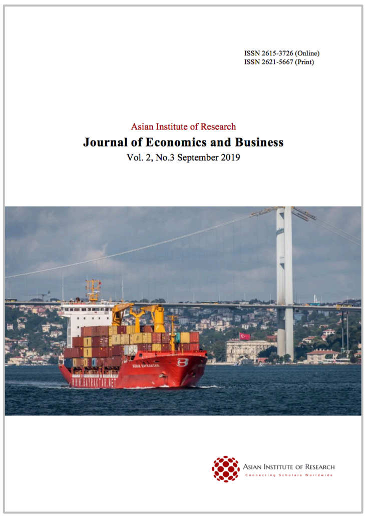

Journal of Economics and Business

Sartzetaki, Maria F. (2019), Appraisal of Capital-Intensive Investments Upon Effectiveness to Business Ecosystem. In: *Journal of Economics and* Business, Vol.2, No.3, 900-909.

ISSN 2615-3726

DOI: 10.31014/aior.1992.02.03.137

The online version of this article can be found at:
https://www.asianinstituteofresearch.org/

Published by:
The Asian Institute of Research

The Asian Institute of Research *Journal of Economics and Business* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Economics and Business, which includes, but not limited to, Business Economics (Micro and Macro), Finance, Management, Marketing, Business Law, Entrepreneurship, Behavioral and Health Economics, Government Taxation and Regulations, Financial Markets, International Economics, Investment, and Economic Development. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Journal of Economics and Business* aims to facilitate scholarly work on recent theoretical and practical aspects of Economics and Business.

Asian Institute of Research
Connecting Scholars Worldwide

The Asian Institute of Research
Journal of Economics and Business
Vol.2, No.3, 2019: 900-909
ISSN 2615-3726

DOI: 10.31014/aior.1992.02.03.137

Appraisal of Capital-Intensive Investments Upon Effectiveness to Business Ecosystem

Dr. Maria F. Sartzetaki[1]

[1] Department of Economics, Democritus University of Thrace, Greece

Correspondence: University Campus, Panepistimioupoli, Komotini, 69100, E-mail: msartze@econ.duth.gr

Abstract
The complexity of decision-making for capital intensive investments addressed to a variety of stakeholders with different expectations and to many business and financial risks and uncertainties. There are many cases where decision-makers and governmental authorities do not clearly distinguish between the investment likelihood alternative scenarios and the effectiveness of the investment to the business ecosystem. This especially applies to decisions regarding the implementation of capital-intensive projects where large amounts of capital are reserved, which is a major concern in the planning and business development process. Therefore, the appraisal of the investment effectiveness to business ecosystem into the project lifetime is very critical to support decision-makers. The key objective of the paper is to define and quantify the overall contribution of the capital-intensive project to a business ecosystem during its lifecycle. The paper provides a compact and applicable methodological framework providing quantitative results in terms of the overall income generated into the project life cycle. According to a deterministic approach, the key variables based on the project financial viability and likelihood scenarios are presented. The numerical application deals with the development of a new logistic center in Greece, stimulating new business opportunities by establishing a new freight transportation corridor from Black Sea to Southeast Mediterranean.

Keywords: Business Ecosystem, Capital Intensive Investments, Investment Management, Effective Management

1. Introduction

Investing in capital intensive projects is a key driver in strengthening the national economy and enhancing the nation's productivity, as it creates economic benefits and additional income. In the national level, the assets portfolio is helping to enhance productivity and competitiveness through the funding of significant infrastructure projects and a comprehensive regulatory reform agenda (Dimitriou, 2017; Cascetta, 2015). However, these decisions made in conditions under uncertainty. The key question in such decisions is if new capital-intensive transport projects affect the business ecosystem.

Governments and decision-makers promote capital intensive investments projects in order to achieve economic growth. Arguments for significantly boosting investments especially in capital intensive infrastructures, in order to achieve economic growth and business ecosystem development based on high returns to investment in capital scarce environments, and the pressing deficiencies in these areas. Especially for transport infrastructures strategy development is also about what decision-makers and stakeholders expect what to achieve and therefore influence other can have over the transport infrastructure's challenges. Transport enterprises development is a decision-making process that involves multiple stakeholders, such as Government and governmental authorities, investors, and operators (Sartzetaki, 2019).

