From Start-up to Scale-up: An approach to Andalusian high growth companies through Social Accounting Matrices

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Abstract:

Public authorities are increasingly focusing on the so-called scale-ups, i.e., start-ups that have experienced growth over 20% for at least three consecutive years. The general belief is that these companies have a greater impact on the economy, especially in terms of job creation, and therefore, in a situation where public resources are scarce, it is necessary to ask whether these resources should continue to be devoted to generation of new companies, or these should be oriented to the promotion of scale-ups. This paper addresses this question. In order to do so, we have chosen a regional economy (Andalusia, in Spain) and have studied how this issue affects it. Our starting point has been the impact that entrepreneurial activity has on the regional economy of Andalusia in terms of GDP, productive output and employment, which we have compared with the effect it would have if instead of creating new ventures, only companies with the characteristics of a scale-up would be created. For that purpose, we have developed a multisector model, based on Social Accounting Matrices (SAM), to measure this impact, and we have applied it to Andalusia in 2014. The results obtained show how in absolute terms scale-ups have a greater impact on gross domestic product, productive output and job creation than traditional entrepreneurial activity. However, this is not enough to justify ceasing allocation of funds to promote the creation of new ventures, to focus, instead, on the promotion of scale-ups.

Keywords: Social Accounting Matrices, Entrepreneurship, Andalusia, Regional Economy; Start-ups; Scale-ups

JEL Classification: C67, D57, L26, R15

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1. Introduction and Objectives

It is generally accepted that a small percentage of companies can generate a high benefit to society. For that reason, the so-called high-growth companies, as engines of economic growth and employment, are increasingly attracting the attention of researchers and policy makers. For example, the European Commission, in its strategy Europe 2020, specifically mentions that one of its objectives is "to create the conditions for high growth SMEs to lead emerging markets and to stimulate ICT innovation across all business sectors " (European Commission, 2010, p.14).

On the other hand, it is important to note that it is practically impossible to identify in advance which companies will reach high levels of growth (Daunfeldt et al., 2014). For that reason, most efforts when designing public policies have been oriented to facilitate the general conditions for the creation of new businesses and the early stages of business growth. However, although framework conditions are theoretically the same for both, newly created companies and high-growth companies, policies designed to stimulate business growth are different from those needed to stimulate the creation of ventures. This has led the public sector, especially in Europe, to take a special interest in the promotion of the so-called scale-ups. For example, the European Commission has launched the initiative Start-up Europe Partnership, aimed to transform European start-ups into high growth companies.

Therefore, our research has focused on comparing, at regional level, the economic impact of new ventures (start-ups) with the potential economic impact of high growth companies (scale-ups). We will try to prove that in these companies there is greater wealth and job creation and that, therefore, it is necessary to promote specific economic policies for this kind of ventures. In order to do so, we have chosen Andalusia, in the south of Spain.

2. Start-ups vs Scale-ups: conceptualisation and delimitation.

Entrepreneurship is one of the driving forces of economy and one of the drivers of economic progress (Kirzner et al., 1980): there is no society capable of progressing in its parameters of well-being if it is not sufficiently competitive, for which it needs to be innovative as a whole and, in order to achieve this, it needs to have entrepreneurs. This fact is confirmed by many examples in different countries like New Zealand, Finland, South Africa, Israel, India or Japan, to name just a few of them. Therefore, this issue (entrepreneurship) has been part a component of economic and social policies in developed countries and, in addition, in recent years, it has become a concern in the field of regional science, since many of the formulas that have been proposed as a solution to

the economic crisis have been based on the promotion of entrepreneurship (Gittell et al., 2014, Doran et al., 2016).

Furthermore, entrepreneurship is associated with positive values (Lupiáñez et al., 2014), since it usually refers to people with courage and enthusiasm, who start the adventure of starting a business, overcoming the problems that may be found along the way (Uribe Toril & Pablo Valenciano, 2011).

However, despite the widespread use of the notion, the truth is that currently there is no official or globally accepted definition for the term entrepreneur, so the debate on this concept has been open for a long time (Obino Mokaya et al., 2012), without reaching a definitive understanding for the moment.

