

Towards A New Approach of Local Development under Crisis
Conditions: Empowering the Local Business Ecosystems in Greece,
by Adopting a New Local Development Policy

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Abstract

The competitiveness of the Greek economy evolves, both in the present crisis and later on, according to the dynamic micro-level environment and its transformations. This evolution depends on the SME's abilities to claim a significant role in the new, competitive global environment, which is characterized by a continuous reshaping process. Respectively, the goal of achieving development in the local scale is of vital importance. This paper attempts to approach and highlight a new framework, by proposing a new business ecosystems approach and policy, focusing on the implementation of a method for strengthening the SME's physiology. This method proposes the construction of systematic knowledge and innovation mechanisms, on a local scale; the Local Development and Innovation Institutes (LDI's). Subsequently, we analyze the regional data in Greece in order to highlight the most affected

by the crisis region and to experimentally establish the Local Development Institutes.

Keywords: Local Development & Innovation Institutes; LDIs'; Business Ecosystems; SMEs; Greece

1. Introduction

Over the recent years, there has been an extended economic crisis which has a hit significantly the small and medium-sized enterprises (SME) in Greece. It has created an underlying negative environment for all the new and existing companies due to a liquidity shortage, high taxation, a decrease in consumption demand, high operating costs, an intensified competition of low-priced imported goods and of larger companies and, mostly, because of the volatile and uncertain political and economic macro-conditions. This crisis in Greece goes way beyond the analytical perspective of insufficient demand. It is in fact necessary to help modernize the supply mechanisms of the local ecosystems in order for them to build efficient competitive advantages.

Based on the 2015 research outcome of the “IOBE” (Greek Foundation for Economic and Industrial Research; Ίδρυμα Οικονομικών & Βιομηχανικών Ερευνών, 2015) under the Global Entrepreneurship Monitor program (GEM), the business environment on the ground remains one of the least innovation friendly throughout the European Union. The process of conducting entrepreneurial activity is held back by the absence of a broader national policy —a framework that would favor entrepreneurship. Significant entrepreneurial obstacles apart from funding, consist of high market entry barriers as well as the dominant —rather ambiguous— business culture. As far as the structural nature of the competitiveness problem (Βλάχος, 2016) concerned, the Greek SME’s and their domestic business environment are now facing intertemporal weaknesses and a lack of competitive advantages (Vlados, 1996). Therefore, the successful adaptation of the locally established SME’s will be the major factor in defining the international competitiveness of the Greek economy (Vlados, 2005; Vlados, 2012).

2. A Brief Overview of Entrepreneurship in Greece

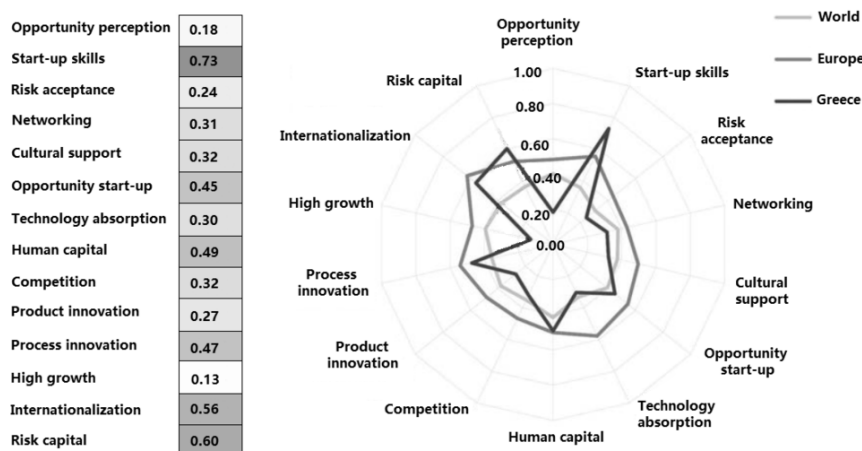


Figure 1. Pillars of Performance for the entrepreneurship in Greece (Ács et al., 2017)

From the above Pillars of Performance graph (Figure 1) relating to the entrepreneurship in Greece, “Start-up skills” is the strongest area (0.73), while “High growth” constitutes the weakest (0.13). Furthermore, Global Entrepreneurial Index, GEI ranking [Ács et al., (2017), p. 56], of the European countries, shows that Greece is close to the bottom, in the 49th position (GEI, 34.6), while the European index is 46.3. Regarding the sub-indices comparison, Entrepreneurial Attitudes sub-index (ATT), Entrepreneurial Abilities sub-index (ABT) and Entrepreneurial Aspirations sub-index (ASP), Greece performs 32.1, 35.8 and 36, while the European totals are 44, 47.3 and 47.6 respectively.

