



Assessing the economic impact of entrepreneurship on a regional economy using social accounting matrices: the case of Andalusia

Manuel Alejandro Cardenete & Joaquin Garcia-Tapia

To cite this article: Manuel Alejandro Cardenete & Joaquin Garcia-Tapia (2018): Assessing the economic impact of entrepreneurship on a regional economy using social accounting matrices: the case of Andalusia, Applied Economics Letters

To link to this article: <https://doi.org/10.1080/13504851.2018.1558343>



Published online: 13 Dec 2018.



Submit your article to this journal [↗](#)



View Crossmark data [↗](#)

Assessing the economic impact of entrepreneurship on a regional economy using social accounting matrices: the case of Andalusia

Manuel Alejandro Cardenete^{a,b} and Joaquin Garcia-Tapia^{b,c} 

^aDepartment of Economy, Universidad Loyola Andalusia, Dos Hermanas, Seville, Spain; ^bSchool of Management and Business, Universidad Autónoma de Chile, Santiago de Chile, Chile; ^cDepartment of Business Management, Universidad Loyola Andalusia, Dos Hermanas Seville, Spain

ABSTRACT

This article analyses the impact that entrepreneurial activity has, from the economic point of view, on a regional economy (Andalusia), based on a Social Accounting Matrix linear model. Moreover, to measure entrepreneurship at regional level, it is defined what can be considered an entrepreneurial initiative company from a quantitative point of view. The results obtained, in terms of Production, GDP and job creation, show how entrepreneurship, in the case of Andalusia, contributes to the sustainability of the economy, its growth and, above all, the reduction of unemployment in the short term.

KEYWORDS

Social Accounting Matrix (SAM); entrepreneurship; regional economy; economic impact; linear models

JEL CLASSIFICATION

D57; M13; O18; R15

1. Introduction

Entrepreneurship is one of the main energizers of the economy, one of the drivers of economic progress and a major signal of a dynamic economy (Lee, Florida, and Acs 2004). Even so, there are few studies that analyse the real impact of entrepreneurial activity on the economy as a whole and its impact on growth (Lupiañez, Priede, and Lopez-Cozar 2014), especially at local and regional levels. This is, among other reasons, because despite the widespread use of the term entrepreneur, especially in recent times, the reality is that there is currently no official or globally accepted definition, and the debate over this concept has been open for a long time (Diaz-Fonca and Marcuello 2013). Another problem that arises when measuring entrepreneurial activity is that available data to measure local economic performance and entrepreneurship are limited (Baumgartner, Schulz, and Seidl 2013; Gonzalez-Sanchez 2015) which leads to a lack of systematic empirical indicators of national levels of entrepreneurial behaviour (Reynolds et al. 2005). That means that the economic impact of entrepreneurship is based on hype rather than a critical analysis of current data and trends (Summers 2015).

For this reason, in this work, we analyse the impact of entrepreneurial activity on employment as well as on productive output and GDP, considering direct and indirect effects and within a specific time frame (2014), and applied it to a regional economy (Andalusia) using a methodology based on the concept of Social Accounting Matrix (SAM). Based on sufficient and statistically reliable instruments, we will determine the productive output related to entrepreneurial activity in Andalusia in 2014, obtaining an economic shock vector that will allow us to estimate the changes in production, GDP and employment generation in Andalusia in that year as a result of that activity, and, therefore, estimate the weight of entrepreneurial activity on the regional economy.

The article is organized as follows. In the second section, we present the SAM methodology that is going to allow us to measure these effects. In the third section, the model is developed and applied to estimate the economic impact of entrepreneurial activity for Andalusia. In the fourth section, we present the main results from these estimations. Finally, in the fifth section, we discuss our findings and draw some conclusions.

II. Methodology

We will apply the economic impact analysis of entrepreneurship in a regional economy based on the concept of SAM. A SAM is a matrix representation of the interrelationships that occur in a given economy at a moment of time. The origin of the SAMs is in the attempt to integrate social statistics in the Input–Output Model of interdependence of the productive sectors, representing an extension of these models in matrix form. Therefore, SAMs enlarge the information provided by Input–Output tables (IOT), 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 (Cardenete, Fuentes, and Vega 2017). As a result, SAMs capture the macro transactions of an economic system on the basis of the micro level transfers between all economic agents in the economy (Pyatt and Round 1977), becoming powerful databases which can be employed to build more sophisticated economic analysis tools, like in our research.

