,5
Denmark	1990-2004: .5; 2004 - 2015: 0	1990-2004: 5; 2004- 2015: 3	1990-1991: €10732; 1992-1996: €26831; 1997-2005: €16769 2005-2015: €6704	1990-2015: 1	1990-2015: 3	1990-2004: 1.4; 2005-2010: 1.35 2011-2015: 1.25
Estonia	1990-2015: 0	1990-2015: 3-5	1990-2015: €2556,47	1990-2015: 1	1990-2015: 2	1990-2015: over 1
Finland	1990-1992: 1; 1993-2015: 0	1990-1992: 37; 1993-2015: 5	1990-2015: €2500	1990-2006: 1 2007-2015: 1	1990-2005: 3 2005-2015:2	1990-2006: 0.8 2007-2015: if no majority is reached in all groups of creditors: 0.7 (c=0.5; v= 0.2; and this in the group pf creditors that has

						approved) – if majority is reached in all groups of creditors: 1 (c=0.5; v= 0.5)
France	1990-2015: 0;	1990-2005: 0 2005-2015: 3 (SARL, SA) - 5 years (SNC)	1990-2002: €7500; 2003-2005: €0 2005-2015: €0 (SARL, SAS, SNC), €37,000 (SA);	1990-2015: 2 (if can be proven that spousal property comes from resources acquired by the debtor)	1990-1994: 1; 1995-2015: 2	1990-2005: 0 2006-2016:0.66
Germany	1990-1998: 1; 1999-2015: 0	1990-1998: 37; 1999-2000: 7; 2001-2015: 6	1990-2015: €25000 (Gmbh, half of the min capital can be made up of contributions in kind)	1990-2015: 0	1990-1998: 3; 1999-2015: 1	1990-1998: 1.25; 1999-2015: 1
Greece	1990-2015: 1	1990-2005: 20 2005-2008: 39 2009 - 2013: 40 2014 – 2016: 41	1990-1992: €587; 1993-1998: €8804; 1999-2002: €17608; 2003-2005: €18000 2005-2016: €0	1990-2005: 1 2005-2016: 1	1990-1997: 4; 1998-2005: 3 2005-2007: 1 2007-2016: 0	1990-2007: 1.46 2007-2016: 1
Hungary	1990-2005: 1 2005-2016: 1	1990-2005: 28 2006-2016: 38	1990-2005: €9641 2006-2013: €643 2014-: €9641	1990-2016: 1	1990-2016: 2	1990-2016: 1.3
Ireland	1990-2015: 0	1990-2013: 12 2014-2015: 3 2016: 1	1990-2005: €0 2005-2015: €0 -€1 (depending on company form)	1990-2015: 1	1990-2015: 2	1990-2015: 1 2016: 0.6
Italy	1990-2016: 1	1990-2005: 38 2005-2016: 45	1990-2003: €10300; 2004-2005: €10000 2005-2016: €1 (limited liability company), €10,000 (joint stock company)	1990-1992: 2; 1993-2015: 1	1990-2015: 3	1990-2015: 1.16
Latvia	1990-2015: 0	1990-2015: 3	1990.-2005. € 3067.00 2005-2015: €2800.00	1990-2015 : 1	1990-2015: 2	1990-2005: 1 2005-2015:0.5
Lithuania	1990-2016: 1	1990-2005: 31 2005-2016: 34, 7	1990-2015: €2,900	1990-2016: 1	1990-2016: 2	1990-2016: 0.66
Luxembourg	1990 - 2015: 0	1990 - 2015: 5	1990-2015: 12,394€ (Sarl); 30,986€ (SA)	1990 - 2015: 1	1990 - 2015: 3	1990-2015: 1.25
Malta	1990-2015: 1	1990-2015: 39	1990-2015 €1,164.69	1995-2015: 2	1995-2015: 4	1990-2015: 1.26
Netherlands	1990-1998: 1; 1999-2015: 0	1990-1998: 38; 1999-2015: 3	1990-2005: €18000 2005-2015: €0.01 (bv),€45,000 (nv),	1990-2015: 2 (depending on company form)	1990-2015: 0	1990-1994: 1.46; 1995-2016: 1
Poland	1990-2003: 1 2003 – 2016: 0	1990-2003: 34 2003-2014: 1	1990-2009: €12,000 (50,000 PLN) 2009-2016: €1,200 (5,000 PLN) (LLC)	1997 - 2016:1	1997 – 2003 :2 2003- 2015: 1	1997-2016: 1.16
Portugal	1990 - 2015: 1	1990-2005:34 2005-2015: 38	2016: €5,000 (limited liability company); €50,000 (SA)	1990-2015: 1	1990-2015: 2	2012-2015: more than 0.33

		2015: 41,3				
Romania	1990 -2015: 1	1991-2005: 31 2005-2015: 34	1990-2015: €45 (200 RON)	1990-2015: 1	1990-2015: 0	1990-2015: 0
Slovakia	1993-2005: 1 2005-2016: 0	1993-2005: 36 2005-2016: 3	1992-1998: €3319 1998-2016: €5000	1993-2016: 1	1993-2016: 2	1993-2016: 1,51
Slovenia	1990-2016: 0	1990-2016: 5	1993-2016: €7,500 (limited liability company)	1990-2016: 1	1990-2016: 2	1990- 2015: 0
Spain	1990-2014: 1 2015-2016: 0	1990-2005: 15 2005-2014: 43 2015-2016:5	1990-2005: €3000 2005-2015: €3,000 (SL), €60,000 (SA)	1990-2015: 1	1990-2015:2	1990-2003: 1.1; 2004-2015: 0.5
Sweden	1990-2005: 1 2005-2015: 0	1990-2005: 10 2005-2015: 5	1990-2005: €10749 2016: €5,350 (lim. Company)	1990-2015: 1	1990-2015: 2	1990-2015: 2 2016: 1.1
UK	1990-2015: 0	1990-2003: 3; 2004-2015: 1	1990-2015: €0	1990-2015: 1	1990-2015: 2	1990-2015: 1

Source: PWC Network of Insolvency Experts.

Each indicator will be described in greater detail in the following sections, to show the degree of cross-country variation in the data.

DISCHARGE

This concerns discharge from pre-bankruptcy indebtedness available for an entrepreneur who has either been trading as a sole proprietor or guaranteed debts of a closely-held private company. The variable takes a value 0 if discharge available, 1 if not available.

In terms of this indicator, the Member States can be broadly classified under three categories:

- Countries where discharge is and has been available throughout the period from 1990 to 2015: this group includes Bulgaria, Croatia, Estonia, France, Ireland, Latvia, Luxembourg, Slovenia, and the United Kingdom.
- Countries where discharge is not available: Cyprus, Greece, Hungary, Italy, Lithuania, Malta, Portugal and Romania.
- Countries where discharge was not available in the early years but changes in legislation made it available at some point during the period of observation: Austria, Belgium, the Czech Republic, Denmark, Finland, Germany, the Netherlands, Poland, Slovakia, Spain, and Sweden.

Table 4: Availability of discharge by Member State, 1990-2015

Discharge available throughout 1990-2015	Discharge not available throughout 1990-2015	Discharge made available (varying over time)
Bulgaria	Cyprus	Austria
Croatia	Greece	Belgium
Estonia	Hungary	Czech Republic
France	Italy	Denmark
Ireland	Lithuania	Finland
Latvia	Malta	Germany
Luxembourg	Portugal	Netherlands
Slovenia	Romania	Poland
United Kingdom		Slovakia
		Spain
		Sweden

Source: PWC Network of Insolvency Experts.

DISCHARGE YEARS

As explained in the introduction, according to the Second Chance principle, entrepreneurs should be fully discharged of their debts which were subject of a bankruptcy after no later than three years. For this reason the time to discharge, expressed in years, is the focus of the analysis.

In the data, if a discharge is available, the value is the number of years until typical discharge; if the discharge is unavailable, the value is life expectancy minus 40, to indicate that the burden of the proceedings can last for the remainder of the entrepreneur's lifetime.

Table 5 : Discharge years by Member State, ranking by the mean, 1990-2015

Country	Mean	Min	Max	Std. Dev.
Bulgaria	1.0	1	1	0.0
France	1.3	0	3	1.5
United Kingdom	2.1	1	3	1.0
Estonia	3.0	3	3	0.0
Latvia	3.0	3	3	0.0
Denmark	4.1	3	5	1.0
Croatia	5.0	5	5	0.0
Luxembourg	5.0	5	5	0.0
Slovenia	5.0	5	5	0.0
Sweden	8.1	5	10	2.5
Finland	8.7	5	37	10.4
Ireland	11.3	3	12	2.4
Belgium	11.4	0	37	17.4
Austria	12.8	7	37	12.1
Netherlands	15.1	3	38	17.0
Germany	16.8	6	37	15.0
Poland	17.5	1	34	16.8
Slovakia	22.0	3	36	16.6
Spain	24.3	5	43	14.0
Greece	27.7	20	41	9.9
Hungary	31.8	28	38	5.0
Romania	32.3	31	34	1.5
Lithuania	32.4	31	34.7	1.8
Czech Republic	35.0	5	38	6.3
Portugal	35.8	34	41.3	2.3
Cyprus	36.8	36	38	1.0
Italy	38.0	38	38	0.0
Malta	39.0	39	39	0.0

Source: PWC Network of Insolvency Experts.

Capital requirements

Historically, three Member States (Cyprus, Ireland, and the United Kingdom) have always had a zero minimum capital requirement to start a private company. Whilst there is a general trend of reduction throughout the period from 1990 to 2015, the requirements can vary markedly across the EU, as shown below.

Table 6: Minimum capital to form a private company by Member State in Euros, ranking by the mean, 1990-2015

Country	Mean	Min	Max	Std. Dev.
Cyprus	0	0	0	0
Ireland	0	0	0	0
United Kingdom	0	0	0	0
Romania	45	45	45	0
Malta	1165	1165	1165	0
Bulgaria	1900	1	2600	1176
Finland	2500	2500	2500	0
Estonia	2556	2556	2556	0
Croatia	2642	2642	2642	0
Lithuania	2900	2900	2900	0
Latvia	2964	2800	3067	132
Spain	3000	3000	3000	0
France	3750	0	7500	3824
Slovakia	4483	3319	5000	791
Portugal	5000	5000	5000	0
Czech Republic	5265	0	7400	2380
Hungary	6872	643	9641	4235
Greece	6885	0	18000	7604
Slovenia	7500	7500	7500	0
Poland	9092	1200	12000	4885
Italy	9777	1	10300	1999
Netherlands	10385	0	18000	9069
Sweden	10541	5350	10749	1059
Luxembourg	12394	12394	12394	0
Belgium	14233	6174	18500	5980
Denmark	14368	6704	26831	7596
Austria	24423	10000	35000	12596
Germany	25000	25000	25000	0

Source: PWC Network of Insolvency Experts.