At the same time, a research conducted recently by the Ministry of Economy and Development in order to “Map the business needs of Greek Startups” (Γενική Γραμματεία Βιομηχανίας, 2016) identified two major trends; their main source of financing is own capital (amazingly, 83.5%) while 60.2% of them focus on the foreign market (in contrast, only 47.7% has an exclusive domestic orientation). A further analysis of the data shows that 23.5% is financed through family and relatives, 9.4% utilizes grants and awards, 7.1% benefits from subsidies and only 4.7% borrows from banking and financial institutions.

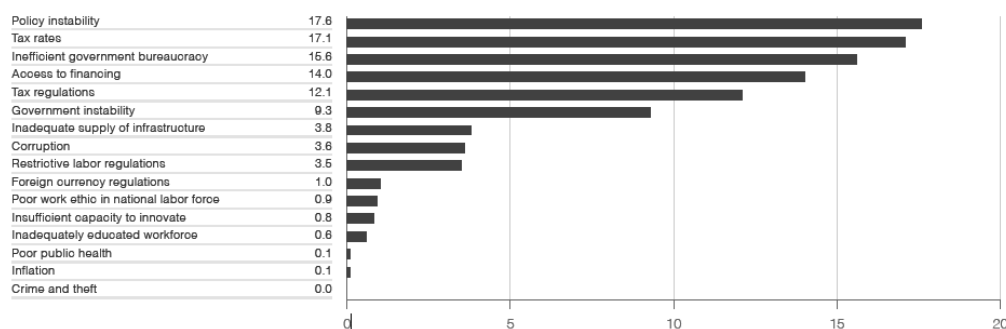


Figure 2. Most Problematic factors for conducting business in Greece (Schwab et al., 2016)

Finally, the above chart (Figure 2) demonstrates the order of factors that impede entrepreneurship; the instability of policy measures is the number one problem to deal with, followed by high taxes, bureaucracy, access to financing and tax regulations. Other significant deterrents are the governmental instability, the inadequate infrastructure as well as restrictive labor regulations etc.

3. Business Ecosystems and Local Development

The biological term “ecosystem” was first coined by the British botanist, Arthur Tansley (Tansley, 1935). He supported the idea that the basic units of nature can be understood as ecosystems; physical spaces with resources, such as oxygen and other gases, soil, minerals, and water; and lots of species, from trees, mammals, reptiles, insects, bacteria, that are sharing resources, creating resources from one another, competing for resources, co-evolving and constantly adapting.

Nowadays —and after the initial contribution by James Moore (Moore, 1993)— the prevailing concept of “Business Ecosystems” has paved the way for further study in the ecology of businesses. The business ecosystem approach (Table 1) is, primarily, a way to think in terms of strategy and of the effort needed to accelerate progress. The field of study

and scope of business ecosystems is the behaviour and development of a population of businesses —living organisms— that co-evolve and act in very complex ways (Peltoniemi, 2005).

Table 1. A brief overview of the business ecosystem definitions

No.	Author & Year	How they describe the business ecosystem
1.	(Moore, 1993)	Like its biological counterpart, gradually moves from a random collection of elements to a more structured community.
2.	(Moore, 1996)	An economic community supported by a foundation of interacting organisations and individuals —the organisms of the business world. This economic community produces goods and services of value to customers, who are themselves members of the ecosystem. The member organisations also include suppliers, lead producers, competitors, and other stakeholders. Over time, they co-evolve their capabilities and roles, and tend to align themselves with the directions set by one or more central companies. Those companies holding leadership roles may change over time, but the function of ecosystem leader is valued by the community because it enables members to move toward shared visions to align their investments and to find mutually supportive roles.
3.	(Iansiti and Levien, 2004)	A business ecosystem is a business network, which is formed by large and loosely connected networks of entities that interact with each other in complex ways, while the health and performance of a firm is dependent on the health and performance of the whole.
4.	(Peltoniemi and Vuori, 2004)	A dynamic structure which consists of an interconnected population of organisations. These organisations can be small firms, large corporations, universities, research centers, public sector organisations, and other parties which influence the system.
5.	(Fragidis et al., 2007)	Business ecosystems concentrate large populations of different kinds of business entities. They transcend industry and supply chain boundaries and assemble a variety of organisations that can complement each other and synergistically produce composite products. Interdependence and symbiotic relationships are inherent attributes in business ecosystems; as a result, the participants counter a mutual fate and co-evolve with each other. But in parallel, members compete with each other for the acquirement of resources and the attraction of customers.
6.	(Marín et al., 2007)	To flourish in such environments, businesses must continually adapt and evolve. This requires that a business engage in an ongoing dialogue with its environment and with others with which it shares this environment.
7.	(Desai et al., 2007)	Dynamic, customizable groups of services provided and used by membership-based social or business networks of varying scale and lifetime.

