Economic Evaluation and Urban Regeneration: A New Bottom-up Approach to Local Development Policies

Rosa Maria Caprino, Gianluigi De Mare and Antonio Nesticò

Abstract In the present context of continuing economic and financial crisis and increased social disadvantage, particularly marked in the Mezzogiorno of Italy, the experience of the Antonio Genovesi Prize was born. It's a prototypical experiment of collaboration among the university, local government, business and local banks for economic, social, cultural and environmental development in the provinces of Salerno, Avellino and Napoli and overall for the implementation of useful synergies for the establishment of stronger growth prospects. This initiative has initiated to develop the economic feasibility profile for over 70 projects in five years, since 2011, for an investment budget of more than 500 million euros (De Mare et al. in La valutazione finanziaria di progetti per il rilancio del territorio. Applicazioni a casi reali. Franco Angeli, Milano, 2012). This report aims to represent and to highlight the effects of the actions undertaken through related activities at the regional level (Bottero et al. in Proc Soc Behav Sci 223:923–928, 2016). As a function of the increasing relevance of extra-monetary repercussions for investment decision makers, this paper estimates such social and environmental effects attributable to examined projects. This is in accordance with recent EU guidelines (see, the Social Impact Agenda for Italy). This association was founded in 2016 to collect the experience of the Social Impact Investment Taskforce (SIIT), launched in 2013

Rosa Maria Caprino, Gianluigi De Mare and Antonio Nesticò have contributed in equal parts to this paper. Thanks to Dr. Silvio Petrone and Dr. Camillo Catarozzo, respectively, President and Vice-President of Cassa Rurale ed Artigiana—BCC di Battipaglia, for guidance and constant support concerning the analytical and developmental strategies of the initiative.

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G. Mondini et al. (eds.), *Integrated Evaluation for the Management of Contemporary Cities*, Green Energy and Technology,
https://doi.org/10.1007/978-3-319-78271-3_30

during the UK Presidency of the G8, to bring social-impact investments to the forefront of national agendas. This is about those initiatives strongly desired by Pope Francis in his Encyclical *Laudato Si'* (2015) and able to give an answer to often unsatisfied needs for health, disabilities, new and more sustainable ways of living, social exclusion, promotion of cultural heritage (Nesticò et al. in Sustainability 7(11):14661–14676, 2015), cooperative management of goods and sharing economy platforms. In the manner shown and with the aim of collecting information in particular on occupational and environmental effects, the use of cross-sectoral matrices enable the prediction of the impacts on regional economy arising from concrete realization of interventions planned in the construction industry.

Keywords Economic evaluation · Urban regeneration · Cross-Sectoral matrices Social effects · Genovesi prize

1 Emigrate or Cooperate? the Experience of the Genovesi Prize

The Province of Salerno is the primary area of interest targeted by the examined projects that are part of the activities eligible for the Antonio Genovesi Prize. This territory is marked by negative externalities with respect both to structural indicators of the European Community and to the survey on the quality of life (IlSole24Ore 2016; ISTAT 2016). The main problem concerns the work. Calculations on 2016 ISTAT data reveal that the male employment rate is 63%, the female's only 37% and the inactivity rate is as much as 62% in the age range of 15–29 years. These ratios are even more worrying when compared with EU objectives for 2020, which aim for an employment rate (age range of 20–64 years) in Europe at 75% and in Italy at 67–69%, as well as to raise the female employment rate twice as much as that of men.

At the same time, the question arises about the inactivity rate of young people aged 15–29 years. In this age group, the population in the Province of Salerno is 199,549, with as many as 124,300 inactive, i.e. an inactivity rate of about 62%.

With regard then to the quality of life, it is sufficient to examine the summary of the data for the main indicators, namely school (education and training, full-time and day nurseries), elderly (care services and assistance), transport, health and justice, economic well-being, safety, environment. These are all issues of extreme importance, as is fully explained in the Encyclical *Laudato Si'* (Borrelli and Citterio 2016). The province of Salerno is rated in the 103rd place out of 110 counties in the classification of the IlSole24Ore (2016). Details can be found in the Bes report (ISTAT 2016).