The term entrepreneur has its origin in the French word *entrepreneur,* whose root in Latin is *prendere,* which means to catch or to surprise (Marulanda et al., 2014). Most definitions of the term focus on the personal characteristics of the entrepreneur and the contributions of entrepreneurs to the economy (Hébert and Link, 1989). Thus, Drucker (Drucker, 1985) defines an entrepreneur as a businessperson who is an innovator, and asserts that a small and new business does not necessarily mean entrepreneurship, although risks are always taken. Therefore, an entrepreneur would be someone who perceives an opportunity and creates an organization around it to take advantage of it (Bygrave and Hofer, 1991). This would differentiate two characteristics for an entrepreneur: one, it is someone who assumes risks; and two, it is an innovator that seeks to differentiate itself from the rest of companies (Pereira, 2003). Summarizing, studies on entrepreneurship do not reach a consensus about the definition of the term, but most of them agree that an entrepreneur is driven by the need to innovate and take risks, ie, it is able to work with a high degree of uncertainty (Bucardo, Saavedra and Camarena, 2015).

Therefore, if we want to estimate the economic effects of entrepreneurial activity, it is necessary to have a definition of it in quantitative terms. To that purpose, the Global Entrepreneurship Monitor (GEM) [1] understands entrepreneurship as any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business, when it survives for more than three and a half years (Wong et al., 2005). In addition, this same report focuses on the phase that combines the stage before

[1] The GEM Project, which is the main global study on entrepreneurship, was born in 1999, leaded by researchers from London Business School (UK) and Babson College (USA). Its objective is to assess the level of entrepreneurial activity in different countries, to understand how it evolves over time and to make comparisons between different countries, all of it based on empirical data (Álvarez et al., 2014).

the start of a new firm (nascent entrepreneurship) and the stage directly after the start of a new firm (owning-managing a new firm). Taken together, this phase is defined in a rate named "Total Early-Stage Entrepreneurial Activity" (TEA). Given that the current economic models do not explicitly define and analyse entrepreneurs and entrepreneurial activity (Reynolds P, Bosma, N., Autio, E. et al., 2005) it will be this scope of the concept the one that we will consider for our research, since it allows to limit entrepreneurial activity to a specific and measurable number of companies. Furthermore, it is a meaning that is also significant from the legal point of view and, hence, acceptable when defining economic policy instruments oriented to this activity.

Nevertheless, faced with the concept of entrepreneur, in the last few months the term scale-up has emerged to refer to entrepreneurial activity that has the ability to grow quickly to reach new markets and customers in a short space of time, usually based on the development of innovative products. This high growth ability means that these companies will probably have a greater impact on the economy and the generation of employment, so that they pose a challenge to public authorities, which query about whether to continue contributing resources to the generation of new ventures (with the risk that many of them will not survive after 42 months) or focus on encouraging scale-ups, which allows a faster and more sustainable growth in the medium term.

To address this question, it is necessary that we also define the term scale-up. Here, unlike what happens with the term entrepreneur, there is still little literature about it, due, among other things, to the lateness of the concept. The usual starting point to define the term scale-up is to identify this kind of companies with any venture that experiences an average annual growth in employment and turnover of more than 20%, during a period of three consecutive years (Eurostat, 2016). From this point, different qualifications are introduced: for instances, that a scale-up has to have at least 10 employees at the beginning of the three-years period (OECD, 2007), that a scale-up is a company that, besides, raises funding for over one million euros (SEP Monitor, 2017) or a scale-up must have a turnover of more than 5 million euros at the beginning of the three-years period (J. Jensen, 2017). The definition of scale-up, therefore, focuses on companies that have experienced a great growth of their turnover as this is the most reliable and objective measure and, indirectly, a good approximation on how innovative the company is.

For the European Commission (Mind the Bridge, 2017), the characteristics of a scale-up are the following:

- Young companies, usually with less than 5 years of experience.