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| 8. | (Anggraeni et al., 2007) | The business ecosystem perspective offers a new way to obtain a holistic view of the business network and the relationships and mechanisms that are shaping it, while including the roles and strategies of the individual actors that are a part of these networks. |
| 9. | (Chang and Uden, 2008) | A business ecosystem is a network of buyers, suppliers and makers of related products or services and their socio-economic environment that includes institutional and regulatory framework. |
| 10 | (Li, 2009) | A business ecosystem provides a new perspective for repositioning a company's strategy in order to aggressively further its own interests and to promote its overall ecosystem health. |
| 11. | (Williamson and De Meyer, 2012) | A network of organisations and individuals that co-evolve their capabilities and roles and align their investments so as to create additional value and/or improve efficiency. |
| 12. | (Rong and Shi, 2015) | A business ecosystem is a community consisting of different levels of interdependent organisations which generates co-evolution between partners and their business environment. |
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Adapted from Rong and Shi (2015).

Every business ecosystem (Figure 3, below) springs out of the original swirl of capital and knowledge, customer interest and markets, new value and talent generated by a new innovation, just as successful species spring from the natural resources of sunlight, water, and soil nutrients. The goal is to get a lot of people to bring their creativity together and accomplish something more important than they can do on their own. In general a business ecosystem tries to be wildly inclusive, and in its extreme tries to harness the productivity of a swarm. (Moore, 2014)

There are four distinct stages of a business ecosystem development: birth, expansion, leadership, and self-renewal —or, if not self-renewal, death (Table 2). In reality, of course, the evolutionary stages blur, and the managerial challenges of one stage often crop up in another. What remains the same from business to business is the process of co-evolution; the complex interplay between competitive and cooperative business strategies (Moore, 1993, p. 76).

Table 2. The evolutionary stages of a business ecosystem

	Cooperative Challenges	Competitive Challenges
Phase Birth	1: Work with customers and suppliers to define the new value proposition around a seed innovation.	Protect your ideas from others who might be working toward defining similar offers. Tie up critical lead customers, key suppliers, and important channels.
Phase Expansion	2: Bring the new offer to a large market by working with suppliers and partners to scale up supply and to achieve maximum market coverage.	Defeat alternative implementations of similar ideas. Ensure that your approach is the market standard in its class through dominating key market segments.
Phase Leadership	3: Provide a compelling vision for the future that encourages suppliers and customers	Maintain strong bargaining power in relation to other players in the ecosystem,

	to work together to continue improving the complete offer.	including key customers and valued suppliers.
Phase 4: Self-Renewal	Work with innovators to bring new ideas to the existing ecosystem.	Maintain high barriers in entry to prevent innovators from building alternative ecosystems. Maintain high customer switching costs in order to buy time to incorporate new ideas into your own products and services.

Reproduced from Moore (Moore, 1993, p. 77).

During *Stage 1* of a business ecosystem, entrepreneurs focus on defining what customers want, that is, the value of a proposed new product or service and the best form for delivering it.

In *Stage 2*, business ecosystems expand to conquer broad new territories. Just as grasses and weeds rapidly cover the bare, scorched ground left after a forest fire, some business expansions meet little resistance. But in other cases, rival ecosystems may be closely matched and choose to attack the same territory.

Similarly, in business ecosystems, two conditions contribute to the onset of leadership struggles that are the hallmark of *Stage 3*. First, the ecosystem must have strong enough growth and profitability to be considered worth fighting over. Second, the structure of the value-adding components and processes that are central to the business ecosystem must become reasonably stable.

This stability allows suppliers to target particular elements of value and to compete in contributing them. It encourages members of the ecosystem to consider expanding by taking over activities from those closest to them in the value chain. Most of all, it diminishes the dependence of the whole ecosystem on the original leader. It's in *Stage 3* that companies become preoccupied with standards, interfaces, "the modular organisation," and customer supplier relations.

Stage 4 of a business ecosystem occurs when mature business communities are threatened by rising new ecosystems and innovations. Alternatively, a community might undergo the equivalent of an earthquake; sudden rise of new environmental conditions that include changes in government regulations, customer buying patterns, or macroeconomic conditions (Moore, 1993, pp. 76-81).