Exemptions

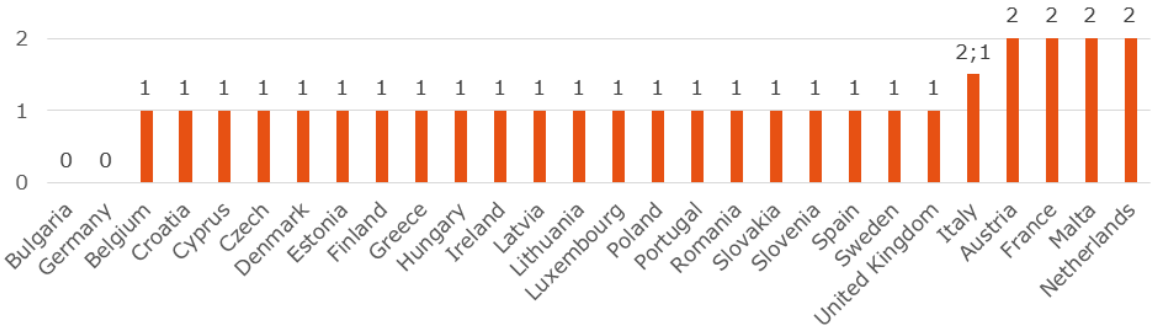
This variable relates to pre-bankruptcy assets which are exempted from the bankrupt estate and so retained by the debtor. The variable can take the following values:

- 1 if exemptions of assets from the bankruptcy estate cover only personal items, tools of trade, etc.
- 0 if exemptions are more generous than at 1
- 2 if exemptions are 'negative', i.e. spousal property can be pulled into the estate.

This variable shows little time variation across the EU and over time.

The vast majority of the Member States report a value of 1; Germany and Bulgaria report more generous policies (0); in Italy, a change has improved the generosity of exemptions from 2 to 1. Lastly, Austria, France, Malta and the Netherlands show the least generous approach.

Figure 1: Exemptions by Member State, 1990-2015



Note: where more than one value is presented, a legislative change has taken place during the period of interest..
Source: PWC Network of Insolvency Experts.

Disabilities

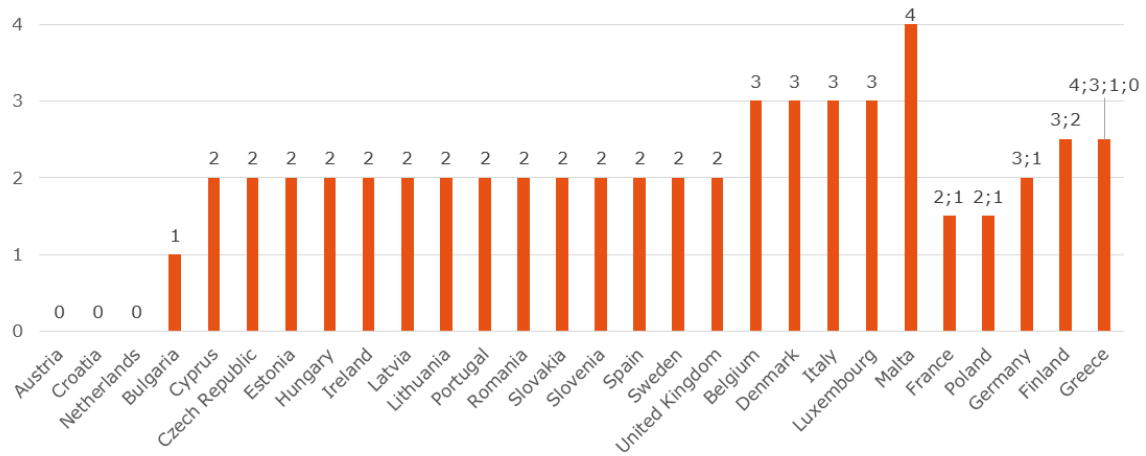
This indicator reflects the restrictions on the debtor's civil and economic rights related to bankruptcy. The variable can take the following values:

- 0 if no disabilities other than loss of power to deal with assets in bankrupt estate;
- 1 for civic disabilities (i.e. loss of right to vote, hold elected office, membership of professional groups);
- 2 for economic disabilities (i.e. restrictions on obtaining credit, being involved in the management of a company);
- 3 for interference with mail and/or travel (i.e. prohibition on travel without consent, mail opened by trustee);
- 4 if debtor may be incarcerated for non-payment of debts.

In the majority of the Member States, the disabilities are of economic nature.

Only a few countries have witnessed changes in the legislation over the period of interest (France, Poland, Germany, Finland and Greece). In all these countries the trend was to reduce the restrictions.

Figure 2: Disabilities by Member State, 1990-2015



Note: where more than one value is presented, one or several legislative changes have taken place throughout the period of interest.
Source: PWC Network of Insolvency Experts.

Composition

This variable relates to the possibility of agreeing a composition with creditors as a means of terminating an existing bankruptcy proceeding. The variable takes a value between 0 and 2, and is the sum of (v + c), where v is the proportion of face value of existing creditors' claims and c is the proportion of number of creditors, who must vote in favour to effect a compromise.

In the table below, countries are ranked from the most lenient composition (i.e. 0) to the highest.

Table 7: Composition by Member State, ranking low to high, 1990-2015

Country	Values (out of 2)
Romania	0
Slovenia	0
Portugal	0.33
Czech Republic	0.5
Latvia	0.5
Lithuania	0.66
Bulgaria	1
Croatia	1
Estonia	1
Ireland	1
United Kingdom	1
Italy	1.16
Poland	1.16
Cyprus	1.25
Luxembourg	1.25
Malta	1.26
Hungary	1.3
Slovakia	1.51
Sweden	2
Spain	0.5;1.1
Finland	0.7;0.8
Austria	0.7;1.25
France	0;0.66
Denmark	1.25;1.35;1.4
Belgium	1;1.25
Germany	1;1.25
Greece	1;1.46
Netherlands	1;1.46

Note: where more than one value is reported, the country has experienced legislative changes thoughout the period.
Source: PWC Network of Insolvency Experts.

4.4 Estimation results

As already noted in section 4.2, this part of the study relies on the model produced by Armour and Cumming (2008). The main specification is a country fixed effects panel regression where the dependent variable is the rate of self-employment (over the country's population), and the explanatory variables are the bankruptcy indicators and a set of controls. The potential sample size for this model is 728 (28 countries * 26 years).

In Table 8, the regressions are estimated for the final EU28 data. The models are gradually extended with additional variables to evaluate the robustness of one main bankruptcy indicator of interest, i.e. time to discharge (in years).

Country fixed effects are included in all these specifications. It should be noted that country fixed effects will capture the impact of any feature of the system which does not vary over time such as other laws.

Time to discharge is negatively and statistically significantly correlated with the incidence of self-employment across the EU28. The coefficient in column 7 implies that a 10-year decrease in the years until discharge is associated with an increase in self-employment rate of 0.00184.

This result is in line with the key finding by Armour and Cumming (2008) and robust to the introduction of other covariates such as GDP growth, R&D growth, stock market returns, the tax burden, the bubble years dummy, and a time trend.

In contrast with the authors' results, GDP growth is statistically significant (and with a positive sign), implying that a period of macroeconomic expansion will result in an increase in entrepreneurship. Similarly, also stock market returns proxied by the MSCI index returns are positively correlated with self-employment. A higher tax burden is associated with a reduction in self-employment.

A similar regression is also performed on a different measure of entrepreneurship, i.e. birth rates. Birth rate information is derived from the business demography data available on Eurostat. No significant impact of the bankruptcy variables is found for this measure. However, it should be remarked that the data for birth rates is only available for a limited number of years (from 2008 to 2013), and only for 20 Member States. Combining this information with all other regressors yields a relatively low number of datapoints for the estimation (138) and, thus, the power of the model to quantify the impact of changes in the characteristics of the bankruptcy regime is weak as there is relatively little variation in such characteristics over the period of interest.

Additional estimations are also performed on a different entrepreneurship measure, the number of new businesses registered (derived from the World Bank Data). The number of businesses is then scaled by population.

In contrast to the data on enterprise birth rates, the data on the number of new businesses is slightly more comprehensive (251 observations).

Table 8: Main econometric results, EU28, panel regression with country fixed effects

Variable	% Self employed (1)	% Self employed (2)	% Self employed (3)	% Self employed (4)	% Self employed (5)	% Self employed (6)	% Self employed (7)
time to discharge	-0.000158***	-0.000155***	-0.000133***	-0.000150***	-0.000142***	-0.000141***	-0.000184***
	(-3.987)	(-3.898)	(-2.928)	(-2.609)	(-2.756)	(-2.745)	(-3.769)
real GDP growth		0.0200	0.0440***	0.0344***	0.0409***	0.0402***	0.0268**
		(1.100)	(2.953)	(3.256)	(3.844)	(3.761)	(2.575)
real R&D growth			0.00213	0.00388	0.00290	0.00282	0.00268
			(0.348)	(0.974)	(0.749)	(0.729)	(0.662)
MSCI growth				0.00294***	0.00355***	0.00351**	0.00274**
				(5.175)	(2.592)	(2.542)	(2.044)
tax burden (% GDP)					-0.000688*	-0.000718*	-0.000754**
					(-1.881)	(-1.910)	(-2.035)
bubble year 1999-2000						0.000878	-0.000427
						(0.766)	(-0.352)
trend							-0.000282***
							(-3.816)
Constant	0.0756***	0.0753***	0.0738***	0.0688***	0.0865***	0.0872***	0.0941***
	(97.36)	(77.80)	(69.48)	(68.65)	(9.091)	(8.927)	(9.803)
Observations	687	680	565	457	446	446	446
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
R-squared	0.893	0.891	0.903	0.946	0.948	0.948	0.950

Notes : Robust t-statistics in parentheses ; *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Main econometric results, EU28, panel regression with country fixed effects, alternative proxies for entrepreneurship

Variable	Birth rates (1)	Number of new businesses per head of population (2)
time to discharge	0.247	-1.76e-05**
	(0.916)	(-2.051)
real GDP growth	-26.80	0.00531***
	(-1.480)	(2.768)
real R&D growth	-1.417	0.000152
	(-0.274)	(0.207)
MSCI growth	-2.729	-0.000382
	(-1.482)	(-0.969)
tax burden (% GDP)	-0.487	0.000373*
	(-1.243)	(1.745)
bubble year 1999-2000	NA	NA
trend	-0.181	6.62e-05*
	(-1.132)	(1.733)
Constant	22.88**	-0.00676
	(2.455)	(-1.263)
Observations	138	251
Country fixed effects	yes	yes
R-squared	0.581	0.902

Note: Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. In these models, the number of observations is reduced to lack of data. Birth rates are only available at granular level from 2008 onwards; number of new businesses data are available from 2004 onwards.