In this alarming context, the only alternative to migration resides in a solidarity aggregation. The decision to migrate is in fact a cost that not everyone is able to bear in economic and emotional terms, so that citizens remain inert as long as

someone else decides for them. Only an exogenous factor, an occasion or a shared opportunity leads to aggregation and to cooperation (see Bank of Italy 2009).

The Genovesi Prize, in this context, constitutes a collaborative, bottom-up hypothesis implemented among universities, local authorities, business and local banks, to pool the experience and know-how necessary for the realization of public-interest investments through project financing and, therefore, with self-contained financial charges for the public sector.

The experiment of the Genovesi Prize enables Master Degree students in Civil, Environmental and Architecture Engineering granted by the Faculty of Engineering of the University of Salerno, or to those who have successfully completed a Course in Economic Evaluation of Projects, to select and verify the economic and financial sustainability of projects to be implemented in the territories, particularly aimed at urban regeneration (De Mare et al. 2015a, b; Nesticò and Pipolo 2015; Guarini et al. 2017). This theme is decisive in reading the content of the Encyclical of Pope Francis, too.

In this path, economic evaluation regains that centrality denied during many years of great waste of public resources, and the environment becomes an endogenous variable for development, together with cultural growth and accumulation of shared capital, able to influence the decision of young people to stay or to emigrate from their places of birth.

Even the Association for the Development of Industry in Southern Italy (SVIMEZ) identifies urban regeneration as the main driver for development of the South, as already experienced in Italy during the Second World War (SVIMEZ 2016). From this perspective, mutual and rural banks often become crucial links between the decision-making process and the realization, even to indicate a sustainable future and helping to preserve and recover the beauty of local areas (Granata 2015).

From an operative point of view, since 2010, thanks to the experience gained from the study meetings at the Cassa Rurale of Battipaglia, it was clear that any path to development of the activities about the Genovesi Prize must necessarily involve institutions, stakeholders of the area of interest and, above all, unused leveraged social capital.

The starting point of the study actions implemented are Three-year Plans of the local government and Regional Park Projects. The actors are students of the University of Salerno and entrepreneurs of the National Association of Builders (ANCE), as well as private virtuous entrepreneurs (e.g., Socomer Grandi Lavori) and the local bank Rural and Artisan Bank of Battipaglia and Montecorvino Rovella. The goal is to promote the realization of investments with positive economic, social and environmental impact, but also to pool experience and know-how to overcome the distinctions of class and background. The award takes the form of a certificate and a cash contribution in favor of the best research groups for each of the three categories in the competition, i.e., feasibility, creativity and research.

The job steps that engage students in project exercises of the Course in Economic Evaluation of Projects in the Department of Civil Engineering (DICIV) of the University of Salerno are:

1. analysis of three-year plans of the government and selection of priority actions for the business sector, feasibility and investment amounts;
2. for the selected action, the study of the relevant economic sector, market analysis, preliminary characterization of the co-treasurers and financial plan (revenue sources, potential customers etc.), and verification of available elaborated designs;
3. sizing of the interventions and the schedule of works (once the design choice is justified and the functional destinations are defined;
4. determination of the assumptions of cash and payment, sales, financing and other financial specifications;
5. estimation of the valuation indicators, often accompanied by *risk analysis*.

If the performance indicators (IRR, NPV etc.) demonstrate the sustainability of the project, the economic investigation ends with a positive opinion. If not, it continues to outline the strategic alternatives for enhancing investment performance.

The first five years (2011–2015) of the Genovesi Prize have attracted the participation of over 300 students, who worked on 70 selected projects for investment of more than 500 million euros (see Table 1). The urban and regional regeneration interventions represent about 45% of the total, for an amount of 235 million euros. The investment projects have been located so: 64% in the province of Salerno; 25% in the province of Avellino; and the remainder in the province of Naples and elsewhere in the country.