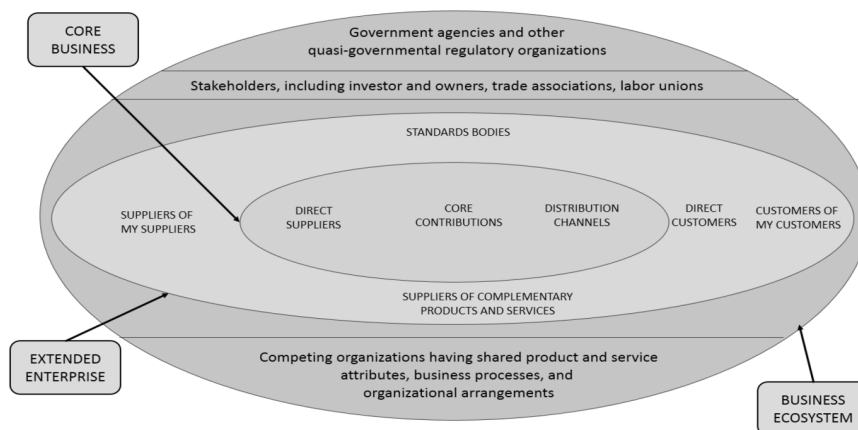


Figure 3. A typical business ecosystem

Source: Moore, 1996.

Iansiti and Lenvien (Iansiti and Levien, 2004), point out that despite the immense interdependence between businesses, a company ought to determine its place in the business ecosystem. Thus, it can follow three main strategic roles: a Keystone, a Dominator, or a Niche Player. In order to develop a strategy, the first and foremost action a manager has to take is to measure the health of the underlying business ecosystem —how productive, robust, and niche creative is. The power to do so depends on the role —current and potential— within the network (the three main roles).

The company's choice of ecosystem strategy is governed primarily by what kind of a company it is or aims to be. This choice can also be affected by the business context in which it operates —the general level of turbulence and complexity of its relationships with others in the ecosystem.

The strategic scenarios, therefore, follow some specific paths: a) Niche strategy: if the business faces rapid and constant change and —by leveraging the assets of other firms— can focus on a narrowly and clearly defined business segment; b) Keystone strategy: if it is at the center of a complex network of asset-sharing relationships and operates in a turbulent environment; c) Physical Dominator strategy: if it relies on a complex network of external assets but operates in a mature industry; d) Value Dominator strategy: if it chooses to extract maximum value from a network of assets that doesn't control and, finally, e) if it is a commodity business that operates in a stable and mature environment and operates relatively independently of other organisations, the Ecosystem strategy is irrelevant (although that may change soon). [Iansiti and Levien, (2004), pp. 7-8]

The implications from the business ecosystem thinking are, more or less, the ripple effects throughout the entire network of organisations. One might no longer design or conceive of a product in isolation. This process, in addition, creates opportunities for innovation and product development and therefore a healthy ecosystem —new products that can leverage the capabilities provided by existing products.

4. Institutes for Local Development and Innovation

The vast majority of businesses internationally —as well as in Greece and the rest of Europe— are small and medium-sized enterprises (Eurostat, 2011). There is, indeed, a clear distinction between big and small businesses. Nevertheless, some SME’s are significantly better than others; behind similar quantities there are massive qualitative variations and the comparable sizes are, sometimes, inefficient in the process of defining different qualities and “kinds” (Βλάδος, 2016).

Therefore, a sustainable way out of the persistent Greek economic crisis lies at the inclusive policies that could help the development of the SME’s environment —the majority, that is, of the economic actors in Greece. One such policy is the proposed Local Development & Innovation Institutions (LDI’s) (Vlados, 2017). The Local Development Institutes are specific mechanisms to promote, coordinate, and spread information and business know-how. As for their core value, they are capable to create and disseminate socioeconomic interest by harnessing the innovation process, on a local scale, and by helping businesses to develop their extroversion skills and physiology.

This LDI’s mechanism is, basically, an effort —an intervention— to directly support the businesses that exist and grow in a specific business ecosystem on a local level. To achieve that, the LDI require sufficient resources, both tangible and intangible, adequate infrastructure —as well as specialized scientists— all of which remain uncoordinated in various state bodies and institutions. So, the idea is to re-organize and build a chain of value creation around them, locally (Figure 4).

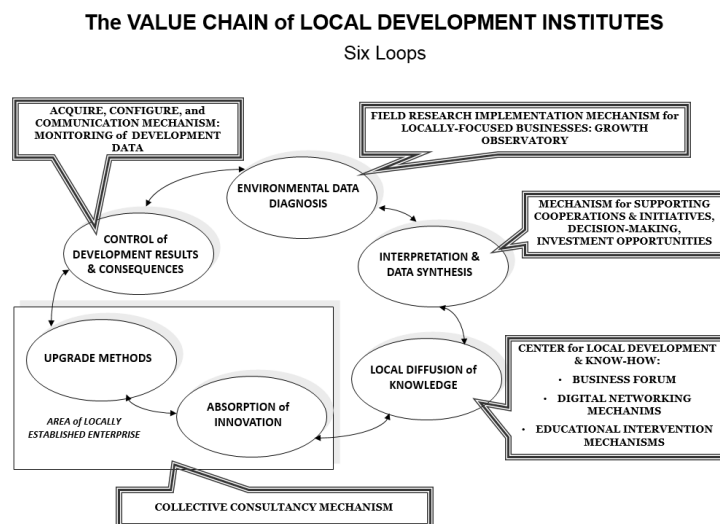


Figure 4. The six-loop value-chain of the Local Development & Innovation Institutions