- SMEs with a verified, operational and effective business plan, a stable team, a consolidated cash flow and a relevant position in the market of origin.
- SMEs with great ambitions, but at the same time realistic, with potential for expansion in markets driven by innovation in a broad sense (technological, knowledge-based, innovative business model, etc.).
- SMEs that want to develop the European Single Market, marketing new products or services, or innovating on existing ones, to expand their business beyond national borders and, therefore, creating growth opportunities.
- SMEs willing to receive and properly manage financial support which it is necessary for its expansion (loan, guarantees, venture capital or any other relevant source of financing) (Danish SME Envoy Report, 2016)

Finally, it should be noted that in some cases the term scale-up is associated with a specific phase of the development process of a company and / or with a specific type of company. Thereby, a scale-up would be a high-tech company in a stage of development in which it seeks to grow in terms of market access, income and number of employees, relying on collaboration with already established companies (Onetti, 2014). Accordingly, they would be companies that have overcome the launching phase and are in full execution of a previously defined business model.

3. Methodology: Input-Output Models and Social Accounting Matrices

To analyse in a comparative manner the economic impact of start-ups with the economic impact of scale-ups we have used a methodology based on the concept of Social Accounting Matrix (SAM). SAMs are matrix presentations of the whole set of economic flows among agents in a given time period, typically one year, and involve the integration of social statistics in the system of economic accounts, i.e., the integration of the information provided by Input Output Tables (IOTs) showing the intersectoral relationships in the economic system and also the relationship among the productive structure and the transactions of distribution, accumulation and use of income of the different institutions (Fernández et al., 2004). These models have allowed a great advance in data analysis and modelling, especially those related with the analysis of socioeconomic impacts.

The structure of SAM is flexible and can take different forms depending on its intended use: accounts corresponding to activity sectors can be more or less disaggregated, if the

objective is to analyse a specific sector; the types of consumers or types of taxes can be disaggregated, if social or tax policies are going to be evaluated; the external sector account can be separated into different areas, even at regional level, to assess interregional relations; or the number of accounts in the matrix of intermediate consumption can be doubled, discriminating between activities and products (Cardenete and Sancho, 2003) . Even so, there are also matrices in which the order of the accounts is determined by the area of the economy that the researcher wants to highlight.

In short, the model, the level of disaggregation and the order of the accounts is made according to the model that is going to be built with the SAM and its application, placing greater emphasis on accounts that will be analysed or depending on the objective of the research (regional analysis, tax analysis, sectoral analysis, etc). Therefore, these are flexible models, as we have already mentioned, but there is a basic structure, which we can name standard, although we have to comply with certain rules so that the SAM has meaning for itself and is useful as a database.

For the purpose of our research, we employ Linear SAM Models, based on the inverse matrix of Leontief's model (1941) and Ghosh's model (1958) and the combination of two kinds of intersectoral linkages, the Backward Linkages (diffusion effect) and the Forward Linkages (absorption effect) calculated from these (Defourney and Thorbecke 1984, Pyatt and Round 1977, Stone 1985). The use of a Linear SAM model through the multiplier decomposition allows us to classify the regional productive sectors according to their capacity to influence and to be influenced by changes in themselves and in the rest of the economic system, considering the corresponding average values as reference.

The methodology is based on the combination of two types of intersectoral links, the Backward Linkages (BL), and the Forward Linkages (FL). The first ones (BL) provide information on the effect of increasing the demand of a sector in the economy, i.e., where the inputs that a sector requires to increase its production come from. The FLs offer information about the effect in the other sectors of changes in the value of primary inputs, and, therefore, in the production, of a specific sector, i.e., what is the destination of the production of a sector and to what extent the variation in its valuation affects the rest.

Specifically, to carry out this research, a methodology of multisectoral models has been used. For this purpose, on one hand we have elaborated a vector calculating the shock that the entrepreneurial (start-up) activity involves for the economic activity in Andalusia; and on the other hand, we have estimated the shock that would suppose for the same economy if a percentage of these start-ups would be transformed into scale-ups. Explicitly, the

impact analysis has been carried out on the production of the economy as a whole, on the Gross Domestic Product (GDP) and on employment in the region, using for that the SIMSIPSAM software[2].