There is a wide range of assessments in the literature that highlight the importance of capital-intensive projects impact towards business development and economic growth (Farhard, 2015; Miller et al., 2015; Mackie et al., 2014). Especially large capital-intensive transportation infrastructure systems attract businesses and increase the positive externalities/benefits gained by industries, which further stimulate competition among industries and businesses and increase the economic competitiveness of a region (Hong, 2007). There are many researches analyzing and demonstrating the impact to economy empirically highlighting the positive effect of public infrastructure (Weisbord, 2008; Romb et al., 2007; Calderon et al., 2015).

The key question to evaluate capital intensive investments is to quantify the impact of the investment to the business ecosystem. The proposed analysis provides decision-makers with a tool to assess the overall value of a project, including the financial viability and the investment 's likely productivity and effectiveness on the business ecosystem. The investment's likely productivity and effectiveness is the equilibrium point between the financial sustainability and contribution of the investment to the economic business system.

2. Method

2.1 Overall effectiveness to business ecosystem appraisal framework

The key question to evaluate the capital-intensive project economic impact to the business ecosystem is to quantify the overall value of the new investment. This economic analysis provides decision-makers with a way of assessing the overall value of a project, including the financial viability and the investment 's likely productivity and effectiveness. The investment's likely productivity and effectiveness is the equilibrium point between financial sustainability and contribution to the economic system. The equilibrium point is the condition in which the two forces, the financial outputs of the project in terms of cost and revenues on the one hand; and the return or the contribution in the regional economy are balanced. In other words, to review if the level of project outputs provides equal or at least equal benefits in an economic system (Dimitriou and Sartzetaki, 2019).

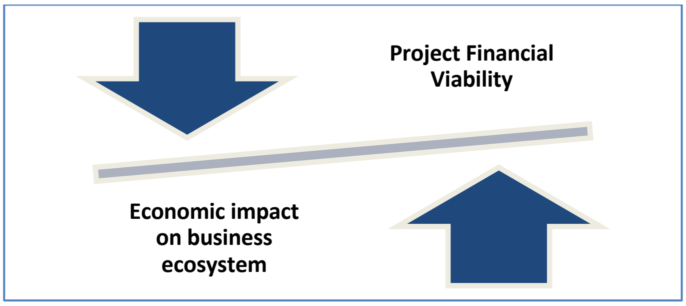

Figure 1: Decision forces of financial Viability and Impact on Business Ecosystem (Dimitriou, 2017).

Financial viability of the project based on the long-term estimations of the project development to meet the project financing requirements and reduce the business risks. The financial viability of a transport infrastructure project results from its ability to meet its financial commitments and guarantee that its recurrent costs will be covered by multiple stakeholders (Dimitriou and Sartzetaki, 2017a). The most critical items in this analysis are the line of cost (based on budget and cash flow analysis) and the expected revenues (based on business plan).

The equilibrium of project financial viability and impact on the business ecosystem is very critical to support decisions and provide information to stakeholders. In other words, the level of income generated by the project activity that distributed in the business ecosystem is a very powerful variable for the stakeholders to support decisions about the project development.

2.2 Project impact to business ecosystem footprint

The conceptual basis for the assessment of the impact to the business ecosystem due to capital intensive investments is Input-Output (I-O). I-O analysis has been used widely to investigate the interlinkages of economic sectors in economic systems (Dimitriou et al., 2017). I-O is a business system consisting of (a) a subsystem with several interdependent internal components and (b) its external environment (Reisa et al., 2009). Internal interdependence implies that the outputs of some components are inputs to others, and external components may provide primary input to these interdependent components.

The objective of the I-O analysis is to evaluate the impact of exogenous changes in the external components, such a capital-intensive investment on the interdependent components of the business ecosystem. The framework can be used as a tool to assess structural changes a business ecosystem, in terms of linkages between economic sectors when an exogenous change such a capital-intensive investment (Dimitriou et al., 2018).

I-O analysis based on the concept of multipliers evaluates how an economy may react to specific policies or external shocks or changes such an investment in a logistic center. Thus I-O tables provide a complete picture of the flows of products and services in an economic system for a given year, illustrating the relationship between producers and consumers and the exchange of goods and services among economic sectors. In other words, these tables illustrate all monetary market transactions between various businesses and between businesses and final demand sectors (i.e., consumers, government, investment, exports, etc.). Thus, they can be used to construct disaggregated multipliers in order to estimate apart from the direct impacts of a particular investment also its indirect and induced impacts (Dimitriou and Sartzetaki, 2018).