Table 10 presents further econometric results which involve other bankruptcy indicators. Model 8 is concerned with the impact of minimum capital requirements, which albeit negative, is found to be not significant. Model 9 further tests this effect by including an interaction between minimum capital and time to discharge. Model 10 instead tests for the impact of another measure of the minimum capital (i.e. as a share of GDP per capita). None of these specifications is robust and consistent with the results shown by Armour and Cumming.

Model 11 is somewhat different in that it includes legal fixed effects and controls for country variation with dummies. In this specification, the results are not consistent with Armour and Cumming, who find that more generous exemptions (i.e. lower values of the dummies) and less disabilities are correlated with higher self-employment rates. The composition variable in model 13 is also found to be in contradiction with the paper.

It should be remarked, however, that this part of the results was not robust to the changes in the variables and the introduction of the new years in the series undertaken in the intermediate steps of the procedure. It would be therefore incorrect to infer that at EU28 level, harsher exemption or disability policies are drivers of entrepreneurship.

Table 10: Additional econometric results, EU28, panel regression with country fixed effects (1990-2015)

Variable	% Self employed (8)	% Self employed (9)	% Self employed (10)	% Self employed (11)	% Self employed (12)	% Self employed (13)
minimum capital	7.72e-08	6.04e-08				
	(1.183)	(0.915)				
minimum capital * discharge years		2.03e-09				
		(0.519)				
minimum capital % GDP			0.00440***			
			(4.473)			
exemptions=0				0.0777***		
				(12.37)		
exemptions =1				0.0873***		
				(6.918)		
exemptions =2				0.0969***		
				(12.51)		
disabilities=2					0.0106***	
					(4.430)	
disabilities=3					0.00146	
					(0.515)	
composition						0.00339*
						(1.960)
real GDP growth	0.0322***	0.0324***	0.0334***	0.0324***	0.0337***	0.0313***
	(2.892)	(2.893)	(2.904)	(2.923)	(2.943)	(2.827)
real R&D growth	0.00422	0.00434	0.00608	0.00411	0.00582	0.00396
	(0.962)	(0.987)	(1.338)	(1.171)	(1.244)	(0.905)
MSCI growth	0.00290**	0.00287**	0.00273**	0.00287***	0.00312**	0.00281**
	(2.130)	(2.096)	(2.093)	(2.774)	(2.344)	(2.051)
tax burden (% GDP)	-0.00102***	-0.00102***	-0.00120***	-0.00102***	-0.00100***	-0.00100**
	(-2.621)	(-2.661)	(-3.311)	(-3.821)	(-2.758)	(-2.574)
bubble year 1999-2000	-5.29e-05	2.48e-05	-0.000268	5.88e-06	-4.94e-05	5.66e-05
	(-0.0429)	(0.0202)	(-0.230)	(0.00465)	(-0.0414)	(0.0459)
trend	-0.000189**	-0.000177**	-1.71e-05	-0.000212***	-0.000190**	-0.000198**
	(-2.310)	(-2.102)	(-0.207)	(-2.995)	(-2.547)	(-2.583)
Constant	0.0955***	0.0954***	0.0957***		0.0895***	0.0926***
	(9.780)	(9.764)	(10.34)		(9.360)	(9.303)
Country fixed effects?	yes	yes	yes	No (legal f.e. & country dummies)	yes	yes
Observations	446	446	446	446	446	446
R-squared	0.948	0.948	0.951	0.993	0.951	0.948

Notes: Robust t-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

As before, further estimations of these models were performed replacing the dependent variable (rate of self-employment) with alternative measures. The results are displayed in the following tables.

Table 11: Additional econometric results, EU28, panel regression with country fixed effects (1990-2015) – birth rates

Variable	Birth rates (8)	Birth rates(9)	Birth rates(10)	Birth rates(11)	Birth rates(12)	Birth rates (13)
minimum capital	6.04e-05	0.000909				
	(1.089)	(0.815)				
minimum capital * discharge years		-0.000121				
		(-0.764)				
minimum capital % GDP			2.131			
			(1.074)			
exemptions=0				27.71***		
				(2.636)		
exemptions =1				49.98**		
				(2.360)		
exemptions =2				36.77***		
				(2.954)		
disabilities=2					-	
disabilities=3					-	
composition						-1.934
						(-1.124)
real GDP growth	-13.24	-14.14	-13.38	-12.90	-12.90	-12.67
	(-0.706)	(-0.752)	(-0.716)	(-1.196)	(-0.693)	(-0.680)
real R&D growth	-1.092	-0.878	-1.119	-1.180	-1.180	-1.269
	(-0.195)	(-0.156)	(-0.201)	(-0.285)	(-0.213)	(-0.229)
MSCI growth	-3.015	-2.967	-3.093	-2.954**	-2.954	-2.913
	(-1.571)	(-1.540)	(-1.616)	(-2.516)	(-1.574)	(-1.557)
tax burden (% GDP)	-0.751*	-0.780*	-0.785*	-0.736*	-0.736*	-0.739*
	(-1.787)	(-1.940)	(-1.928)	(-1.709)	(-1.769)	(-1.767)
trend	-0.0885	-0.0578	-0.0538	-0.104	-0.104	-0.129
	(-0.556)	(-0.349)	(-0.322)	(-0.565)	(-0.655)	(-0.731)
Constant	31.25***	35.08***	31.15***		31.58***	33.85***
	(2.879)	(3.155)	(2.891)		(2.891)	(2.892)
Country fixed effects?	yes	yes	yes	No (legal f.e. & country dummies)	yes	yes
Observations	143	143	143	143	143	143
R-squared	0.675	0.676	0.676	0.922	0.675	0.675

Notes: Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1; '-' denotes an omitted variable due to collinearity. In these models, the number of observations is reduced to lack of data. Birth rates are only available at granular level from 2008 onwards; number of new businesses data are available from 2004 onwards.

Table 12: Additional econometric results, EU28, panel regression with country fixed effects (1990-2015) – new businesses per head of population

Variable	Number of new businesses per head of population (8)	Number of new businesses per head of population 9)	Number of new businesses per head of population (10)	Number of new businesses per head of population (11)	Number of new businesses per head of population (12)	Number of new businesses per head of population (13)
minimum capital	-2.07e-08	1.16e-08				
	(-1.119)	(0.488)				
minimum capital * discharge years		-2.68e-09*				
		(-1.669)				
minimum capital % GDP			-0.000874**			
			(-2.208)			
exemptions=0				-0.00864***		
				(-3.793)		
exemptions =1				-0.0150***		
				(-3.346)		
exemptions =2				-0.00653***		
				(-2.837)		
disabilities=2					0.00113**	
					(2.235)	
disabilities=3					0.000376	
composition						-0.000498
						(-0.871)
real GDP growth	0.00551***	0.00568***	0.00590***	0.00541*	0.00535***	0.00548***
	(2.866)	(2.945)	(3.044)	(1.816)	(2.751)	(2.851)
real R&D growth	0.000149	0.000125	8.73e-06	0.000190	0.000201	0.000219
	(0.203)	(0.170)	(0.0120)	(0.188)	(0.269)	(0.294)
MSCI growth	-0.000371	-0.000343	-0.000308	-0.000383	-0.000394	-0.000370
	(-0.938)	(-0.861)	(-0.774)	(-1.180)	(-0.994)	(-0.933)
tax burden (% GDP)	0.000370*	0.000364*	0.000377*	0.000370***	0.000373*	0.000369*
	(1.736)	(1.688)	(1.769)	(3.902)	(1.735)	(1.727)
trend	6.08e-05	6.29e-05	4.49e-05	6.50e-05*	6.34e-05	6.34e-05*
	(1.523)	(1.580)	(1.058)	(1.746)	(1.639)	(1.653)
Constant	-0.00675	-0.00664	-0.00647		-0.00767	-0.00642
	(-1.265)	(-1.235)	(-1.229)		(-1.356)	(-1.188)
Country fixed effects?	yes	yes	yes	No (legal f.e. & country dummies)	yes	yes
Observations	251	251	251	251	251	251
R-squared	0.902	0.902	0.903	0.942	0.902	0.902

Notes: Robust t-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1 '-' denotes an omitted variable due to collinearity. Iin these models, the number of observations is reduced to lack of data. Birth rates are only available at granular level from 2008 onwards; number of new businesses data are available from 2004 onwards.

4.5 What would be the impact of implementing Second Chance on the EU28 economy?

The econometric analysis described above shows that high years to discharge are a key deterrent of entrepreneurship. The negative and statistically significant sign of the coefficient in the regressions indicates that reducing the years to discharge could potentially increase the number of new businesses in the EU.

One can quantify this change by using the estimated coefficient from the model on new businesses per capita (-0.0000176) to project the potential increase in new businesses on the latest data.

Table 13 presents the latest data on new businesses registered as well as the latest years to discharge. In addition, the table also presents the gap between the current level of discharge years and the number of discharge years suggested by Second Chance (i.e. 3 years) and the gap between the current level of discharge years and a potential reduction to less than a year (i.e. 0).

As shown in the table, some countries were already at the frontier in 2015 i.e. they already have a period to discharge of less than 3 years or even less than a year. This is the case of Belgium (0), Bulgaria (1), Denmark (3), Estonia (3), France (3), Ireland (3), Latvia (3), the Netherlands (3), Poland (1), Slovakia (3) and the United Kingdom (1).

In these countries the improvement can only be marginal and would be achieved by reducing the discharge period even further. For an economy like France, decreasing years to discharge from 3 to less than a year would increase new businesses by 4%.

At the other end of the spectrum are countries such as Cyprus, Greece, Hungary, Italy, Lithuania, Malta, Portugal, and Romania, where there is no discharge. These Member States could benefit vastly from implementing Second Chance and a discharge of maximum 3 years. The number of new businesses each year in Greece, for example, would double.