2 Cross-Sectoral Matrices for the Measurement of the Generated Effects on the Regional Economy

The total investment cost of €113,114,552, which flows from concrete realization of 23 of the 70 interventions on the survey area, is the starting point for predicting the economic effects produced in Campania. The computational tool is a

Table 1 Selected projects in the 2011–2015 editions of Genovesi Prize

Sector	Investment cost (€)	Number of projects	Average cost per project (€)
Regeneration	235,231,992	20	11,761,600
Sports facilities	10,344,800	3	3,448,267
Transport	57,752,377	5	11,550,475
Tourism, heritage	86,188,718	17	5,069,925
Energy	76,707,140	12	6,392,262
Other	62,975,305	13	4,844,254
Total	529,200,332	70	7,560,005

cross-sectoral matrix. This helps in determining the impacts (*output*) generated by a change in aggregate demand (*input*, such as the investment in an industry) on the economy of the territory to which the matter pertains.[1]

In the present work, the referenced cross-sectoral matrix is the *Social Accounting Matrix* (SAM) of Campania, updated to 2010[2] and still representative of the effective regional production structure.

The implementation of SAM Campania returns the effects generated by investments made in the construction industry. The result is synthetically expressed through three indicators: change in regional GDP (GDP = 0.145%), increase of employment (2421 work units) and environmental damage monetized (€10,896,370). Tables 2, 3 and 4 show excerpts from the cross-sectoral matrix used by the first two for economic and employment effects, the last as regards environmental impact.

The *output* obtained expresses the impact over a period estimated to be between three and five years.

[1]The *input-output* model, defined by Russian economist Wassily Leontief, provides a schematic representation of certain relations from the production and circulation (purchases and sales) of goods between the various sectors of a national economy (or regional) and among sectors and abroad (imports and exports). Every entity of a productive sector gives rise to an *output* buying and combining some *input* from households or from other production areas. These exchanges give rise to a sort of pulses, generated by a variation of demand that spread in all sectors of the production system with contagion effects. The magnitude of the effect depends on the degree of interdependence of the various industries within the economic system. The *input-output* model considers an exchange economy (at national or regional level) divided into a number of productive sectors identified generally with homogenous type of product produced. Each sector, as a whole, is on the market with a dual role: (1) as a buyer of goods and services from other sectors and factors that employs in the production process; (2) as a seller of the goods it produces.

The possibility of using these models in the field of economic planning is clear, since then enable one to study the effects that changes in demand cause on production levels of various sectors and employment at sectoral level and overall level, and to compare these sizes with the production capacity of the economic system.

The logic of the *input-output* model is structured in a cross-sectoral matrix, an accounting framework summarizing the flows arising from trade in goods and services, which take place between the various productive sectors and between producers and end-use sectors. For more details, see Leontief (1970), Miller and Blair (1985), Guarini and Tassinari (1990) and Abbate and Bove (1993).

[2]The development of SAM Campania is a collaborative effort among the University of Rome Tor Vergata, the Institute for Industrial Promotion (IPI) and the Ministry of Economic Development.

Table 2 Effects on regional GDP and employment induced by implemented interventions

Codice Ateco	Indice	Investimento (M€)	Impatto (M€)	Occupazione attivata (Unita di lavoro)	ΔPIL
	LAVORO	0.00	55.99		0.145%
	CAPITALE	0.00	63.30		
	FAMIGLIE	0.00	206.45		
	IMPRESE	0.00	46.92		
01	Prodotti dell'agricoltura, caccia e servizi connessi	0.00	1.84	15	
02	Prodotti della silvicoltura e servizi connessi	0.00	0.06	0	
05	Pesca ed altri prodotti ittici; servizi accessori della pesca	0.00	0.15	1	
10	Carbon fossile	0.00	0.01	0	
11	Petrolio e gas naturale; servizi accessori all'estrazione di olio e gas	0.00	0.30	3	
13	Estrazione di minerali metalliferi	0.00	0.00	0	
14	Altri prodotti delle industrie estrattive	0.00	0.08	0	
15	Prodotti alimentari e bevande	0.00	2.02	10	
16	Industria del tabacco	0.00	5.62	4	
17	Prodotti tessili	0.00	0.12	0	
18	Vestiario e pellicce	0.00	2.80	12	
19	Cuoio e prodotti in pelle	0.00	0.14	1	
20	Legno e prodotti del legno e sughero (mobili esclusi)	0.00	1.40	4	
21	Carta e prodotti della carta	0.00	0.32	1	
22	Editoria e stampa	0.00	0.62	4	
23	Coke e prodotti della raffinazione del petrolio	0.00	3.14	4	