The impacts due to the capital-intensive project investment are divided into four distinct categories: direct, indirect, induced, and catalytic. Direct effects are associated with the businesses directly involved in the project. In transportation infrastructure projects, direct effects are related to the employment and GDP generated by firms which will construct and operate the transportation infrastructure. Indirect effects occur in the wider supply-chain as firms directly involved in constructing and operating the transportation infrastructure purchase goods and services from nation-based suppliers, in turn generating output, profits, and employment among suppliers. Induced effects arise because the direct and indirect effects mean additional wages are paid to workers, some of which are used to purchase goods and services for their own consumption. This spending supports additional businesses (and so additional output and jobs) in the industries that supply these purchases. Induced effects result from the employees of the transportation infrastructure purchasing goods and services at a household level (Dimitriou et al., 2015).

Concerning catalytic impacts, in many cases, the objective of large transport infrastructure investments is to improve the accessibility of a given region by reducing travel time or increasing the potential to travel. Accessibility can be measured as the quantity of economic or social activities that can be reached using the transport system. Improvement in accessibility will increase the market size for trade, manufacturing, tourism, and/or labour, leading to increased competition and/or centralization (Dimitriou and Sartzetaki, 2019). In such a context, the evaluation of these infrastructures should involve the estimations of the changes in the interregional trade and the regions' economic development (Owyong et al., 2001).

The estimation results of the I-O model based on a nxn matrix of multipliers that embodies n production sectors per unit of final consumption of commodities produced by n industry sectors that can also provide the indirect and induced effects by means of the Leontief matrix (TRB, 2008).

In the first step, we estimate the vector X, which expresses the total direct, indirect, and induced impact of the project on employment. This is accomplished with the Leontief inverse matrix. The standard representation of the I-O model in matrix form is defined as follows:

$$X_e = (I - A)^{-1} Y_e \quad (1)$$

Where I is the n × n unit matrix; Xe is the vector of final production of the economy; Ye is the vector of final demand of the economy; A is n × n matrix of technological coefficients. A technical coefficient aij is defined as the amount of production of sector i that sector j requires to produce one unit of output. ; (I − A)-1 is the n × n matrix of input–output multipliers, or the Leontief inverse. The rows and columns of the Leontief inverse matrix are the sectors of the economy and each element bij of this matrix shows the total required increase in the production of sector i to meet an increase of one unit in the final demand of sector j. The sum of all the elements of the j column of the Leontief inverse matrix gives the output multiplier of the sector j. The change in income using the direct coefficient w that expresses the wages per unit of sectoral jobs is estimated.

$$X_i = w(I - A)^{-1} Y_e \quad (2)$$

where X_i is the vector that expresses the direct, indirect, and induced impact of the project on the total income.

2.3 Financial viability framework assessment

Financial viability, in terms of cost and revenues, evaluated through a detailed cash-flow analysis based on alternative financing and demand scenarios to investigate the breakeven point for the payback period. Based on these demand and financing scenarios developed, project cost future flows for the alternative scenarios calculated as:

$$CP_t = (1 + a) \times CP_{t-1} \quad (3)$$

Where:
CPt = Logistic center Project Cost in year t
CP0 = Initial investment cost
t = year of operation (max t = 30)
a =share of CP, constant value (20% for the operation period).
After calculating future investment cost fluctuations, the next step is to calculate the future revenues fluctuations to
investigate the optimal financing scenario for the project using the internal rate of return method.

2.3 *General Added Value to the business ecosystem during the operational period*

Based on the calculation of the direct, indirect, and induced effects, the total value added to the business ecosystem from the development of the logistic center GA is estimated for project operation period, as:

$$GA_t = GD_0 + aGD_{t-1} + GI_0 + aGI_{t-1} + GM_0 + aGM_{t-1} \quad (4)$$

$\boldsymbol{GD_0}$=Direct income generated due to project in t=0
a= freight demand annual growth rate
$\boldsymbol{GI_0}$=Indirect income generated due to project operation in t=0 based on I-O analysis framework
$\boldsymbol{GI_t}$= Indirect income generated due to project operation in t=0 based on I-O analysis framework in year t
$\boldsymbol{GM_0}$=Induced income generated due to project operation in t=0 based on I-O analysis framework in year t
$\boldsymbol{GM_t}$= Induced income generated due to project operation in year t based on I-O analysis framework in year t

3. Case study 1 -Application

Greece is part of the EU's Orient/East-Med Corridor that connects the maritime interfaces of the North, Baltic, Black Sea and the Mediterranean. In this environment, Greece's geographical position as a gateway between East and West render it highly attractive for investments in logistics and transport to take advantage of these increasing trade flows in an efficient and cost-effective manner. The geographical position of North Greek port allows the offering of competitive sea freight cost for transported containers, while offering access to a set of growing economies in the broader region.