This model is a clear example of the advantages of SAM analysis over the traditional input-output approach, given that IOTs do not consider the interdependencies that are present in the circular flow of income, while SAMs incorporate these flows. That also allows assessing the effects derived from the circular flow of income (for example, the effect of a change in income on the levels of activity, called induced effects).

4. Data

4.1 Social Accounting Matriz for Andalusia 2014 (SAMAND14)

The empirical application has been made using the SAM built for Andalusia for year 2014 (Cardenete, Delgado and Campoy, mimeo, 2016) called SAMAND14. The use of SAMAND14 instead of appealing directly to the IOT is justified because it enables a more disaggregated structure of expenditure and income, integrating the relationships between institutional sectors, estimated with information from national accounting systems. This way, the objective of closing the full economic flow is achieved. Thus, a SAM is a consistent framework gathering national income data, product accounts, input-output table, and which reflects the monetary flows between institutions.

SAMAND has been built from the symmetric tables of the last Input-Output Framework for Andalusia in 2010 (MIOAN10[3]), published by the Institute of Statistics and Cartography of Andalusia (IECA), updated for 2014. MIOAN10 has been chosen because it is the only table that introduces homogeneous branches in rows and in columns. Since in the SAMAND14 goods and services accounts and production accounts have been joined together, a table with the same level of detail by rows and columns was required. Nevertheless, although most of the information has been built in from this table, we have used other statistical sources to complete the information, such as the Spanish Regional Accountancy, published by the Spanish National Institute of Statistics (INE).

This study works with a SAM divided into 37 productive sectors with 10 more for institutional sector accounts, as shown in Table 1.

[2] SIMSIPSAM stands for Simulation for Social Indicators and Poverty using Social Accounting Matrix. It is a software developed by World Bank (Parra and Wodon, 2009), which is based on a Microsoft Excel application on MATLAB. It can be used to analyse Input-Output and SAM Tables. The application can be used to perform various types of analysis and decomposition and to obtain detailed results and graphs for different simulations.

[3] MIOAN1O is the acronym for Marco Input Output en Andalucia 2010.

Table 1. Structure of the SAM of Andalusia 2014 (SAMAND14).

	Productive Sectors
1	Agriculture, forestry and fishing
2	Extractive industries
3	Food, beverage and tobacco industries
4	Textile industry, garment manufacturing, leather and footwear industry
5	Wood and cork industry, paper industry and graphic arts
6	Oil refining and treatment of nuclear waste
7	Chemical industry
8	Manufacture of pharmaceutical products
9	Manufacture of rubber and plastics products and other non-metallic mineral products
10	Metallurgy and metal products manufacturing, except machinery and equipment
11	Manufacture of computer, electronic and optical products
12	Manufacture of electrical equipment and materials
13	Manufacture of machinery and equipment
14	Manufacture of transport equipment
15	Furniture manufacturing; Other manufacturing industries and repair and installation of machinery and equipment
16	Electricity, gas, steam and air conditioning supply
17	Water supply; Sanitation, waste management and decontamination activities
18	Building
19	Wholesale and Retail; Repair of motor vehicles and motorcycles
20	Tourism
21	Storage, transport and communications activities
22	Publishing, audio visual and broadcasting activities
23	Telecommunications
24	Programming, consultancy and other activities related to information technology; Information services
25	Financial, insurance and auxiliary services
26	Legal and accounting activities; Business management consultancy activities; Architectural and engineering technical services
27	Research and development
28	Advertising and market research; Other professional, scientific and technical activities; Veterinary activities
29	Activities related to employment
30	Security and research activities; Services to buildings and gardening activities
31	Office administrative activities and other activities auxiliary to enterprises
32	Public administration and defence;
33	Education
34	Health Activities
35	Social service activities
36	Other services
37	Activities of households as employers of domestic personnel or as producers of goods and services for their own use

	Institutional Sectors
38	Labour
39	Capital
40	Consumption
41	Social Security contributions paid by employers
42	Indirect Taxes
43	Direct Taxes
44	Social Security contributions paid by employees
45	Public Sector
46	Savings / Investment
47	Foreign Sector

Source: Cardenete, Delgado y Campoy (2016).