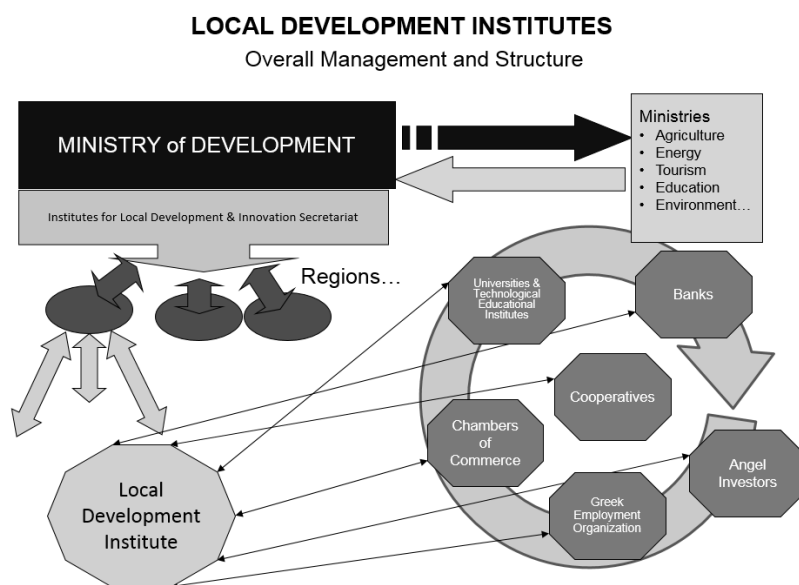


Figure 5. The structure of the Local Development & Innovation Institutions

In other words, the LDIs serve as offices responsible for business support, development and growth, throughout the regions, prefectures and municipalities in Greece. They are, in fact, a point of contact for all the government agencies and organisations, related to innovation and to the regional productive powers (Figure 5).

That said, in order for the LDIs to succeed “on the battlefield”, they need a flexible and proactive approach. An intelligent design as well as a regulation framework that will ensure the stability and the core competencies of the mechanism: Speed and reliability, synergistic approach, value-added structural measures, and the enhancement of the local business ecosystems (Βλάχος, 2006).

5. Quantitative Analysis, Based on Regional Data

The next step in this proposed method is to clarify which business ecosystem has some form of priority in establishing and implementing a pilot LDI policy. So, the target-region in our regional development (Εθνικό Κέντρο Τεκμηρίωσης, 2015; Κόνσολας, 1984; Λαμπριανίδης, 2002; Παπαδασκαλόπουλος, 1990; Πολύζος, 2011; Blakely, 1989) research is characterized by relative losses and difficulties to adjust throughout the crisis period (from 2008 to this day).

As such, we extract the weakest out of the regions of the Greek productive system, the particular, that is, and problematic regional area that could experimentally host a Local Development & Innovation Institute. This region, based on our search criteria, appears to be the Eastern Macedonia & Thrace.

It is a featured border area since all its prefectures, except Kavala, are adjacent to the borders of Greece. Border areas demonstrate the extreme syndrome of “regionality”. This serves to explain the economic, social, demographic and other problems which are found in some geographical entities that cannot follow the pace of development like other —more central—

regions and cities (Βλάχος, 2007). As a consequence, when a region is isolated and “regionalized” there are some significant costs to deal with:

- A. Financing: high operating costs for businesses as well as living costs due to high distances.
- B. Infrastructure: low or absent economies of scale due to fragmentation of market activities.
- C. Opportunities: weak economy with diminished expectations, both for social and economic benefits.
- D. Information: relatively late in remote regions coupled with higher costs to obtain specialized information.

In particular, the following analysis begins with the calculations of some basic figures of the Greek economy (Tables 3-11), as well as of the target-region, for the 2008-2014 period. Consequently, the shift-share analysis (Tables 12-21), based on the previous calculated data, will end up in which industries of the Eastern Macedonia & Thrace there are advantages or disadvantages and, as a conclusion, with the help of the regional classification method, we take the best out of each region’s industry by proposing the most adequate strategy to follow.