Region of Eastern Macedonia and Thrace [REM-T] (Anatoliki Makedonia - Thraki) is situated along the crossroads of Europe and Asia and is predominantly an agricultural area. It is a border region which gradually transforms into a gateway of the country and the European Union. The structure of the production model of the region displays concentration trends in lowland areas, large agricultural holdings, and monocultures where the production is done vertically, and urban centers as centers of trade and services. East Macedonia and Thrace have invested strategically to a large extent on inclusion in the International transport networks (Dimitirou and Sartzetaki, 2017b).

3.1 Key features of the project

The framework applied in a strategic logistics hub in North Greece. The new capital-intensive investment project aims to optimize the transportation system, to enhance the performance of logistics and multimodal transport supply chains, and transport development (Sartzetaki and Dimitriou, 2019a). The investment will satisfy the overall need for developing a logistics hub in North Greece to support multimodal transportation between Greece and Bulgaria. The development of the transit hub includes infrastructure development of integrated management through multimodal land (road and rail) with international ports in the region. This project will further strengthen the country’s role, as it will relate to the port of Burgas, enabling this way Greece to become an international freight hub for Central and Eastern Europe.

Figure 2. Strategic location of the logistic center (Dimitriou and Sartzetaki, 2019)

3.2 Demand and Financing Scenarios determination

Freight demand scenarios have been developed considering the potential for regional economic development in the catchment area. The scenarios are based on the regional and national economic conditions, transport network development perspectives, and other external factors.

The alternative demand scenarios created for the development of a logistic center based on many different parameters such as:

- rail transport network development
- the complementarity of the transport network
- intermodal transport network enhancement
- national and regional economic growth features

The six (6) alternative scenarios were developed based on alternative prospects for future economic and operational demand options in the freight zone, with two (2) scenarios per level of freight demand traffic considering the higher demand levels in last five years.

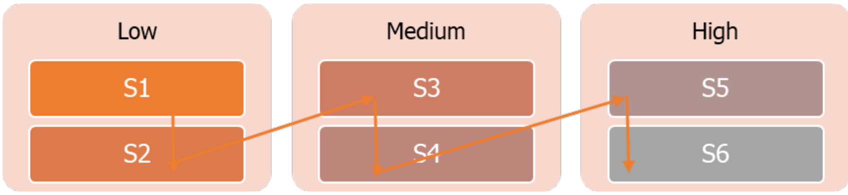

Figure 3. Scenarios development concept for annual freight demand growth rates in logistic centre catchment area

Whether driven by revenue growth, improved performance, better cost management or increased competitive advantage, it is critical for viable transport infrastructure to identifying both the long-term benefits and impact on the overall business, services and strategy and develop different financing scenarios (Dimitriou and Sartzetaki, 2017a).

Twelve different scenarios with different interest rates representing different ownership structure, from a typical public financing project to a typical private investment project. The scenarios in group A represent financial and business characteristics of a public project; group B includes a mixture of public funds and partial support from governmental investment organisations; group C are mainly supported by governmental investment organisations; and group D are mainly financed by the private sector.

The determination of alternative financing scenarios is analytically depicted in Table 1 for scenarios A, B, C and D. Scenarios A1, A2, A, B1, C3, D1, D2, D3 are in the high-risk area, the scenarios B2, B3, C1, C2 are in the medium-risk area.

Table 1: Project financing scenarios development

Scenario *Acronym*	Interest rate (%) *30 years average*	Investing Conditions *Investing Scheme and Conditions*
A1		-- Public financing schemes
A2	1.5-2.5	-- Implemented by Governmental entities
A3		
B1		-- Public financing schemes
B2	3.0-4.0	-- Implemented by Governmental entities
B3		
C1		-- PPP financing schemes
C2	4.5-5.0	-- Implemented by Concessioner's entities
C3		
D1		-- PPP financing schemes
D2	6.0-7.0	-- Implemented by Concessioner's entities
D3		

3. Results and Discussion

The expected average annual net cash flow during the operational period were calculated for each combination of the 12 financial scenarios A1, up to D3 and all 6 S1 development scenarios, up to S6 as analytically depicted in Table 2.