A SAM is represented by a square matrix in which each account is represented by a row and column. Each cell shows the payment from the account in column to the account in row. Accordingly, the income of an account is shown along its row and its expenditures along its column. By double-entry accounting principle, total receipts equal total payments for each account in a SAM, and as a consequence, the total revenue of the economy (total of rows) equals the total expenditure (total of columns).

For the purposes of our research, the Leontief IOT Model is extended to linear SAM Models, allowing us to formulate a SAM linear model (Pyatt and Round 1977, among others). Following similar methodology as Cardenete, Fuentes, and Vega (2017) and Cardenete and Lima (2007), we have obtained an accounting multiplier matrix, the components of which reflect the impact generated by an exogenous income unit of endogenous account (Entrepreneurial activity per activity sector) on the income of endogenous account (Output/Employment per activity sector). Thus, the addition of the columns of the

accounting multiplier matrix reveals the total effect of an exogenous shock received by an endogenous account on the rest of the economic activity (backward linkage effect). The empirical application will be made using the SAM built for Andalusia for 2014 named SAMAND14.

III. Economic impact of entrepreneurial activity on the Andalusian economy

Given that the current economic models do not explicitly define and analyse entrepreneurs and entrepreneurial activity (Reynolds et al. 2005), to measure entrepreneurship at regional level, the industrial organization literature refers to the foundation and emergence of new enterprises (Acs, Desai, and Hessels 2008; Audretsch, Kuratko, and Link 2015; Tran and Santarelli 2017). This concept of entrepreneurial activity leads to define the entrepreneur based on the so-called Total Early Stage Entrepreneurial Activity (TEA) Rate, used internationally by the Global Entrepreneurship Monitor (GEM) project, which is the prevalence rate of individuals in the working-age population who are actively involved in business start-up, either in the creation of a new business or in the expansion phase 42 months after the birth of the company. Therefore, for the purpose of our analysis, we will consider as entrepreneurial activity the activity developed by a venture in its first three years after the birth of the company.

In order to estimate the entrepreneurial activity defined in this way within a specific time frame, we have set out from the statistical information provided by the Spanish National Institute of Statistics (from now on INE) about business demography, which it is the only source that provides us with aggregate information on the population of companies located in the Spanish territory as well as indicators related to stock, births, deaths and survival of companies. Thus, we have calculated the number of companies that could be considered with entrepreneurial activity according to:

$$E_{ea} = E_{nc} + E_{nb} \quad (1)$$

where E_{ea} is the total number of companies considered as entrepreneurial initiative, E_{nc} are newly

created companies (nascent entrepreneurs) and E_{nb} are the companies created in the two years prior to the study and that survive in it (owners of new business).

From these, and based on productivity statistics issued by INE (INE 2014), we work with the assumption that, from the productive output of each sector of activity, 75% corresponds to companies with more than 20 employees and 25% to companies with less than 20 employees. That is:

$$O_e = O_t \times 0,25 \quad (2)$$

Being O_e the Total Productive Output of companies with less than 20 employees and O_t the Total Productive Output of the sector.

Finally, we have calculated which percentage of the output assigned to companies with less than 20 employees corresponds to entrepreneurial activity, that is:

$$O_{ea} = \sum O_{ex} \frac{E_{ea}}{E_e} \quad (3)$$

where O_{ea} is the Productive Output for companies with entrepreneurial initiative, O_e is the Productive Output for companies with less than 20 employees, E_{ea} is the number of companies of entrepreneurial initiative and E_e is the number of companies with less than 20 employees.

IV. Main results

Based on the demand shock produced by the entrepreneurial activity on the regional economy (ΣO_{ea}) and on the linear model based on SAMAND14, we have quantified the impact of entrepreneurial activity on Andalusia. Results show that the increase in demand generated by entrepreneurial activity has positive effects on both Regional Total Production and Regional GDP. Thus, this effect translates into an average increase in the regional economy of 10.84% measured in terms of Total Production, while in terms of GDP, it is 11.11%.