(continued)

Table 2 (continued)

Codice Ateco	Indice	Investimento (M€)	Impatto (M€)	Occupazione attivata (Unita di lavoro)	ΔPIL
24	Prodotti chimici e fibre artificiali	0.00	1.02	3	
25	Gomma e prodotti in plastica	0.00	0.34	1	
26	Altri minerali non metalliferi	0.00	2.00	13	
27	Metalli e leghe	0.00	1.13	3	
28	Prodotti metallici, eccetto macchine ed apparecchi	0.00	1.66	9	
29	Macchine ed apparecchi meccanici	0..00	0.18	1	
30	Macchine per ufficio e computer	0.00	0.01	0	
31	Macchine ed apparecchi elettrici	0.00	0.69	3	
32	Apparecchi radiotelevisivi	0.00	0.13	1	
33	Apparecchi medicali, di precisione, strumenti ottici ed orologi	0.00	0.02	0	
34	Veicoli a motore e rimorchi	0.00	0.07	0	
35	Altri mezzi di trasporto	0.00	0.01	0	
36	Mobili ed altri prodotti manifatturieri	0.00	0.19	1	
37	Materiale da recupero	0.00	0.05	0	
40	Energia elettrica, gas e vapore	0.00	3.94	23	
41	Raccolta e distribuzione dell'acqua	0.00	0.61	1	
45	Costruzioni	113.11	165.85	1.166	
50	Commercio, servizi di manutenzione e riparazione di veicoli a motore e motocicli	0.00	2.24	12	

(continued)

Table 2 (continued)

Codice Ateco	Indice	Investimento (M€)	Impatto (M€)	Occupazione attivata (Unita di lavoro)	ΔPIL
51	Commercio all'ingrosso, esclusi veicoli a motore e motocicli	0.00	3..61	24	
52	Commercio al dettaglio, esclusi veicoli a motore e motocicli	0.00	5.39	37	
55	Alberghi e ristoranti	0.00	0.77	8	
60	Trasporti terrestri	0.00	4.00	53	
61	Trasporti marittimi	0.00	0.21	2	
62	Trasporti aerei	0.00	0.22	1	
63	Trasporti ausiliari; agenzie di viaggio	0.00	0.93	7	
64	Poste e telecomunicazioni	0.00	2.53	28	
65	itermediazione finanziaria, escluso assicurazione e fondi pensione	0.00	6.26	48	
66	Assicurazione e fondi pensione, esclusa previdenza sociale obbligatoria	0.00	1.05	5	
67	Servizi ausiliari di intermediazione finanziaria	0.00	0.77	7	
70	Attività immobiliari	0.00	11.49	8	
71	Noleggio di macchinari	0.00	0.65	0	
72	Computer e servizi connessi	0.00	0.56	8	
73	Ricerca e sviluppo (R&S)	0.00	0.14	2	
74	Attività professionali	0.00	11.99	85	
75	Pubblica amministrazione e difesa; previdenza sociale obbligatoria	0.00	14.32	327	
80	Istruzione	0.00	10.61	340	

(continued)

Table 2 (continued)

Codice Ateco	Indice	Investimento (M€)	Impatto (M€)	Occupazione attivata (Unita di lavoro)	ΔPIL
85	Sanità e servizi sociali	0.00	5.47	57	
90	Smaltimento rifiuti, fognature e servizi similari	0.00	1.52	8	
91	Organizzazioni associative	0.00	0.97	13	
92	Attività ricreative, culturali e sportive	0.00	1.06	9	
93	Altri servizi	0.00	1.66	25	
95	Servizi domestici	0.00	0.50	19	
	GOVERNO	0.00	58.30		
	Totale	113.11		2.421	