4.2 Entrepreneurial activity and scale-ups in Andalusia in 2014

To estimate the entrepreneurial activity in Andalusia for 2014, our starting point have been the number of start-up companies, considering both those recently created and those spanning 3 years after the birth of the company, in accordance with TEA rate. (Cardenete and García-Tapial, 2018). Thereafter,

$$E_{ae} = E_{nc} + E_{nu} \quad (1)$$

where E_{ae} is the total number of start-up companies, E_{nc} is the total number of new firms for one year and E_{nu} is the number of companies spanning up to 3 years after the birth of the company.

Next, we have estimated the productive output associated with those companies. Given that there is a clear relationship between productivity and the age of a company (Kok et al., 2006), that the level of productivity of start-ups is lower than the average productivity of their sector (JB Jensen et al., 2001) and that productivity increases as the size of the company increases (Taymaz, 2005), we have assumed that, from the productive output of each productive sector, 75% corresponds to companies with more than 20 employees and 25% to companies with less than 20 employees. This is because in Spain the productivity of large companies (with more than 1,000 employees) is, at least, three times more than productivity of companies with less than 20 employees (INE, Survey Industrial of Companies, 2013). Thereafter,

$$O_p = O_t * 0{,}25 \quad (2)$$

being O_p Total productive output for companies with less than 20 employees and O_t Total productive output for the productive sector.

Finally, as 98% of Andalusian companies are companies with 20 or fewer employees (Institute of Statistics and Cartography of Andalusia (IECA), 2014), we have considered that start-ups, with a 98% likelihood will be companies with less than 20 employees, and that, as a result, their productivity will be the same as those. Hence, the Output start-up companies would be:

$$O_{AE} = \sum O_p \times (E_{ae} / E_p) \quad (3)$$

being O_{ae} Productive output for start-ups and E_p the number of companies with less than 20 employees.

Because of these calculations, we have obtained the Output productive vector corresponding to start-ups in Andalusia for 2014. This vector has been used to estimate the economic impact of these companies, as shown in Table 2.

Table 2: Productive Output for Start-ups in Andalusia, 2014 (thousands of Euros)

Productive Sectors	O_{ae}
Extractive industries	19.240,56 €
Food, beverage and tobacco industries	555.375,88 €
Textile industry, garment manufacturing, leather and footwear industry	74.092,38 €
Wood and cork industry, paper industry and graphic arts	774.562,63 €
Chemical industry	22.326,43 €
Manufacture of pharmaceutical products	171.593,32 €
Manufacture of rubber and plastics products and other non-metallic mineral products	245.400,86 €
Metallurgy and metal products manufacturing, except machinery and equipment	15.607,11 €
Manufacture of computer, electronic and optical products	70.477,48 €
Manufacture of electrical equipment and materials	30.557,10 €
Manufacture of machinery and equipment	115.887,63 €
Manufacture of transport equipment	82.739,31 €
Furniture manufacturing; Other manufacturing industries and repair and installation of machinery and equipment	515.516,32 €
Electricity, gas, steam and air conditioning supply	3.485,18 €
Water supply; Sanitation, waste management and decontamination activities	794.369,85 €
Building	1.334.895,50 €
Wholesale and Retail; Repair of motor vehicles and motorcycles	3.545.028,98 €
Tourism	299.007,92 €
Storage, transport and communications activities	63.980,52 €
Publishing, audio visual and broadcasting activities	276.471,77 €
Telecommunications	138.660,28 €
Programming, consultancy and other activities related to information technology; Information services	755.392,02 €