In addition, considering the ratio between the increase in total production and the demand shock associated with the entrepreneurial activity, it is worth noting the positive impact linked to it, which can be estimated at 2.02. This ratio means that each euro expended by an entrepreneurial

venture multiplies by 2.02 (i.e. it triggers an average increase of Andalusian production by €2.02.)

Finally, we have also estimated the impact of entrepreneurial activity on job creation. The result is that jobs that are generated due to this activity represent over 20% of regional employment.

This impact can be broken down by activity, as it appears in Table 1.

In terms of economic value, the demand shock derived from the entrepreneurial activity translates into an increase in Andalusian production of 28,415.79 million euro for 2014 and in the Regional GDP of 15,991.76 million euro in the same period.

V. Conclusions

The methodology proposed in this work allows us to estimate the importance of entrepreneurship as a driving force for regional economic activity, showing that, although most of the job creation and GDP still correspond to large companies, public authorities must continue to foster entrepreneurship, not only for its contribution to the sustainability of the economy in the medium and long term, but also to reduce unemployment rates in the short term.

Given that the current economic models do not explicitly define and analyse entrepreneurs and entrepreneurial activity (Reynolds et al. 2005) and that the evidence of the effect of entrepreneurship on economic growth is far from being clear (Van Stel, Carree, and Thurik 2005), our research implies an advance in the measurement of this effect, while providing a useful method for policy makers when designing policies to foster entrepreneurship.

Nevertheless, there have been some restrictions for our analysis. First, there is currently no commonly accepted definition of entrepreneurship on a global scale, which has led to an open debate about the meaning of the term. For this reason, and for the purpose of the research carried out in this article, the term entrepreneurship has been associated with new business generation. In addition, there is no empirical evidence on the productivity of newly created companies, compared with the one for established business. Consequently, it has been necessary to estimate

Table 1. Impact of entrepreneurial activity on the Andalusian economy, Productive Output and GDP, 2014 (millions of euros).

Activity sectors	Total impact on GDP	Total impact on production/income (productive output)	% Change after impact	Generated jobs
Agriculture, forestry and fishing	€76.31	€209.34	2.69	6303
Extractive industries	€1.99	€63.32	9.87	357
Agribusiness industry	€64.16	€1415.50	7.71	4509
Textile industry	€12.64	€163.12	14.20	1509
Wood, paper and cork industry	€201.43	€1.150.65	60.62	910
Coke and oil refining	€13.84	€474.64	2.81	156
Chemical industry	€34.05	€269.82	4.48	4343
Pharmaceutical industry	€5.34	€198.98	42.49	116
Manufacture of nonmetallic mineral products	€62.81	€390.23	15.04	746
Metallurgy	€23.65	€216.56	2.72	17,678
Electronic product industry	€7.08	€143.61	44.29	277
Electrical equipment industry	€12.25	€98.17	8.07	597
Machinery and equipment	€16.14	€182.97	26.12	307
Transport equipment	€13.18	€173.28	5.06	966
Other manufacturing industries	€193.55	€696.23	31.33	1831
Light and gas supply	€324.82	€914.71	9.20	1390
Water management activities	€450.81	€1027.08	31.70	1185
Building	€1194.22	€1605.98	7.96	8258
Retail	€4753.07	€5315.51	19.78	49,556
Tourism	€3584.44	€4876.11	9.04	321,368
Transport	€103.05	€318.38	6.49	6156
Audiovisual	€96.20	€371.21	32.12	1094
Telecommunications	€238.15	€617.14	15.83	3671
IT	€255.92	€885.05	66.64	2081
Financial services	€653.58	€1188.61	15.08	12,755
Professional services	€149.47	€296.34	4.19	29,661
R&D	€88.40	€111.10	12.89	1195
Other professional activities	€57.34	€224.85	15.96	13,575
Activities related to employment	€196.66	€271.22	71.01	1261
Security	€235.70	€320.31	13.34	30,188
Office administration	€780.01	€1628.89	134.12	3365
Education	€849.97	€915.32	9.10	18,379
Health	€739.62	€895.65	8.45	11,406
Social services	€132.81	€179.34	5.55	3518
Other services	€260.12	€497.63	14.26	27,727
Household activities	€108.97	€108.97	8.42	14,659
Work		€6691.63	11.46	
Capital		€7115.14	10.59	
Consumption		€13806.78	8.42	
Total	€15,991.76	€28,415.79		603,052

Source: Own elaboration.

the productivity of newly created companies in Andalusia, assuming that is the same than that of existing small businesses.