Table 13: Projections of potential changes in number of SME enterprises as a result of reducing years to discharge

Country	New businesses (latest year available)	Years to discharge (2015)	Differential from suggested Second Chance years (3)	Differential from minimum years (0)	Potential increase in number of new businesses due to implementing Second Chance (i.e. 3 years)	% increase	Potential increase in number of new businesses due to implementing discharge in a year	% increase
Austria	4181	7	-4	-7	601	14%	902	22%
Belgium	14897	0	3	0	n.a.	n.a.	n.a.	n.a.
Bulgaria	42613	1	2	-1	n.a.	n.a.	127	0%
Croatia	13073	5	-2	-5	149	1%	298	2%
Cyprus	11169	38	-35	-38	525	5%	555	5%
Czech Republic	24366	5	-2	-5	370	2%	739	3%
Denmark	15806	3	0	-3	n.a.	n.a.	199	1%
Estonia	13867	3	0	-3	n.a.	n.a.	46	0%
Finland	11961	5	-2	-5	192	2%	385	3%
France	94927	3	0	-3	n.a.	n.a.	2330	2%
Germany	68526	6	-3	-6	4256	6%	7093	10%
Greece	5761	41	-38	-41	3555	62%	3742	65%
Hungary	24490	38	-35	-38	6078	25%	6425	26%
Ireland	17601	3	0	-3	n.a.	n.a.	162	1%
Italy	91853	38	-35	-38	37453	41%	39593	43%
Latvia	13991	3	0	-3	n.a.	n.a.	70	1%
Lithuania	8481	34.7	-31.7	-34.7	1634	19%	1737	20%
Luxembourg	2224	5	-2	-5	19	1%	37	2%
Malta	5062	39	-36	-39	271	5%	286	6%
Netherlands	58900	3	0	-3	n.a.	n.a.	595	1%

Poland	14434	1	2	-1	n.a.	n.a.	n.a.	n.a.
Portugal	31860	41.3	-38.3	-41.3	7010	22%	7377	23%
Romania	56381	34	-31	-34	10857	19%	11558	20%
Slovakia	12027	3	0	-3	n.a.	n.a.	191	2%
Slovenia	6243	5	-2	-5	73	1%	145	2%
Spain	91544	5	-2	-5	1637	2%	3274	4%
Sweden	42063	5	-2	-5	341	1%	683	2%
United Kingdom	537658	1	2	-1	n.a.	n.a.	n.a.	n.a.

Note: A value of '0' in the years to discharge indicates that discharge can be obtained within one year.

5. Estimated relationship between number of new enterprises and GDP

In order to understand the effect that an increase of the number of SME enterprises can have on GDP, a simple vector autoregression (VAR) was run for the EU28 economy as a whole. A VAR model relates a set of, so-called, endogenous variables to their own lagged values and the contemporaneous and lagged values of all the otherendogenous variables. It is therefore perfectly suited to gauge how a set of interrelated variables influence each other.

The endogenous variables used in the VAR model were EU28 GDP, EU28 economy-wide employment levels and the number of SME enterprises in the EU28. EU28 GDP and EU28 employment levels are at a quarterly frequency from Eurostat, but the number of SME enterprises is available only at an annual frequency.

To maximise the availability of data, the number of enterprises at a quarterly level were estimated first from the annual data. This was done first by estimating quarterly value added for SMEs using the ratio of annual SME value added to annual GDP. Then, the estimated SME value added per quarter was used to estimate the quarterly number of enterprises by using the annual level of of SME value added per enterprise.

The VAR estimation uses the log transformation of the three variables of interest and is undertaken over the period Q1 2005 to Q4 2015 for a total of 44 observations.

The results of the VAR are reported in tables 1 and 2 below. Since tests for the optimal lag structure were not conclusive, the results for a VAR model with two and four lags for each variable are reported. The model with four lags is reported in table 1 and the model with two lags in table 2.

The meaning of these results for the effect of the number of enterprises on GDP is best understood through examining the Impulse Response Function (IRF). The IRF measures the effect of a shock in an endogenous variable on either the variable itself or another endogenous variable. It also allows one to track the effect of a shock over time, since a VAR model is a dynamic model. For the purpose of this report, it is most interesting to see how a shock in the number of enterprises impacts GDP. The outcome of this IRF for 16 predicted periods is provided in Table 16 along with the bounds of the 95% confidence interval of the IRF. Since the IRF for the model with two lags differs from the IRF for the model with four lags, the average of both IRFs is also provided.

Table 14: Outcomes VAR model with 4 lags

Dependent variable: number of enterprises				Dependent variable: Employment			
	Coef.	Std. Err.	p		Coef.	Std. Err.	p
Number of enterprises				Number of enterprises			
Lag 1	0.449***	0.128	< 0.001	Lag 1	0.041*	0.021	0.052
Lag 2	-0.044	0.149	0.770	Lag 2	-0.009	0.025	0.705
Lag 3	-0.042	0.150	0.780	Lag 3	-0.010	0.025	0.692
Lag 4	0.633***	0.134	< 0.001	Lag 4	-0.011	0.022	0.620
GDP				GDP			

Lag 1	0.304	0.345	0.379	Lag 1	0.150***	0.057	0.009
Lag 2	-0.423	0.494	0.392	Lag 2	-0.210**	0.082	0.010
Lag 3	-0.629	0.528	0.234	Lag 3	0.037	0.088	0.671
Lag 4	0.649**	0.320	0.043	Lag 4	0.010	0.053	0.846
Employment				Employment			
Lag 1	1.849	1.017	0.069	Lag 1	1.448***	0.169	< 0.001
Lag 2	0.527	1.766	0.765	Lag 2	-0.327	0.293	0.264
Lag 3	-4.558***	1.731	0.008	Lag 3	-0.129	0.287	0.654
Lag 4	2.066**	0.858	0.016	Lag 4	-0.044	0.142	0.756
Constant	2.934*	1.692	0.083	Constant	0.657**	0.281	0.019

Dependent variable: GDP

	Coef.	Std. Err.	p
Number of enterprises			
Lag 1	0.186***	0.069	0.007
Lag 2	-0.066	0.080	0.414
Lag 3	0.050	0.081	0.538
Lag 4	0.007	0.072	0.920
GDP			
Lag 1	1.128***	0.186	< 0.001
Lag 2	-0.606**	0.266	0.023
Lag 3	-0.012	0.284	0.967
Lag 4	0.005	0.172	0.976
Employment			
Lag 1	0.824	0.547	0.132
Lag 2	-0.465	0.950	0.625
Lag 3	0.152	0.931	0.870
Lag 4	-0.305	0.461	0.509
Constant	2.053**	0.911	0.024

Number of observations:

Log-likelihood:

Note: *p<0.1, **p<0.05, ***p<0.01.

The shock investigated here is a surprise 1% increase in the number of enterprises. The IRF measures the percentage increase in GDP from this shock in the number of enterprises relative to what it would have been without the shock.

Table 15: Outcomes VAR model with 2 lags

Dependent variable: number of enterprises

	Coef.	Std. Err.	p
Number of enterprises			
Lag 1	0.799***	0.162	< 0.001
Lag 2	0.229	0.167	0.171
GDP			
Lag 1	-0.126	0.442	0.776
Lag 2	-0.033	0.368	0.928
Employment			
Lag 1	0.620	1.031	0.548
Lag 2	-0.684	0.859	0.426
Constant	2.710	1.992	0.174

Dependent variable: Employment

	Coef.	Std. Err.	p
Number of enterprises			
Lag 1	0.037*	0.020	0.065
Lag 2	-0.030	0.021	0.146
GDP			
Lag 1	0.154***	0.054	0.005
Lag2	-0.156***	0.045	0.001
Employment			
Lag 1	1.548***	0.126	< 0.001
Lag 2	-0.587***	0.105	< 0.001
Constant	0.399	0.244	0.102

Dependent variable: GDP

	Coef.	Std. Err.	p
Number of enterprises			
Lag 1	0.191***	0.063	0.003
Lag 2	-0.050	0.065	0.441
GDP			
Lag 1	1.155***	0.173	< 0.001
Lag 2	-0.528***	0.144	< 0.001
Employment			
Lag 1	0.929**	0.403	0.021
Lag 2	-0.743**	0.336	0.027
Constant	1.186	0.778	0.128

Number of observations:	42
Log-likelihood:	539.063

Note: *p<0.1, **p<0.05, ***p<0.01.

To further aid interpretation of the IRFs, these results can be graphed. Note that for both models, the impulse response becomes statistically indistinguishable from zero from period nine onwards – the confidence interval straddles zero. Hence, the IRF will only be graphed until period nine.

As can be observed from all three figures, the initial impact of a 1-period increase in the number of enterprises is an increase in GDP. The increase of GDP peaks around five periods after the initial shock. Since the data used in the VAR model is quarterly, five periods equal one year and three months. After the peak, the quarterly impact of GDP returns slowly back to zero until around eight periods after the initial one-period shock – corresponding to a period of roughly two years – the impact of the shock is statistically indistinguishable from zero. As the table below shows, the difference in GDP before and after the shock remains statistically insignificant at the 5% level from period nine onwards.