Table 2: Average annual net cash inflow during the single operation period

Financing scenarios	Demand scenarios					
	S1	S2	S3	S4	S5	S6
A1	552,084	1,104,168	1,150,333	1,725,500	1,955,567	2,415,700
A2	581,017	1,162,035	1,222,667	1,834,000	2,078,533	2,567,600
A3	609,951	1,219,901	1,295,000	1,942,500	2,201,500	2,719,500
B1	638,884	1,277,768	1,367,333	2,051,000	2,324,467	2,871,400
B2	667,817	1,335,635	1,439,667	2,159,500	2,447,433	3,023,300
B3	696,751	1,393,501	1,512,000	2,268,000	2,570,400	3,175,200
C1	725,684	1,451,368	1,584,333	2,376,500	2,693,367	3,327,100
C2	754,617	1,509,235	1,656,667	2,485,000	2,816,333	3,479,000
C3	783,551	1,567,101	1,729,000	2,593,500	2,939,300	3,630,900
D1	812,484	1,624,968	1,801,333	2,702,000	3,062,267	3,782,800
D2	870,351	1,740,701	1,946,000	2,919,000	3,308,200	4,086,600
D3	928,217	1,856,435	2,090,667	3,136,000	3,554,133	4,390,400

The minimum average net cash inflow to ensure the project financial viability for the most likelihood scenarios S3, S4 ranges from €1.1 m to €3.1 m. Considering the uncertainties in future estimates of the financial parameters and the characteristics of the investment involving a payback period for the project over 20 years, the most likely demand and financing scenarios for the payback period are depicted analytically in following table 3.

Table 3. Payback period for the different scenarios of the project development.

Financing scenarios	Demand scenarios					
	S1	S2	S3	S4	S5	S6
A1	23	21	29	13	11	11
A2	25	22	28	15	12	12
A3	-	23	27	17	13	13
B1	-	25	26	19	14	14
B2	-		25	20	15	15
B3	-	-	-	22	16	17
C1	-	-	-	24	20	19
C2	-	-	-	25	22	21
C3	-	-	-	-	25	23
D1	-	-	-	-	-	25
D2	-	-	-	-	-	28
D3	-	-	-	-	-	30

Scenarios	***Demand***					
	Low		*Medium*		*High*	
Financing	*S1*	*S2*	*S3*	*S4*	*S5*	*S5*
A1	*33*	*31*	*39*	*23*	*21*	*21*
A2	*35*	*32*	*38*	*25*	*22*	*22*
A3	-	*33*	*37*	*27*	*23*	*23*
B1	-	*35*	*36*	*29*	*24*	*24*
B2	-	-	*35*	*30*	*25*	*25*
B3	-	-	-	*32*	*26*	*27*
C1	-	-	-	*34*	*30*	*29*
C2	-	-	-	*35*	*32*	*31*
C3	-	-	-		*35*	*33*
D1	-	-	-		-	*35*
D2	-	-	-	-		*38*
D3	-	-	-	-		*40*

Given the uncertainties in demand freight, demand scenarios S3 and S4 are selected as the likelihood scenarios for the investment. Scenarios S1,S2,S5,S5 implicate significant risks. Therefore, the investment implementation should be designed based on achieving these goals.

Considering the uncertainties in financial parameters forecasts and the characteristics of the project that entails a payback period of over 20 years, the scenarios B1, B2, C1, C2 are selected as the most likelihood scenarios.

It is noteworthy that scenarios B2 and B3 require financial contribution from international free-floating funders, such as EIB, etc. C1 and C2 scenarios involve private sector participation through concession agreements and PPPs.

For the most likelihood scenarios, the interest rate on the capital fluctuates between 3.5% and 5.0% f Measures and targets beyond these limits should be carefully considered in terms of stimulating financial risks, based on current conditions and practices in project financing schemes and projects.