This article also points out two new possible lines of development for future researches: on one hand, we believe it would be of enormous interest to have reliable and verified data related to the productivity of newly created companies. On the other hand, it would be interesting to match the impact of entrepreneurial activity (and especially its impact on job creation) with Entrepreneurship Promotion Public policies developed by Policy Makers.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Joaquin Garcia-Tapial  <http://orcid.org/0000-0001-8594-8965>

References

- Acs, Z. J., S. Desai, and J. Hessels. 2008. "Entrepreneurship, Economic Development and Institutions." *Small Business Economics* 31 (3): 219–234. doi:10.1007/s11187-008-9135-9.
- Audretsch, D. B., D. F. Kuratko, and A. N. Link. 2015. "Making Sense of the Elusive Paradigm of Entrepreneurship." *Small Business Economics* 45 (4): 703–712. doi:10.1007/s11187-015-9663-z.
- Baumgartner, D., T. Schulz, and I. Seidl. 2013. "Quantifying Entrepreneurship and Its Impact on Local Economic Performance: A Spatial Assessment in Rural Switzerland." *Entrepreneurship & Regional Development* 25 (3–4): 222–250. doi:10.1080/08985626.2012.710266.

- Cardenete, M. A., P. Fuentes, and J. Vega. 2017. "Socio-Economic Impact of a Nuclear Power Plant: Almaraz (Spain)." *Applied Economics* 49 (47): 4782–4792. doi:10.1080/00036846.2017.1293793.
- Cardenete, M. A., and C. Lima. 2007. "The Effects of European Structural Funds in a Regional Economy: An Applied General Equilibrium Analysis." *Applied Economic Letters* 14: 851–855. doi:10.1080/13504850600592630.
- Diaz-Foncela, M., and C. Marcuello. 2013. "Entrepreneurs and the Context of Cooperative Organizations: A Definition of Cooperative Entrepreneur." *Canadian Journal of Administrative Sciences* 30 (4): 238–251. doi:10.1002/cjas.1267.
- Eurostat. accessed 15th April 2018. http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Statistics_Explained
- Gonzalez-Sanchez, V. M. 2015. "Factors Promoting Entrepreneurship in European Countries: Unemployment, Taxes, and Education." *Journal of Promotion Management* 21 (4): 492–503. doi:10.1080/10496491.2015.1051405.
- INE. 2014. "Demografía armonizada de empresas." accessed 24th May 2018. <http://ine.es/dynt3/inebase/index.htm?padre=3769>
- Lee, S. Y., R. Florida, and Z. J. Acs. 2004. "Creativity and Entrepreneurship: A Regional Analysis of New Firm Formation." *Regional Studies* 38 (8): 879–891. doi:10.1080/0034340042000280910.
- Lupiañez, L., T. Priede, and C. López-Cózar. 2014. "Entrepreneurship as Engine of Economic Growth." [In Spanish]. *Boletín económico de ICE, Información Comercial Español* 3048: 55–63.
- Pyatt, G., and J. I. Round. 1977. "Social Accounting Matrices for Development Planning." *Review of Income and Wealth* 23 (4): 339–364. doi:10.1111/j.1475-4991.1977.tb00022.x.
- Reynolds, P., N. Bosma, E. Autio, S. Hunt, N. De Bono, I. Servais, P. Lopez-Garcia, and N. Chin. 2005. "Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998-2003." *Small Business Economics* 24 (3): 205–231. doi:10.1007/s11187-005-1980-1.
- Summers, D. 2015. "The Economic Impact of Entrepreneurship: Setting Realistic Expectations." *Academy of Entrepreneurship Journal* 21 (2): 99–108.
- Tran, H. T., and E. Santarelli. 2017. "Spatial Heterogeneity, Industry Heterogeneity, and Entrepreneurship." *Annals of Regional Science* 59 (1): 69–100. doi:10.1007/s00168-017-0819-4.
- Van Stel, A., M. Carree, and R. Thurik. 2005. "The Effect of Entrepreneurial Activity on National Economic Growth." *Small Business Economics* 24 (3): 311–321. doi:10.1007/s11187-005-1996-6.