Table 3. GDP per capita

By Region, 2008 & 2014* (EUR, current prices)			
	2008	2014	CHANGE %
GREECE	21845	16336	-25.2%
ATTICA	29215	23377	-23.4%
NORTH AEGEAN	17647	12919	-26.8%
SOUTH AEGEAN	24747	17899	-27.7%
CRETE	19176	13773	-28.2%
EASTERN MACEDONIA, THRACE	15568	11366	-27%
CENTRAL MACEDONIA	17437	12500	-28.3%
WESTERN MACEDONIA	16748	15624	-6.7%
EPIRUS	14960	11606	-22.4%
THESSALY	16363	12237	-25.21%
IONIAN ISLANDS	21759	14826	-31.8%
WESTERN GREECE	16393	12214	-25.5%
CENTRAL GREECE	19552	13917	-28.8%
PELOPONNESE	17224	13134	-23.8%
COEFFICIENT VARIATION (CV)	OF 21.5	45.81646	

Source: Hellenic Statistical Authority (Note 1)– Calculated data. *Temporary data. Update 17/01/2017.

Table 4. GDP per capita

Eastern Macedonia and Thrace prefectures, 2008 & 2014* (EUR, current prices)			
	2008	2014	CHANGE %
EASTERN MACEDONIA, THRACE TOTAL	15568	11366	-27%
EVROS	15438	12019	-22%
XANTHI	14537	9805	-32.55%
RODOPE	15148	9954	-34.3%
DRAMA	13377	10601	-20.75%
KAVALA	18388	13651	-25.8%

Source: Hellenic Statistical Authority – Calculated data. *Temporary data. Update 17/01/2017.

Table 5. Gross Fixed Capital Formation

By region, 2008 & 2014* (EUR, current prices)			
	2008	2014	CHANGE %
GREECE	57627	20625	-64.2%
ATTICA	22505	7984	-64.5%
NORTH AEGEAN	934	342	-63.4%
SOUTH AEGEAN	2130	647	-69.6%
CRETE	3695	1184	-68%
EASTERN MACEDONIA, THRACE	2746	938	-65.8%
CENTRAL MACEDONIA	8064	3555	-56%
WESTERN MACEDONIA	2248	918	-59%
EPIRUS	1725	500	-71%
THESSALY	3199	1162	-63.7%
IONIAN ISLANDS	1069	312	-70.8%
WESTERN GREECE	3010	983	-67.3%
CENTRAL GREECE	3345	1349	-59.7%
PELOPONNESE	2956	951	-67.8%

Source: Hellenic Statistical Authority – Calculated data. *Temporary data. Update 17/01/2017.

Table 6. Employment

By region, 2008 & 2014*			
	2008	2014	CHANGE %
GREECE	4856333	3999296	-17.6%
ATTICA	1876689	1527414	-18.6%
NORTH AEGEAN	76732	68643	-10.5%
SOUTH AEGEAN	150811	133612	-11.4%
CRETE	283873	237780	-16.2%
EASTERN MACEDONIA, THRACE	243252	210804	-13.3%
CENTRAL MACEDONIA	802478	635846	-20.8%
WESTERN MACEDONIA	108445	89845	-17.1%
EPIRUS	139872	116567	-16.7%
THESSALY	317032	262754	-17.1%
IONIAN ISLANDS	96728	81725	-15.5%
WESTERN GREECE	283627	227232	-19.9%
CENTRAL GREECE	232488	193936	-16.6%
PELOPONNESE	244325	213139	-12.8%

Source: Hellenic Statistical Authority – Calculated data. *Temporary data. Update 17/01/2017.

Table 3 above shows a sharp decline in Eastern Macedonia and Thrace's GDP per capita between 2008 and 2014 (27%). This decrease is greater compared to the 25.2% country's total whereas the region's prefectures (Table 4) show a large drop especially in Xanthi and Rodope (35.2% and 34.3% respectively). In turn, Table 5, shows a steep decline of investments in the region (65.8% for 2008-2014) while the employed persons decreased by 13.3% (Table 6). The calculated coefficient of variation —21.5 for 2008 and 45.81 for 2014 (Table 3)— indicates a markable rise of the uneven distribution of GDP per capita across the Greek regions.

Table 7. Gross value added

By industry, 2008 & 2014* (EUR, current prices, in millions)								
Selected Industries: AFF: Agriculture-Forestry-Fishing, MEG: Mining-Electricity-Gas, M: Manufacturing, C: Construction, TTAFS: Trade-Transportation-Accommodation-Food Services, FIA: Financial and Insurance Activities, PSTA: Professional, Scientific and Technical Activities								
2008	AFF	MEG	M	C	TTAFS	FIA	PSTA	SUM
EVROS	121	39	145	86	462	47	52	993
XANTHI	79	32	195	96	246	31	72	751
RODOPE	91	102	190	78	258	35	69	823

DRAMA	98	51	167	44	256	33	66	715
KAVALA	110	74	250	134	872	59	64	1563
SUM	499	298	947	439	2094	205	323	4805
2014								
EVROS	103	38	114	17	245	39	26	581
XANTHI	69	18	126	28	163	25	25	453
RODOPE	85	54	117	19	157	22	22	475
DRAMA	87	64	120	45	155	30	11	513
KAVALA	89	74	212	71	542	47	41	1075
SUM	433	248	689	180	1261	162	125	3098

Source: Hellenic Statistical Authority – Calculated data. *Temporary data. Update 17/01/2017.