Table 3 Economic impact in Campania Region

	Investimento	Impatto investimento
Lavoro	0.0000	55.9851
Capitale	0.0000	63.2960
Agricoltura	0.0000	2.0577
Industria in senso stretto	0.0000	28.6013
Costruzioni	113.1100	165.8494
Servizi	0.0000	88.9075
Totale	113.1100	404.6970
Famiglie	0.0000	206.4451
Imprese	0.0000	46.9250
Governo	0.0000	58.2975
Totale	0.0000	311.6676

Table 4 Environmental impact in Campania (in thousands of tons of pollution and per euro of investment)

Impatto ambientale												
	Investimento	CO_2	N_2O	CH_4	NO_x	SO_x	NH_3	NMVOC	CO	PM10	Pb	Impatto investimento
Agricoltura	0.000	0.4216	0.0033	0.0356	0.0062	0.0001	0.0176	0.0021	0.0171	0.0015	0.0000	455,478
Industria in senso stretto	0.000	20.1800	0.0013	0.0321	0.0281	0.0423	0.0000	0.0181	0.0247	0.0036	0.0000	7,063,728
Costruzioni	113.110	3.3960	0.0004	0.0003	0.0254	0.0006	0.0001	0.0779	0.0207	0.0066	0.0000	423,416
Servizi	0.000	3.7958	0.0007	0.0344	0.0217	0.0024	0.0005	0.0068	0.0266	0.0020	0.0000	2,953,748
Totale	113.110	27.7935	0.0057	0.1023	0.0814	0.0453	0.0182	0.1049	0.0890	0.0137	0.0000	10,896,370

3 Conclusions

The educational module of disciplinary and professional immersion that refers to the Antonio Genovesi Prize is able to mobilize multiple synergies, on the public side such as those represented by territorial government bodies and research centers, and on the private side, arising from the knowledge of traders, associations and groups of citizens. Thus, it serves to constitute a common sharing context, important to encourage bottom-up urban-regeneration processes through the implementation of a network of micro-interventions, many of which are achievable through a public-private partnership.

At the base of the concrete success of the initiative, and thus the actual implementation of investment projects, there is a rigorous study of the economic and financial feasibility (Napoli et al. 2017), conducted according to the Cost-Benefit Analysis criteria, sometimes in association with multicriteria assessments. It is noted that for projects that exceed the technical and financial appraisals there is an increase in the likelihood of success of 50% and, therefore, the concrete realization of the interventions. All this involves positive impacts on the construction sector, the productive sectors and the entire neighboring social area. This can be studied through the implementation of input-output matrices, which summarize the patterns of trade in goods and services that occur between various productive sectors and between producers and end-user sectors.

The application of cross-sectoral matrix for the Campania region estimates the effects generated by investments realized in the construction sector, accounting for a significant increase in regional GDP (+0.68%), but also for job growth with over 11,000 new jobs, as well with a monetization of environmental damage. The logical process represented in the study to measure the effects generated by projects across the country— from forecast of investment costs to elaboration an economic methodology of analysis, such as input/output matrices— represents a practice exportable to other regional contexts. In this process, it becomes essential to cover the project under several profiles: financial but also social, cultural and environmental, thus fully sharing the essence of what Pope Francis explained in the Encyclical *Laudato Si*'.

The prize and the results that have ensued have gained public interest, getting the support of the Senate of the Italian Republic and the participation of senators of several parties, extending the range of the investigated actions, possibly creating a national network of universities aggregated under the same mission. This serves to promote the feasibility analysis of trans-regional and national interest, especially in the field of infrastructures and renewable energies. Thus, the validity of the model analysis and study of the economic and financial component of the project is recognized in accordance with article 23 of Legislative Decree 50/16 New Code of Public Procurement and how the European Community has already strongly supported with directives n. 24 and n. 25 in 2014.

The underlying objective remains clear and inherent to capillary action of spreading the estimation and evaluation culture among young professional and in the institutions, in order to increase the capacity to gear research to difficult terrain of investment sources and financing for public works or public utility.

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