Table 16: Impulse response function outcomes for models with 2 and 4 lags

	IRF for 2 lags VAR			IRF for 4 lags VAR			Average IRF
Period	IRF	Lower bound 95% CI	Upper bound 95% CI	IRF	Lower bound 95% CI	Upper bound 95% CI	
1	0.191%	0.067%	0.315%	0.186%	0.051%	0.320%	0.188%
2	0.357%	0.162%	0.552%	0.261%	0.045%	0.477%	0.309%
3	0.489%	0.221%	0.756%	0.316%	0.061%	0.571%	0.402%
4	0.565%	0.235%	0.895%	0.320%	0.072%	0.569%	0.443%
5	0.588%	0.214%	0.963%	0.350%	0.093%	0.607%	0.469%
6	0.565%	0.165%	0.965%	0.303%	0.041%	0.565%	0.434%
7	0.508%	0.099%	0.918%	0.229%	-0.021%	0.478%	0.368%
8	0.431%	0.024%	0.838%	0.146%	-0.095%	0.386%	0.288%
9	0.347%	-0.051%	0.745%	0.097%	-0.126%	0.321%	0.222%
10	0.265%	-0.121%	0.651%	0.047%	-0.157%	0.252%	0.156%
11	0.194%	-0.178%	0.567%	0.007%	-0.184%	0.198%	0.101%
12	0.138%	-0.221%	0.497%	-0.017%	-0.196%	0.162%	0.061%
13	0.099%	-0.247%	0.446%	-0.013%	-0.185%	0.159%	0.043%
14	0.077%	-0.257%	0.388%	-0.001%	-0.171%	0.169%	0.038%
15	0.068%	-0.252%	0.388%	0.014%	-0.155%	0.183%	0.041%
16	0.070%	-0.237%	0.376%	0.032%	-0.133%	0.197%	0.051%

Figure 3: Impulse reaction function, model with 2 lags

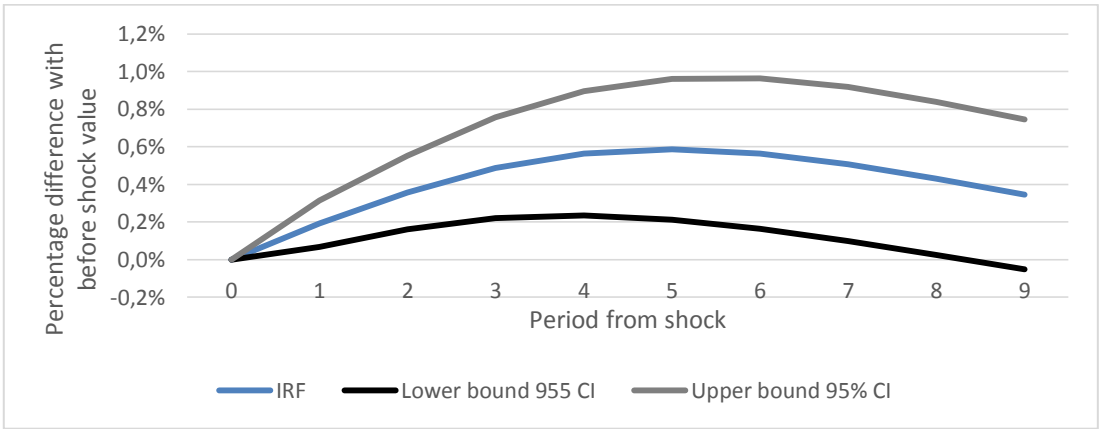


Figure 4: Impulse reaction function, model with 4 lags

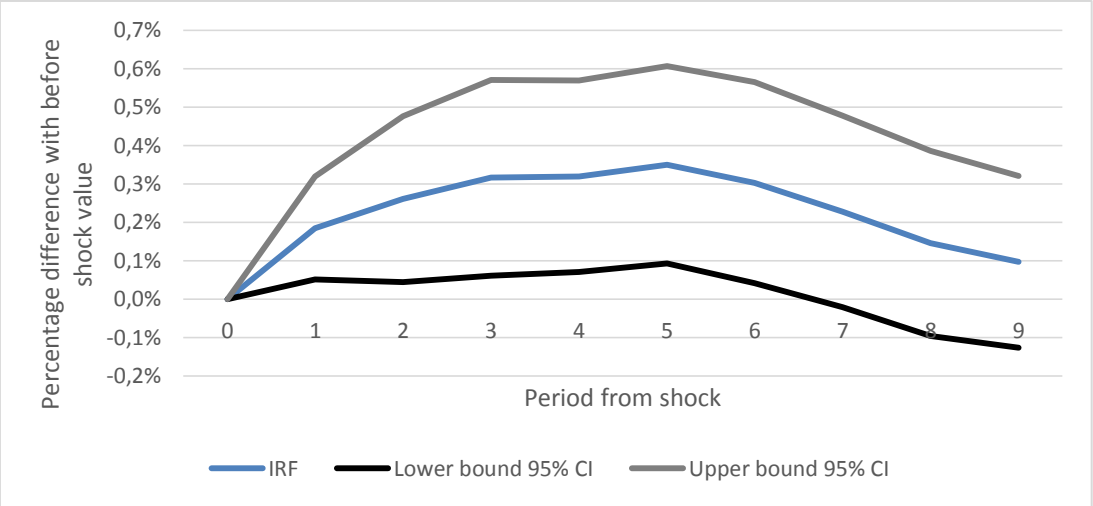
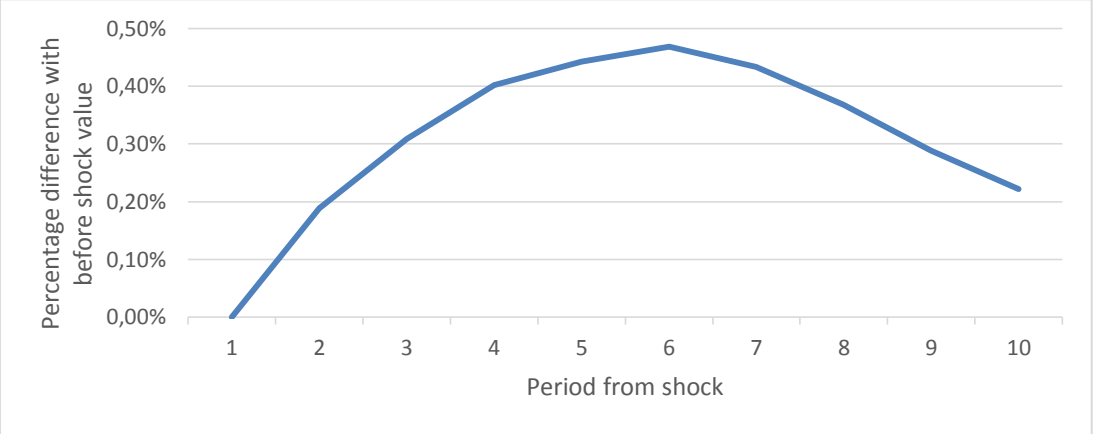


Figure 5: Impulse reaction function, averaged over both models



The IRF, however, only calculates per quarter the difference between what GDP would be with and without the shock in enterprises. To truly appreciate the effect of the number of enterprises one would have to add up all these "per period" effects. This can be done with a cumulative impulse response function, the outcomes of which are reported in table 4 and graphed in figures 4 through 6. Since the IRF is insignificant after period 9, the results are only presented up to period 9.

Table 17: Cumulative impulse reaction function for models with 2 and 4 lags

	IRF for 2 lags VAR			IRF for 4 lags VAR			Average IRF
Period	CIRF	Lower bound 95% CI	Upper bound 95% CI	CIRF	Lower bound 95% CI	Upper bound 95% CI	
1	0.191%	0.067%	0.315%	0.186%	0.051%	0.320%	0.188%
2	0.548%	0.239%	0.856%	0.446%	0.116%	0.777%	0.497%
3	1.037%	0.480%	1.593%	0.762%	0.215%	1.310%	0.900%
4	1.602%	0.743%	2.461%	1.083%	0.347%	1.818%	1.342%
5	2.190%	0.992%	3.389%	1.432%	0.511%	2.354%	1.811%
6	2.755%	1.201%	4.309%	1.735%	0.615%	2.856%	2.245%
7	3.263%	1.355%	5.171%	1.964%	0.660%	3.268%	2.614%
8	3.694%	1.448%	5.940%	2.109%	0.655%	3.564%	2.902%
9	4.041%	1.482%	6.600%	2.207%	0.640%	3.774%	3.124%