Applying IO modelling, the direct, indirect, and induced total impact created by the project on the annual output (in million €) calculated. The calculations are based on Eurostat's Input-Output national tables for the year 2015. The new logistic center results in an annual increase of the total income ranging from €6 m to €17m for scenario S1, from €6m to €20m for scenario S2, from €6m to €20m for scenario S3, from €6m to €47m for scenario S4, from €6m to €46m for scenario S5, from €6m to €48m for scenario S6, for the entire period under consideration as depicted in figure 4.

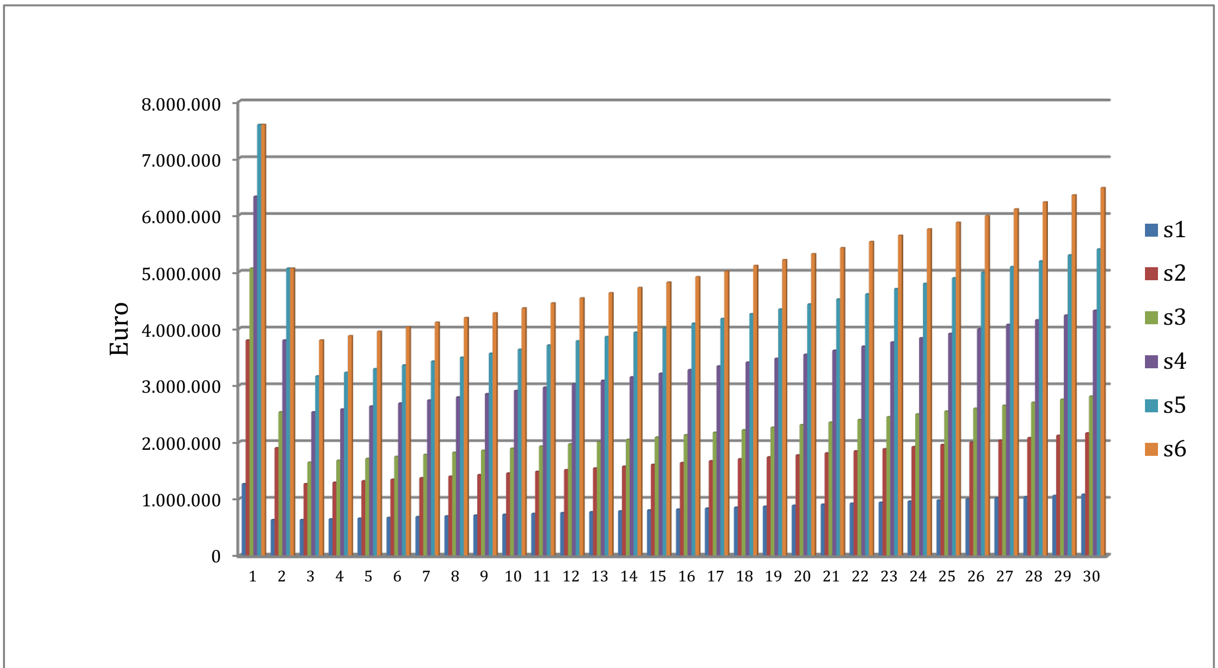

Figure 4. General added value to the business ecosystem due to logistic center development

During the construction period, the implementation of the center will contribute to the region's business ecosystem from € 1.2m to € 7.5m for the first year of construction while for the second from € 630m for the S1 scenario to € 5m for the scenario S6.

From the first year of operation, the total impact on the business ecosystem estimated from € 630,000 for the scenario S1 to € 6.4m for the scenario S6. For the most feasible scenarios S3 and S4, the impact to business ecosystem in the first year of operation is estimated at € 1.6 m and € 2.5 million respectively, with a forecast to target at € 2.8 m (fixed annual values) and € 4.3m (fixed annual values) in the last year of the project lifecycle.

4. Conclusions

The estimated results provide a strong evidence of the existence of long-run cointegrating relationship among the effectiveness of a capital-intensive investment to the business ecosystem during its lifecycle. Conventional wisdom is to present a quantitative analysis framework providing key messages to decision-makers on financial an economic impact generated by a capital intensive project supporting decisions and feeding scenarios of offsetting future benefits.

The analysis framework based on I-O methodology aims to evaluate the impact of economic growth in terms of new income distributed to the business ecosystem.

Application results highlight information to compare with other similar cases and highlight key messages to decision-makers, stakeholders, and investors. The results indicate that each decision for a capital-intensive project should be associated with targets and measures to stimulate economic impact, in a way that all sectors of business ecosystem take the benefits of the capital-intensive project development during its lifecycle.