The above table (Table 7) indicates that, for selected industries, the Gross Added Value between 2008-2014 recorded a decline of 35.5 percent in region totals while for specific prefecture the changes were: Evros: -39% , Xanthi: -39.7% , Rodope: -73.26% , Drama: -28.25% , Kavala: -31.22%. The greatest decrease was registered in Rodope.

Table 8. Gross Value Added

By region and sector, 2014* (EUR, current prices, in millions)				
I= Primary, II= Secondary, III= Tertiary				
	I	II	III	TOTAL
GREECE	5843	25047	126297	157187
ATTICA	307	9155	66509	75971
NORTH AEGEAN	110	233	1918	2261
SOUTH AEGEAN	132	584	4578	5294
CRETE	461	957	6261	7679
EASTERN MACEDONIA, THRACE	433	1117	4548	6098
CENTRAL MACEDONIA	1163	3681	16120	20964
WESTERN MACEDONIA	238	1908	1685	3831
EPIRUS	281	573	2633	3487
THESSALY	825	1514	5614	7953
IONIAN ISLANDS	95	204	2417	2716
WESTERN GREECE	660	1058	5570	7288
CENTRAL GREECE	566	2450	3850	6866
PELOPONNESE	572	1613	4594	6779

Source: Hellenic Statistical Authority – Calculated data. *Temporary data. Update 17/01/2017.

Table 9. Location Quotient (LQ), Coefficient of Specialization (CS)

By region and sector, 2014 (Based on Table 8)				
I= Primary, II= Secondary, III= Tertiary				
	LQ (I)	LQ (II)	LQ (III)	CS
ATTICA	0.10759	0.75623	1.08952	0.06
NORTH AEGEAN	1.25139	0.64676	1.07143	0.053
SOUTH AEGEAN	0.65321	0.69228	1.07601	0.058
CRETE	0.15966	0.7821	1.01476	0.031
EASTERN MACEDONIA, THRACE	1.90746	1.14953	0.92821	0.06
CENTRAL MACEDONIA	1.48841	1.10193	0.95701	0.037
WESTERN MACEDONIA	0.16414	3.12559	0.54743	0.36
EPIRUS	2.16372	1.03124	0.93978	0.05
THESSALY	2.78678	1.19468	0.87855	0.1
IONIAN ISLANDS	0.92598	0.47138	1.10753	0.08
WESTERN GREECE	2.41562	0.91105	0.95119	0.047
CENTRAL GREECE	2.1978	2.23938	0.69789	0.24
PELOPONNESE	2.24917	1.48399	0.84344	0.12

Source: Hellenic Statistical Authority – Calculated data. *Temporary data. Update 17/01/2017.

The literature of regional development indicates that, if $LQ > 1$, the considered activity is standard and exporting; if $LQ < 1$ then it is non-standard; and if $LQ = 1$ it is a balanced activity. According to Table 9, the Eastern Macedonia and Thrace's primary and secondary productive sectors are standard or specialized in their productive activities while the tertiary is a non-standard. The specialization coefficient of the region (0.06) signalizes absence of specialization with regard to the distribution of the national activities; the country's industrial structure corresponds to the respective structure of the region.

Table 10. Employment

By region and sector, 2014*				
I= Primary, II= Secondary, III= Tertiary				
	I	II	III	TOTAL
GREECE	488413	579473	2931410	3999296
ATTICA	13705	210338	1303370	1527413
NORTH AEGEAN	8546	7809	52288	68643
SOUTH AEGEAN	10460	19111	104041	133612
CRETE	41097	32908	163775	237780
EASTERN MACEDONIA, THRACE	60086	26631	124086	210803
CENTRAL MACEDONIA	87749	94586	453511	635846
WESTERN MACEDONIA	15693	21706	52446	89845
EPIRUS	23081	17503	75983	116567
THESSALY	62642	40684	159428	262754
IONIAN ISLANDS	12471	9608	59646	81725
WESTERN GREECE	50926	27927	148379	227232
CENTRAL GREECE	39826	42907	111202	193935
PELOPONNESE	62130	27754	123255	213139

Source: Hellenic Statistical Authority – Calculated data. *Temporary data. Update 17/01/2017.