Figure 6: Cumulative impulse reaction function, model with 2 lags

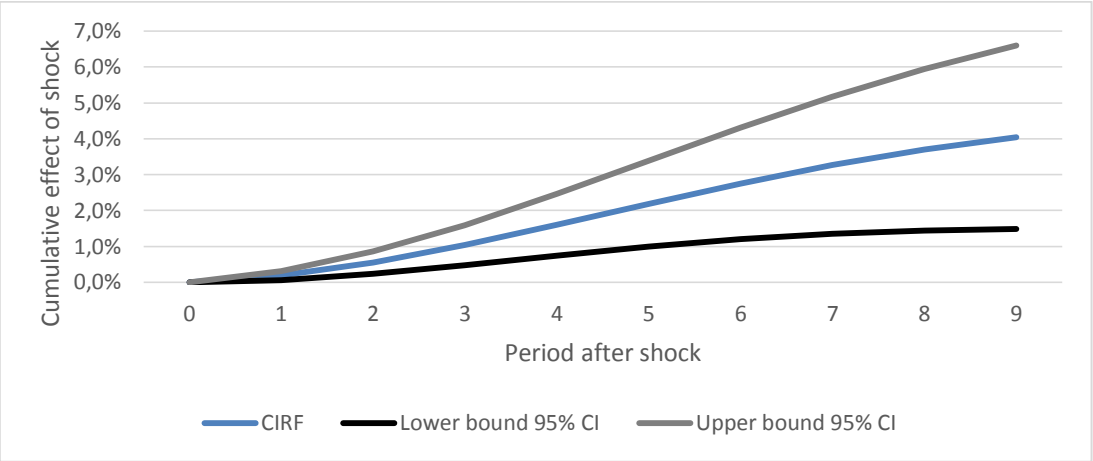


Figure 7: Cumulative impulse reaction function, model with 4 lags

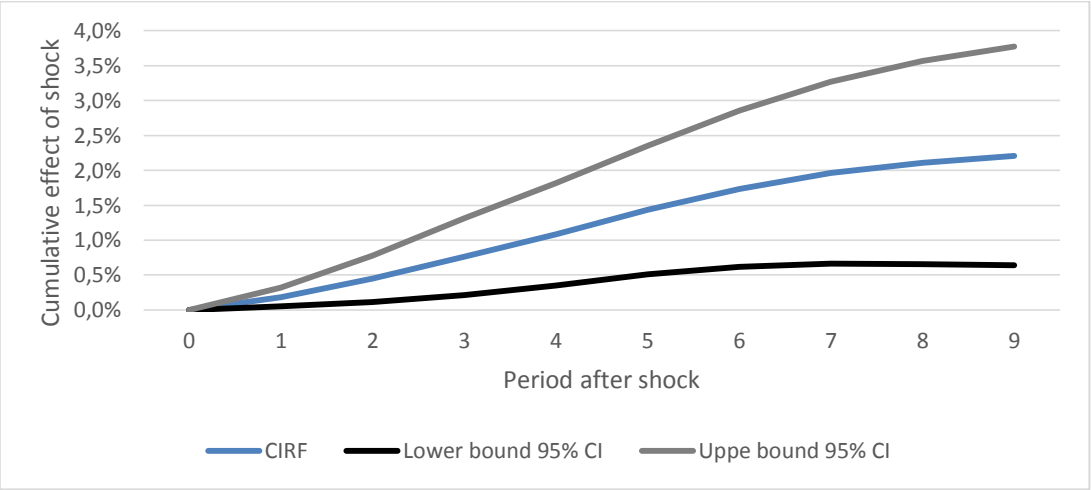
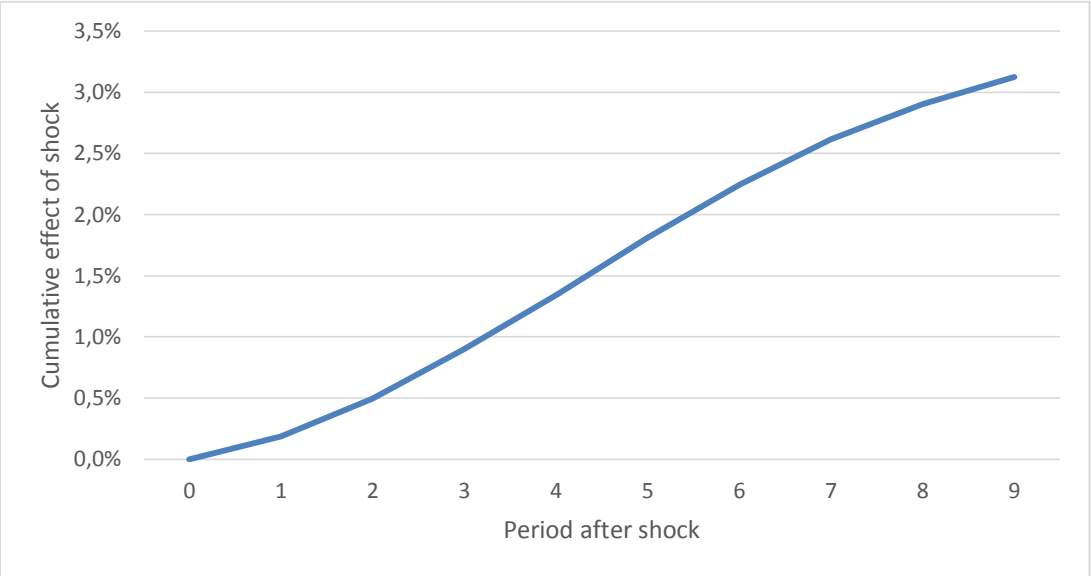


Figure 8: Cumulative impulse reaction function, averaged over both models



On average, the total effect of a 1% shock in the number of enterprises is a roughly 3% increase in GDP after two years. It needs to be noted that estimates for the impact of a shock over such a period are naturally uncertain. At the lowest end, the impact of a shock to GDP is only 0.7% after two years whereas the impact is as high as 5.9% at the highest end. It is clear, however, that the total impact on GDP of an increase of the number of enterprises is positive and economically non-negligable.

For the purpose of the analysis of the impact on the level of GDP at constant prices of an increase in the number of new businesses in the EU28, the latter being the result of a reduction in the discharge period to 3 years in all the Member States where it is still higher than 3 years, the central estimate lower bound estimate of 3.0% will be used and it will be bracketed by the lower and upper bounds..

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6. Annex

I. METHODOLOGICAL OVERVIEW

In this annex, we will provide an overview of the methodological steps to replicate and extend Armour and Cumming's model. Prior to detailing the estimation steps, we will give detailed information on the data collection.

The extension of the model to all EU28 countries, for a longer period of time (1990 to 2015) required the collection of new data.

The bankruptcy indicators were discussed extensively in the main body of this chapter.

The table below presents information on the data collected for the alternative dependent variables and the control variables.

Table 18: Data sources and notes on data collection

Variable	Source	Notes	% missing
Rate of self-employment	Eurostat		5.63
Birth rates	Eurostat	Sufficient data coverage for all EU28 is only available starting from 2008	80
Number of new businesses registered	World Bank	Sufficient data coverage for all EU28 is only available starting from 2004	64.08
real GDP growth	AMECO		3.57
real R&D growth	Eurostat		21.98
MSCI growth	Bloomberg	Annual average returns; for Cyprus, Latvia, Malta, Slovakia and Luxembourg), historical series of the MSCI returns were not available, and were thus replaced with the main stock market index growth rate (derived from Bloomberg).	30.63
tax burden (% GDP)	Eurostat	The income tax data did not show sufficient coverage for the EU28. For this reason, the variable 'income taxes on wages' was replaced with the % share of tax receipts over GDP (from Eurostat).	23.08

The replication of the results by Armour and Cumming (2008) and the extension of the model to the recent years and the whole group of EU28 countries involved a number of steps :

- Step 1: replication of the paper's results → to ensure consistency in the procedure
- Step 2a: replication of the model on the subset of 13 EU countries for the period 1990-2005, with newly updated bankruptcy variables and controls → to track the possible impact of introducing new variables
- Step 2b: replication of the model on the subset of 13 EU countries for the period 2005-2015, with newly updated bankruptcy variables and controls → to track the possible impact of new variables and the robustness of results in a different period of analysis
- Step 3: replication of the paper's results on the subset of 13 EU countries for the extended period i.e. up to 2015 → to gauge sensitivity of results to additional years, prior to the addition of other EU Member States

In addition, three other proxies for entrepreneurship were used in the last two steps:

- Step 4a: replication of the model using birth rates as opposed to the self-employment rate

- Step 4b: replication of the model using the share of new businesses per population, as opposed to the self-employment rate
- Step 4c: replication of the model using the share of new businesses per GDP, as opposed to the self-employment rate.

This annex presents the econometric results for each intermediate step.

As a first step, the original data was collected from the authors and the results were replicated, as shown below.

Table 19: Regression results in Panel A, Armour and Cumming, 2008

Variable	% Self employed (1)	% Self employed (2)	% Self employed (3)	% Self employed (4)	% Self employed (5)	% Self employed (6)	% Self employed (7)
time to discharge	-6.38e-05***	-6.38e-05***	-6.36e-05***	-6.40e-05***	-6.41e-05***	-6.90e-05***	-6.31e-05**
	(-2.815)	(-2.812)	(-2.789)	(-2.790)	(-2.790)	(-2.886)	(-2.484)
real GDP growth		4.35e-05	-0.000430	-0.000350	-0.000526	-0.00140	-0.00184
		(0.0272)	(-0.228)	(-0.185)	(-0.274)	(-0.653)	(-0.800)
real R&D growth			0.00135	0.00132	0.00141	0.00246	0.00269
			(0.520)	(0.507)	(0.538)	(0.895)	(0.948)
MSCI growth				-4.11e-06*	-4.28e-06*	-4.16e-06*	-4.39e-06*
				(-1.908)	(-1.960)	(-1.897)	(-1.880)
tax burden (% GDP)					-1.52e-05	-1.75e-05	-1.55e-05
					(-0.851)	(-0.965)	(-0.860)
bubble year 1999-2000						-0.000629	-0.000703
						(-1.143)	(-1.242)
trend							2.81e-05
							(0.436)
Constant	0.0618***	0.0618***	0.0617***	0.0617***	0.0620***	0.0622***	0.0618***
	(142.5)	(142.0)	(136.8)	(136.1)	(105.9)	(96.98)	(60.42)
Observations	240	240	240	240	240	240	240
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
R-squared	0.982	0.982	0.982	0.982	0.982	0.982	0.982

Note : the regressions include 13 EU countries as well as the USA and Canada as in the paper by Armour and Cumming. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 20: Regression results in Panel B, Armour and Cumming, 2008

Variable	% Self employed (8)	% Self employed (9)	% Self employed (10)	% Self employed (11)	% Self employed (12)	% Self employed (13)
minimum capital	-2.50e-07***	-1.98e-07***				
	(-3.326)	(-2.891)				
minimum capital * discharge years		-4.17e-09***				
		(-3.589)				
minimum capital % GDP			-0.00462***			
			(-5.754)			
exemptions=0				0.0593***		
				(27.67)		
exemptions =1				0.0511***		
				(18.92)		
exemptions =2				0.0442***		
				(18.12)		
disabilities=2					-0.00795***	
					(-5.476)	
disabilities=3					-0.00433***	
					(-3.680)	
disabilities=4					0.00142	
					(0.760)	
composition						-0.0125***
						(-5.305)
real GDP growth	-0.00112	-0.000734	-0.00216	-0.00747	-0.000567	-0.00117
	(-0.499)	(-0.331)	(-0.977)	(-1.227)	(-0.260)	(-0.522)
real R&D growth	0.00232	0.00261	0.00332	0.0105	0.00238	0.00354
	(0.867)	(0.955)	(1.267)	(1.507)	(0.897)	(1.269)
MSCI growth	-1.86e-06	-1.96e-06	-3.12e-06	3.34e-06	-4.99e-06**	-4.96e-06***
	(-0.724)	(-0.879)	(-1.339)	(0.313)	(-2.007)	(-3.436)
tax burden (% GDP)	5.59e-07	-9.66e-06	-4.72e-06	-8.24e-05	3.62e-05**	-1.16e-05
	(0.0282)	(-0.501)	(-0.246)	(-1.263)	(2.079)	(-0.697)
bubble year 1999-2000	-0.000241	-0.000471	4.21e-05	-0.00149	-0.000267	-0.000605
	(-0.433)	(-0.832)	(0.0762)	(-0.892)	(-0.517)	(-1.100)
trend	0.000108*	4.22e-05	7.04e-05	6.98e-05	0.000141**	-9.47e-06
	(1.747)	(0.695)	(1.270)	(0.606)	(2.377)	(-0.161)
Constant	0.0623***	0.0634***	0.0626***		0.0629***	0.0748***
	(69.52)	(75.54)	(89.21)		(71.74)	(26.07)
Country fixed effects?	yes	yes	yes	No (legal f.e. & country dummies)	yes	yes
Observations	240	240	240	240	240	240
R-squared	0.983	0.984	0.984	0.988	0.985	0.984

Note : the regressions include 13 EU countries as well as the USA and Canada as in the paper by Armour and Cumming. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Secondly, the same model with the same data was estimated for the subset of EU13 countries, i.e. excluding the USA and Canada from the estimation. The results are shown below.