The methodology framework adopted is a tool to support stakeholders, decision-makers, planners, and managers in the investment strategic planning process for capital intensive projects, based on the most likelihood scenarios development. The managerial implications provided to industry based on the above methodology framework is to monitor and improve efficiency in such projects like a logistic center, as well as effectiveness to the business ecosystem.

References

Calderón César , Enrique Moral-Benito, Luis Servén (2015). *Is Infrastructure capital productive? A dynamic heterogeneous approach, J. Appl. Econ.*, 30 (2) (2015), pp. 177-198

Cascetta E. (2015*). A new look at planning and designing transportation systems: A decision-making model based on cognitive rationality, stakeholder engagement and quantitative methods* Transp. Policy, 38 (2015), pp. 27–39

Dimitriou D., Mourmouris J., Sartzetaki M., (2017). *Quantification of the air transport industry socio-economic impact on regions heavily depended on tourism, Transportation Research Procedia*, 2017. 25: 5242-5254

Dimitriou D., Sartzetaki M. (2018). *Assessing air transport socioeconomic footprint, International Journal of Transportation Science and Technology*,7(4), pp. 283-290

Dimitriou D., Mourmouris J., Sartzetaki M., (2018). *Maritime ports economic effect on regional development: Estimations for the major maritime ports in Greece, International Journal of Decision Support Systems,* 2(4), pp.210 – 220

Dimitriou D. and Sartzetaki M., (2017a). *Evaluation framework for investments in rail infrastructure projects, International Journal of Transport and Vehicle Engineering (IJTVE),* 11 (5), pp. 1308-1312.

Dimitriou D. and Sartzetaki M., (2017b). *Decision Framework for developing transport logistics hub, International Journal of Engineering Sciences &Research Technology (IJERT),* Vol 6(1), pp 314-322.

Dimitriou D., Mourmouris J., Sartzetaki M., (2015). *Economic impact assessment of mega infrastructure projects, International Journal of Applied Economics (RAEC),* Vol. 47(40), pp. 4310-4322.

Dimitriou D., Sartzetaki M. (2019). *"Appraisal of the effects, on regional economy by investments in transportation projects", Transportation Research Board (TRB) 98th Annual Meeting,* January 13-17, Washington, DC, TRB Annual Meeting proceeding online.

Dimitriou D. (2017) *'Quantitative evaluation taxonomy for transport infrastructure projects, International Journal of Research Science and Management, 2017.* 4(3): 2349-5197.

Farhad M. (2015). *Transport infrastructure and long-run economic growth in OECD countries, Journal of Transportation Research Part A: Policy & Practic*e, 74, 73-90.

Hong Junjie (2007), *Transport and the location of foreign logistics firms: the Chinese experience, Transport. Res. Part A: Policy Pract.,* 41 (6) (2007), pp. 597-609, 10.1016/j.tra.2006.11.004

Mackie Peter, Tom Worsley, Jonas Eliasson, (2014). *Transport appraisal revisited, Research in Transportation Economics,* 47, pp. 3–18

Miller Michael and Eckhard Szim, (2015). *How to avoid unrealistic appraisal results? A concept to reflect the occurrence of risk in the appraisal of transport infrastructure projects,* Research in Transportation Economics 49, pp. 65-75

Owyong, D. T. and Thangavelu, S. M. *An Empirical Study on Public Capital Spillovers from the USA to Canada. Applied Economics,* 2001. 33(11): 1493-1499.

Romp Ward, Jakob De Haan (2007), *Public capital and economic growth: a critical survey, Perspektiven Der Wirtschaftspolitik, 8 (S1) (2007),* pp. 6-52

Reisa H. & Rua A. *An Input–Output Analysis: Linkages versus Leakages, International Economic Journal, 2009.* 23(4): 527-544

Sartzetaki M. (2019). *Value Based Management Analysis Framework Towards Transport Enterprises Resilience, International Journal of Economics, Business and Management Research*, 3(6), pp.82-96

TRB, (2008). *Transportation Research Board Airport economics impact methods and models: A synthesis of airport practice, Airport Cooperative Research Program, ACRP Synthesis 7,* Washington D.C., pp. 5-6.

Weisbord Glen (2008), *Models to predict the economic development impact of transportation projects: historical experience and new applications, Ann. Reg. Sci.,* 42 (3) (2008), pp. 519-543