Financial, insurance and auxiliary services	453.389,91 €
Legal and accounting activities; Business management consultancy activities; Architectural and engineering technical services	35.981,81 €
Research and development	109.809,44 €
Advertising and market research; Other professional, scientific and technical activities; Veterinary activities	32.190,29 €
Activities related to employment	215.490,43 €
Security and research activities; Services to buildings and gardening activities	80.121,98 €
Office administrative activities and other activities auxiliary to enterprises	1.412.882,19 €
Education	786.353,94 €
Health activities	680.746,23 €
Social service activities	125.517,03 €
Other services	257.286,66 €
TOTAL	**14.094.438,94 €**

Source: Authors' calculations based on SAMAND14, INE and IECA

Faced with this Output productive consequence of start-ups' activity, we will work with two hypotheses:

Hypothesis 1: Start-up companies have a greater impact on regional economy than scale-ups.

First, we are going to try to show that despite the benefits of scale-ups, the creation of new ventures has a greater effect on the economy than this type of companies. In order to do so, we will calculate the effect that scale-ups would have on Andalusian economy in terms of GDP, Productive output and job creation if 10% of start-ups would transform into scale-ups (and, therefore, increase their turnover by 20% for three consecutive years). Then, we will compare this impact with the impact that start-ups companies have as a whole.

Hypothesis 2: The effort that would have to be made so that the economic impact of scale-ups would be comparable to that of start-ups companies would be very high.

Likewise, we will try to prove that the number of start-ups that would have to become scale-ups is so high that it would be unrealistic to support a public policy strategy focused only on scale-ups instead of start-ups, because the results, in terms of economic impact, would never be the same, at least in the short term. In order to do son, we will calculate what percentage of start-ups that needed to be transformed into scale-ups so that their economic impact would become similar to that which occurs right now with start-ups' activity.

5. Impact Analysis and Results

As a starting point for both hypotheses, we start out from the economic impact of start-ups in Andalusia in 2014, based on the demand shock that these companies produces on the regional economy. This shock is due to the productive output associated with this activity (O_{AE}), distributed by productive sectors, as we have seen in Table 4.

To test our first hypothesis, i.e., what would happen if 10% of start-ups in Andalusia were transformed into scale-ups, we have calculated the productive output vector for 2014 for these companies. To do so, we have calculated how many companies correspond to 10% of start-up companies, what would be their average turnover (by productive sector and based on information on productivity provided by the INE) and what would be the turnover at the end of the third year, if they would act as an scale-up (i.e., with a 20% increase in turnover every year). The result is the productive output vector shown in Table 3.

Table 3: Output productive if 10% of start-up companies transform in scale-ups, 2014 (thousands of Euros)

Productive Sectors	O_{SU}
Extractive industries	3.324,77 €
Food, beverage and tobacco industries	95.968,95 €
Textile industry, garment manufacturing, leather and footwear industry	12.803,16 €
Wood and cork industry, paper industry and graphic arts	133.844,42 €
Chemical industry	3.858,01 €
Manufacture of pharmaceutical products	29.651,33 €
Manufacture of rubber and plastics products and other non-metallic mineral products	42.405,27 €
Metallurgy and metal products manufacturing, except machinery and equipment	2.696,91 €
Manufacture of computer, electronic and optical products	12.178,51 €
Manufacture of electrical equipment and materials	5.280,27 €
Manufacture of machinery and equipment	20.025,38 €
Manufacture of transport equipment	14.297,35 €
Furniture manufacturing; Other manufacturing industries and repair and installation of machinery and equipment	89.081,22 €
Electricity, gas, steam and air conditioning supply	602,24 €
Water supply; Sanitation, waste management and decontamination activities	137.267,11 €
Building	230.669,94 €
Wholesale and Retail; Repair of motor vehicles and motorcycles	612.581,01 €
Tourism	51.668,57 €
Storage, transport and communications activities	11.055,83 €
Publishing, audio visual and broadcasting activities	47.774,32 €