Table 21: Regression results in Panel A, Armour and Cumming, 2008, EU countries only

Variable	% Self employed (1)	% Self employed (2)	% Self employed (3)	% Self employed (4)	% Self employed (5)	% Self employed (6)	% Self employed (7)
time to discharge	-6.36e-05***	-6.45e-05***	-6.49e-05***	-6.53e-05***	-6.54e-05***	-7.32e-05***	-7.90e-05***
	(-2.803)	(-2.841)	(-2.843)	(-2.843)	(-2.840)	(-3.059)	(-3.059)
real GDP growth		-0.000795	-1.85e-05	6.60e-05	-8.56e-05	-0.00150	-0.00110
		(-0.502)	(-0.00954)	(0.0339)	(-0.0432)	(-0.671)	(-0.461)
real R&D growth			-0.00232	-0.00237	-0.00228	-0.000724	-0.000976
			(-0.954)	(-0.968)	(-0.928)	(-0.271)	(-0.351)
MSCI growth				-3.94e-06*	-4.10e-06*	-3.89e-06*	-3.67e-06
				(-1.766)	(-1.808)	(-1.710)	(-1.531)
tax burden (% GDP)					-1.31e-05	-1.69e-05	-1.86e-05
					(-0.771)	(-0.977)	(-1.059)
bubble year 1999-2000						-0.00100*	-0.000936*
						(-1.920)	(-1.719)
trend							-2.71e-05
							(-0.390)
Constant	0.0630***	0.0631***	0.0631***	0.0631***	0.0634***	0.0637***	0.0641***
	(128.6)	(128.1)	(122.8)	(122.1)	(99.82)	(91.39)	(58.50)
Observations	208	208	208	208	208	208	208
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
R-squared	0.983	0.983	0.983	0.983	0.983	0.983	0.983

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 22: Regression results in Panel B, Armour and Cumming, 2008, EU countries only

Variable	% Self employed (8)	% Self employed (9)	% Self employed (10)	% Self employed (11)	% Self employed (12)	% Self employed (13)
minimum capital	-2.39e-07***	-1.78e-07***				
	(-3.246)	(-2.686)				
minimum capital * discharge years		-4.60e-09***				
		(-3.907)				
minimum capital % GDP			-0.00452***			
			(-5.657)			
exemptions=0				0.0440***		
				(29.73)		
exemptions =1				0.0521***		
				(32.44)		
exemptions =2				0.0446***		
				(30.98)		
disabilities=2					-0.00768***	
					(-5.338)	
disabilities=3					-0.00463***	
					(-3.850)	
disabilities=4					0.000688	
					(0.364)	
composition						-0.0134***
						(-5.448)
real GDP growth	-0.000422	1.28e-05	-0.00150	-0.00266	0.000110	-0.000434
	(-0.182)	(0.00565)	(-0.659)	(-0.717)	(0.0486)	(-0.188)
real R&D growth	-0.00104	-0.000839	0.000287	3.72e-06	-0.000933	0.000273
	(-0.402)	(-0.327)	(0.114)	(0.000802)	(-0.361)	(0.101)
MSCI growth	-1.45e-06	-1.52e-06	-2.58e-06	4.93e-06	-4.47e-06*	-4.32e-06***
	(-0.532)	(-0.653)	(-1.042)	(0.782)	(-1.693)	(-3.006)
tax burden (% GDP)	-1.27e-06	-1.28e-05	-6.11e-06	-8.10e-05**	3.29e-05**	-1.33e-05
	(-0.0658)	(-0.678)	(-0.327)	(-2.118)	(1.992)	(-0.832)
bubble year 1999-2000	-0.000374	-0.000656	-4.47e-05	-0.000897	-0.000414	-0.000759
	(-0.688)	(-1.192)	(-0.0825)	(-0.864)	(-0.838)	(-1.426)
trend	8.08e-05	-2.40e-06	3.87e-05	6.10e-06	0.000112*	-6.05e-05
	(1.200)	(-0.0370)	(0.652)	(0.0845)	(1.736)	(-0.968)
Constant	0.0640***	0.0653***	0.0644***		0.0646***	0.0775***
	(67.27)	(76.25)	(91.32)		(67.73)	(25.97)
Country fixed effects?	yes	yes	yes	No (legal f.e. & country dummies)	yes	yes
Observations	208	208	208	208	208	208
R-squared	0.983	0.985	0.985	0.996	0.986	0.985

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Thirdly, we proceded by replicating similar results for the 13 EU countries with updated GDP and R&D data.

Table 23: Regression results in Panel A, Armour and Cumming, 2008, EU countries only, replaced GDP and R&D

Variable	% Self employed (1)	% Self employed (2)	% Self employed (3)	% Self employed (4)	% Self employed (5)	% Self employed (6)	% Self employed (7)
time to discharge	-6.36e-05***	-6.47e-05***	-5.62e-05***	-5.05e-05**	-5.04e-05**	-5.38e-05**	-5.70e-05**
	(-2.803)	(-2.942)	(-2.611)	(-2.458)	(-2.446)	(-2.558)	(-2.382)
real GDP growth		-0.0223***	-0.0126	-0.0138	-0.0138	-0.0100	-0.00958
		(-2.668)	(-1.104)	(-1.233)	(-1.233)	(-0.884)	(-0.846)
real R&D growth			0.00114	9.06e-05	1.63e-05	0.00109	0.00113
			(0.200)	(0.0158)	(0.00283)	(0.179)	(0.185)
MSCI growth				4.50e-05***	4.46e-05***	4.30e-05***	4.32e-05***
				(5.156)	(5.055)	(4.559)	(4.516)
tax burden (% GDP)					-1.40e-05	-1.47e-05	-1.59e-05
					(-0.835)	(-0.875)	(-0.899)
bubble year 1999-2000						-0.000655	-0.000661
						(-1.326)	(-1.337)
trend							-1.58e-05
							(-0.224)
Constant	0.0630***	0.0637***	0.0599***	0.0599***	0.0602***	0.0602***	0.0604***
	(128.6)	(109.0)	(98.47)	(101.6)	(87.58)	(87.48)	(52.01)
Observations	208	208	177	177	177	177	177
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
R-squared	0.983	0.983	0.978	0.979	0.979	0.979	0.979

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 24: Regression results in Panel B, Armour and Cumming, 2008, EU countries only, replaced GDP and R&D

Variable	% Self employed (8)	% Self employed (9)	% Self employed (10)	% Self employed (11)	% Self employed (12)	% Self employed (13)
minimum capital	-6.55e-08	-7.67e-08				
	(-0.844)	(-1.046)				
minimum capital * discharge years		-4.10e-09***				
		(-3.405)				
minimum capital % GDP			-0.00351**			
			(-2.567)			
exemptions=0				0.0455***		
				(28.69)		
exemptions =1				0.0528***		
				(30.98)		
exemptions =2				0.0441***		
				(29.53)		
disabilities=2					-0.00769***	
					(-4.925)	
disabilities=3					-0.00347***	
					(-3.789)	
disabilities=4					0.00261	
					(1.494)	
composition						-0.00903***
						(-4.008)
real GDP growth	-0.00869	-0.00168	-0.00818	-0.00702	-0.00352	-0.00644
	(-0.787)	(-0.156)	(-0.742)	(-0.359)	(-0.350)	(-0.576)
real R&D growth	0.000940	-0.000592	0.000738	0.00704	-0.00286	0.000788
	(0.154)	(-0.0997)	(0.124)	(0.804)	(-0.512)	(0.133)
MSCI growth	4.79e-05***	4.08e-05***	4.44e-05***	5.38e-05*	4.56e-05***	2.65e-05**
	(4.605)	(4.275)	(4.505)	(1.728)	(4.351)	(2.600)
tax burden (% GDP)	-9.08e-06	-1.57e-05	-6.74e-06	-8.83e-05**	3.35e-05**	-1.36e-05
	(-0.506)	(-0.859)	(-0.378)	(-2.341)	(2.024)	(-0.819)
bubble year 1999-2000	-0.000407	-0.000797	-0.000109	-0.000723	-0.000431	-0.000577
	(-0.840)	(-1.603)	(-0.223)	(-0.716)	(-0.988)	(-1.201)
trend	4.39e-05	-2.71e-05	2.33e-06	-3.44e-05	0.000119*	-2.48e-05
	(0.675)	(-0.410)	(0.0390)	(-0.451)	(1.853)	(-0.386)
Constant	0.0595***	0.0611***	0.0610***		0.0611***	0.0690***
	(55.14)	(54.57)	(57.54)		(63.36)	(25.26)
Country fixed effects?	yes	yes	yes	No (legal f.e. & country dummies)	yes	yes
Observations	177	177	177	177	177	177
R-squared	0.978	0.980	0.979	0.996	0.983	0.980

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Fourthly, we proceded by replicating similar results for the 13 EU countries with all the updated variables that would subsequently be required to perform the estimation on all EU28 countries.

In this step, the dataset is updated with the new bankruptcy indicators collected by the Insolvency Experts. Then, the data is integrated with new variables to overcome problems of country coverage. The income tax variable is replaced with a Eurostat national variable of tax revenue as percentage of GDP: the MSCI variable is updated and integrated, for a small subset of countries, with the main stock market indices.

Table 25: Regression results in Panel A, Armour and Cumming, 2008, EU countries only, 1990 to 2015, replacing new variables (bankruptcy indicators, GDP, R&D, tax burden)

Variable	% Self emplo yed (1)	% Self emplo yed (2)	% Self emplo yed (3)	% Self employ ed (4)	% Self employe d (5)	% Self employe d (6)	% Self employe d (7)
time to discharge	-0.000111***	-0.000105***	-7.75e-05**	-0.000120***	-0.000116***	-0.000119***	-0.000128***
	(-3.249)	(-3.149)	(-2.325)	(-2.916)	(-2.986)	(-3.076)	(-3.264)
real GDP growth		0.0324**	0.0226	0.0353**	0.0457***	0.0475***	0.0419***
		(2.279)	(1.563)	(2.477)	(3.169)	(3.234)	(2.765)
real R&D growth			0.0183**	0.0129	0.0184**	0.0190**	0.0171*
			(2.221)	(1.411)	(2.185)	(2.192)	(1.936)
MSCI growth				0.000235	0.000307	0.000364	0.000225
				(0.240)	(0.327)	(0.386)	(0.238)
tax burden (% GDP)					-0.000785**	-0.000752**	-0.000719**
					(-2.452)	(-2.293)	(-2.230)
bubble year 1999-2000						-0.000761	-0.00101
						(-0.955)	(-1.265)
trend							-7.03e-05
							(-1.186)
Constant	0.0696***	0.0689***	0.0651***	0.0639***	0.0868***	0.0859***	0.0864***
	(148.4)	(130.4)	(120.7)	(104.5)	(9.408)	(9.083)	(9.129)
Observations	338	338	294	251	242	242	242
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
R-squared	0.972	0.973	0.972	0.978	0.981	0.981	0.981

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 26: Regression results in Panel B, Armour and Cumming, 2008, EU countries only, 1990 to 2015, replacing new variables (bankruptcy indicators, GDP, R&D, tax burden)

Variable	% Self employed (8)	% Self employed (9)	% Self employed (10)	% Self employed (11)	% Self employed (12)	% Self employed (13)
minimum capital	-6.84e-08	-4.85e-08				
	(-1.323)	(-0.952)				
minimum capital * discharge years		-3.21e-09				
		(-1.272)				
minimum capital % GDP			-0.00219*			
			(-1.812)			
exemptions=0				0.0697***		
				(13.31)		
exemptions =1				-		
exemptions =2				0.0997***		
				(18.78)		
disabilities=2					-0.00100	
					(-0.425)	
disabilities=3					-0.00473**	
					(-2.529)	
disabilities=4					-	
composition						0.00458***
						(2.918)
real GDP growth	0.0469***	0.0466***	0.0458***	0.0469***	0.0477***	0.0453***
	(3.058)	(3.045)	(2.986)	(3.797)	(3.119)	(3.052)
real R&D growth	0.0187**	0.0183*	0.0184**	0.0194***	0.0208**	0.0169*
	(2.020)	(1.961)	(1.985)	(2.744)	(2.239)	(1.880)
MSCI growth	0.000110	0.000249	7.13e-05	0.000150	0.000437	7.25e-06
	(0.112)	(0.252)	(0.0729)	(0.157)	(0.446)	(0.00764)
tax burden (% GDP)	-0.000801**	-0.000804**	-0.000812**	-0.000805***	-0.000776**	-0.000760**
	(-2.386)	(-2.383)	(-2.422)	(-3.395)	(-2.236)	(-2.355)
bubble year 1999-2000	-0.000518	-0.000722	-0.000341	-0.000587	-0.000831	-0.000471
	(-0.649)	(-0.880)	(-0.426)	(-0.622)	(-1.006)	(-0.599)
trend	-5.53e-05	-7.59e-05	-9.58e-05	-2.76e-05	-6.43e-05	-9.89e-06
	(-0.869)	(-1.136)	(-1.283)	(-0.487)	(-1.114)	(-0.174)
Constant	0.0874***	0.0880***	0.0887***		0.0880***	0.0802***
	(9.087)	(9.149)	(9.273)		(8.459)	(8.770)
Country fixed effects?	yes	yes	yes	No (legal f.e. & country dummies)	yes	yes
Observations	242	242	242	242	242	242
R-squared	0.980	0.980	0.980	0.997	0.981	0.980

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The following two tables report results of the same specification above, but for a reduced period, i.e. from 1995 to 2005.

Table 27: Regression results in Panel A, Armour and Cumming, 2008, EU countries only, 1990 to 2005, replacing new variables (bankruptcy indicators, GDP, R&D, tax burden)

Variable	% Self employed (1)	% Self employed (2)	% Self employed (3)	% Self employed (4)	% Self employed (5)	% Self employed (6)	% Self employed (7)
time to discharge	6.85e-05***	6.64e-05***	6.61e-05***	6.49e-05*	4.84e-05	5.66e-05	4.84e-05
	(3.094)	(3.188)	(2.758)	(1.932)	(1.498)	(1.643)	(1.355)
real GDP growth		-0.0411***	-0.0456***	-0.0258	0.0155	0.00654	0.000792
		(-3.646)	(-2.738)	(-1.233)	(0.737)	(0.268)	(0.0320)
real R&D growth			0.00623	0.00363	0.0112*	0.00996	0.00825
			(0.872)	(0.481)	(1.878)	(1.581)	(1.383)
MSCI growth				0.000803	0.000492	0.000532	0.000490
				(1.176)	(0.965)	(1.027)	(0.948)
tax burden (% GDP)					-0.000639**	-0.000693**	-0.000654**
					(-2.384)	(-2.549)	(-2.319)
bubble year 1999-2000						0.000699	0.000704
						(1.027)	(1.023)
trend							-7.36e-05
							(-0.914)
Constant	0.0681***	0.0693***	0.0643***	0.0610***	0.0794***	0.0811***	0.0811***
	(173.7)	(140.5)	(100.7)	(79.95)	(10.19)	(10.19)	(10.19)
Observations	208	208	177	134	125	125	125
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
R-squared	0.987	0.988	0.984	0.988	0.993	0.993	0.993

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 28: Regression results in Panel B, Armour and Cumming, 2008, EU countries only, 1990 to 2005, replacing new variables (bankruptcy indicators, GDP, R&D, tax burden)

Variable	% Self employed (8)	% Self employed (9)	% Self employed (10)	% Self employed (11)	% Self employed (12)	% Self employed (13)
minimum capital	4.14e-08	3.89e-08				
	(0.917)	(0.844)				
minimum capital * discharge years		1.77e-09				
		(0.763)				
minimum capital % GDP			-3.33e-05			
			(-0.0276)			
exemptions=0				0.0651***		
				(11.08)		
exemptions =1				-		
exemptions =2				0.0837***		
				(11.15)		
disabilities=2					-0.00617***	
					(-4.726)	
disabilities=3					-0.00470***	
					(-3.893)	
disabilities=4					-	
composition						-0.00187
						(-1.053)
real GDP growth	0.00511	0.00325	0.00442	0.00443	0.0128	0.00469
	(0.203)	(0.130)	(0.176)	(0.216)	(0.563)	(0.186)
real R&D growth	0.00964	0.0102	0.00857	0.00858	0.00567	0.00882
	(1.541)	(1.644)	(1.429)	(1.282)	(1.004)	(1.477)
MSCI growth	0.000690	0.000623	0.000585	0.000591	0.000741	0.000589
	(1.206)	(1.105)	(0.969)	(0.774)	(1.342)	(1.094)
tax burden (% GDP)	-0.000689**	-0.000706**	-0.000660**	-0.000661**	-0.000694**	-0.000711**
	(-2.376)	(-2.434)	(-2.295)	(-2.378)	(-2.477)	(-2.343)
bubble year 1999-2000	0.000419	0.000570	0.000462	0.000460	0.000209	0.000478
	(0.625)	(0.820)	(0.674)	(0.754)	(0.301)	(0.718)
trend	-9.90e-05	-6.93e-05	-0.000115	-0.000114	-0.000156**	-0.000131
	(-1.227)	(-0.842)	(-1.481)	(-1.450)	(-2.032)	(-1.613)
Constant	0.0823***	0.0823***	0.0822***		0.0878***	0.0859***
	(10.22)	(10.24)	(10.30)		(10.79)	(8.856)
Country fixed effects?	yes	yes	yes	No (legal f.e. & country dummies)	yes	yes
Observations	125	125	125	125	125	125
R-squared	0.993	0.993	0.993	0.999	0.994	0.993

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The following two tables report results of the same specification above, but for a reduced period, i.e. from 2006 onwards.

Table 29: Regression results in Panel A, Armour and Cumming, 2008, EU countries only, 2006 onwards, replacing new variables (bankruptcy indicators, GDP, R&D, tax burden)

Variable	% Self employed (1)	% Self employed (2)	% Self employed (3)	% Self employed (4)	% Self employed (5)	% Self employed (6)	% Self employed (7)
time to discharge	6.37e-05	0.000104*	-0.000286	-0.000305	-0.000206	-0.000206	-0.000404
	(0.968)	(1.721)	(-0.410)	(-0.434)	(-0.335)	(-0.335)	(-0.699)
real GDP growth		0.0315*	0.0265	0.0271	0.0321	0.0321	0.0235
		(1.692)	(1.290)	(1.297)	(1.614)	(1.614)	(1.340)
real R&D growth			0.0145	0.0131	0.0164	0.0164	0.00937
			(0.866)	(0.727)	(1.006)	(1.006)	(0.583)
MSCI growth				-0.000872	-0.000470	-0.000470	-0.000269
				(-0.399)	(-0.230)	(-0.230)	(-0.143)
tax burden (% GDP)					-0.000827	-0.000827	-0.000650
					(-1.645)	(-1.645)	(-1.458)
bubble year 1999-2000						-	-
trend							-0.000437**
							(-2.362)
Constant	0.0655***	0.0647***	0.0695***	0.0698***	0.0920***	0.0920***	0.0989***
	(82.30)	(89.57)	(7.887)	(7.874)	(5.265)	(5.265)	(5.803)
Observations	130	130	117	117	117	117	117
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
R-squared	0.978	0.979	0.982	0.982	0.983	0.983	0.984

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 30: Regression results in Panel B, Armour and Cumming, 2008, EU countries only, 2006 onwards, replacing new variables (bankruptcy indicators, GDP, R&D, tax burden)

Variable	% Self employed (8)	% Self employed (9)	% Self employed (10)	% Self employed (11)	% Self employed (12)	% Self employed (13)
minimum capital	-	-				
minimum capital * discharge years		-				
minimum capital % GDP			-0.0388*			
			(-1.928)			
exemptions=0				0.0791***		
				(10.50)		
exemptions =1				0.0809***		
				(11.14)		
exemptions =2				0.0944***		
				(10.55)		
disabilities=2					-	
disabilities=3					-	
disabilities=4					-	
composition						0.00190
						(0.390)
real GDP growth	0.0261	0.0261	0.0225	0.0261*	0.0261	0.0256
	(1.524)	(1.524)	(1.329)	(1.784)	(1.524)	(1.540)
real R&D growth	0.00951	0.00951	0.00751	0.00951	0.00951	0.00987
	(0.591)	(0.591)	(0.465)	(0.926)	(0.591)	(0.604)
MSCI growth	-0.000186	-0.000186	0.000130	-0.000186	-0.000186	-0.000231
	(-0.0987)	(-0.0987)	(0.0703)	(-0.125)	(-0.0987)	(-0.122)
tax burden (% GDP)	-0.000680	-0.000680	-0.000654	-0.000680**	-0.000680	-0.000664
	(-1.488)	(-1.488)	(-1.467)	(-2.088)	(-1.488)	(-1.445)
bubble year 1999-2000	NA	NA	NA	NA	NA	NA
trend	-0.000417**	-0.000417**	-0.000569**	-0.000417***	-0.000417**	-0.000397**
	(-2.349)	(-2.349)	(-2.383)	(-2.650)	(-2.349)	(-2.081)
Constant	0.0941***	0.0941***	0.104***		0.0941***	0.0913***
	(6.633)	(6.633)	(6.283)		(6.633)	(5.688)
Country fixed effects?	yes	yes	yes	No (legal f.e. & country dummies)	yes	yes
Observations	117	117	117	117	117	117
R-squared	0.984	0.984	0.984	0.997	0.984	0.984

Note : the regressions include 13 EU countries. The table presents OLS estimates of a model explaining self employment over population. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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