Telecommunications	23.960,50 €
Programming, consultancy and other activities related to information technology; Information services	130.531,74 €
Financial, insurance and auxiliary services	78.345,78 €
Legal and accounting activities; Business management consultancy activities; Architectural and engineering technical services	6.217,66 €
Research and development	18.975,07 €
Advertising and market research; Other professional, scientific and technical activities; Veterinary activities	5.562,48 €
Activities related to employment	37.236,75 €
Security and research activities; Services to buildings and gardening activities	13.845,08 €
Office administrative activities and other activities auxiliary to enterprises	244.146,04 €
Education	135.881,96 €
Health activities	117.632,95 €
Social service activities	21.689,34 €
Other services	44.459,13 €
TOTAL	**2.435.519,05 €**

Source: Authors' calculations based on SAMAND14, INE and IECA

Table 4 shows the results obtained in terms of Total Production (Productive output) and Regional GDP. The increase in demand generated by the start-ups' activity has positive effects, both on Total Production and on Regional GDP. Thus, this effect involves an average increase in the regional economy of 10,84% in terms of Total Production, and of 11,11% in terms of GDP. On the other hand, the effect resulting from the potential activity of scale-ups, assuming that these were 10% of start-ups, is 1,87% out of Total production increase and 1,92% out of Regional GDP increase.

Table 6. Effects on Total Production and Regional GDP (percentage)

	Increase for Start-ups	**Increase for Scale-ups (10% out of start-ups)**
Total Production	10,84%	1,87%
Regional GDP	11,11%	1,92%

Source: Authors

In terms of global economic impact, the demand shock derived from start-ups' activity translates into an increase of Andalusian production in 28,415,791 million euros for 2014, and 15,991,762.73 million euros for the Regional GDP. On the other hand, the demand shock derived from the activity of scale-ups under our hypothesis would result in an

increase of Andalusian production in 4,910,248.79 million euros for 2014, and in 2,763,376.60 millions of euros for Regional GDP.

Therefore, these results sustain our first hypothesis, ie, that start-ups' activity as a whole have a greater impact on regional economy than scale-ups, under the assumption that these were 10% of total number of start-ups.

With regard to our second hypothesis, we have calculated that percentage of start-up companies that should transform into scale-ups, so that their economic impact would be the same as the current impact of start-ups. This means, how many start-ups should became scale –ups so that the average increase in the regional economy would be 10,84% in terms of Total Production and 11,11% in terms of GDP. The result has been that 58% of start-ups should transform into scale-ups in their first three years of life. Therefore, this data also confirms our second working hypothesis, i.e., that the effort that would have to be done is very high if we want that scale-ups' activity had the same impact that currently start-ups have.

6. Conclusions

The importance of entrepreneurship as a driving force for economic activity and a source for employment was already recognized by the academic world as well as by the political and business world. This value has increased in recent years because of the global economic crisis and the need to generate employment, to which entrepreneurship contributes, as this research shows, by generating jobs for both the entrepreneur himself and the people to whom he hires. However, public institutions and policy makers have been debating for some time about the importance of supporting scale-ups instead of start-ups, given their supposed impact on economy and employment generation. So the challenge that this institutions face is to ask themselves whether to continue giving resources to new ventures (with the risk that many start-ups do not exceed five years of life) or start focusing on companies that have already demonstrated that they have the basis to continue growing .

Because of this, in our research we have compared the economic impact of start-ups with the potential impact of scale-ups. The results show that, although scale-ups have proportionally greater economic impact, the risk of ceasing support to start-up companies to focus on scale-ups is high, since it is foreseeable that these will not have, as a whole, the economic impact needed to replace the economic effect produced by these new ventures, So this kind of decision would probably do the economy more harm than good.

This paper also points out two new possible lines of development for future researches: on one hand, it would be interesting to extend investigation to find out the real importance of scale-ups in a regional economy as a whole, since there are hardly any statistics that reflect which percentage of companies existing in a country or region can be considered as scale-ups (among other reasons, because there is still no consensus regarding its definition); and, on the other hand, it would also be necessary to work on the factors that stimulate a start-up to become a scale-up, since public policies related with entrepreneurship should be oriented to favour these factors, alongside with the promotion of start-ups: scaling-up is a concept that has come over to the field of entrepreneurship to stay and the challenge is to balance it with traditional start-ups' activity.

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