Table 11. Regional Multiplier & Total Multiplier

By region and sector, 2014 (Based on Table 10)				
I= Primary, II= Secondary, III= Tertiary				
	I	II	III	TOTAL
ATTICA			7.09	8.31
NORTH AEGEAN	52.32		26.5	32.13
SOUTH AEGEAN			17	3.45
CRETE	3.4			19.71
EASTERN MACEDONIA, THRACE	1.75			6.14
CENTRAL MACEDONIA	79.8	38.6		179
WESTERN MACEDONIA	3.32	2.5		6.7
EPIRUS	2.6	28.6		12.32
THESSALY	2.05	15.58		46.36
IONIAN ISLANDS	5			32.81
WESTERN GREECE	2.2			9.8
CENTRAL GREECE	2.47	2.9		6.26
PELOPONNESE	1.72			5.9

Regional multiplier:

$$Kir = \frac{Air}{\left[Air - \left(\frac{Ain}{An} \right) Ar \right]}$$

Air = Employment in sector i and region r

Ar = Total employment in region r

Ain = Employment of sector i in country's total

An = Total country's employment

The calculated regional multiplier of the target-region in Table 11 (1.75) signifies a multiplying effect and exporting activity only in the primary sector (value greater than 1). The regional multiplier measures the region's total raise of employment by taking into account the increase in number of employed in exports. In other words, it weighs the influence of each export unit in the total activity of the region.

5.1 Shift-Share Analysis

Based on the Gross Value Added by industry (Table 7) we calculate the Shift-Share analysis' components (Barff and Knight, 1988) according to the following types (Table 12):

Table 12.

o = Starting year of analysis; 2008

t = Final year of analysis; 2014

$$\frac{Ant}{Ano} = \frac{3098}{4805} = 0.644$$

$$\frac{AAFFnt}{AFFno} = \frac{433}{499} = 0.86 \quad \left(\frac{AAFFnt}{AFFno} \right) - \left(\frac{Ant}{Ano} \right) = 0.86 - 0.644 = -0.223$$

National Growth Effect

$$E\Sigma r = Aro \left(\frac{Ant}{Ano} \right) - Aro$$

$$\frac{AMEGnt}{AMEGno} = \frac{248}{298} = 0.83 \quad \left(\frac{AMEGnt}{AMEGno} \right) - \left(\frac{Ant}{Ano} \right) = 0.83 - 0.644 = 0.19$$

Industrial Mix Effect

$$O\Sigma r = \sum \left[\left\{ \left(\frac{Aint}{Aino} \right) - \left(\frac{Ant}{Ano} \right) \right\} Airo \right]$$

$$\frac{AMnt}{AMno} = \frac{689}{947} = 0.73 \quad \left(\frac{AMnt}{AMno} \right) - \left(\frac{Ant}{Ano} \right) = 0.73 - 0.644 = 0.09$$

Local Share Effect

$$\Delta\Sigma r = \sum \left[Airt - Airo \left(\frac{Aint}{Aino} \right) \right]$$

$$\frac{ACnt}{ACno} = \frac{180}{439} = 0.41 \quad \left(\frac{ACnt}{ACno} \right) - \left(\frac{Ant}{Ano} \right) = 0.41 - 0.644 = -0.23$$

$$\frac{ATTAFSnt}{ATTAFSno} = \frac{1261}{2094} = 0.6 \quad \left(\frac{ATTAFSnt}{ATTAFSno} \right) - \left(\frac{Ant}{Ano} \right) = 0.6 - 0.644 = -0.04$$

Actual Growth

$$Mr = Er + Or + \Delta r$$

$$\frac{AFI_{Ant}}{AFI_{Ano}} = 0.79$$

$$\left(\frac{AFI_{Ant}}{AFI_{Ano}}\right) - \left(\frac{Ant}{Ano}\right) = 0.79 - 0.644 = 0.15$$

$$\frac{APST_{Ant}}{APST_{Ano}} = 0.39$$

$$\left(\frac{APST_{Ant}}{APST_{Ano}}\right) - \left(\frac{Ant}{Ano}\right) = 0.39 - 0.644 = -0.25$$

5.1.1 The shift and share variables of Eastern Macedonia and Thrace's prefectures by industry

Table 13. AFF: Agriculture-Forestry-Fishing

	NATIONAL GROWTH EFFECT	INDUSTRIAL MIX EFFECT	LOCAL SHARE EFFECT	ACTUAL GROWTH
EVROS	121*0.644-121=-43.08	0.223*121= 26.98	103-121*0.5= 42.5	18
XANTHI	79*0.644-79=28.12	0.223*79=17.61	69-70*0.5=34	-5.49
RODOPE	91*0.644-121=-62.4	0.223*91= 20.3	85-91*0.5=39.5	-36
DRAMA	98*0.644-98=-34.9	0.223*98= 21.85	87-98*0.5=38	-11.01
KAVALA	110*0.644-110=-39.16	0.223*110= 24.53	89-110*0.5=34	-21
SUM	-207.66	-111.27	188	-91.5

With regard to the AFF industry, Table 13 indicates that all prefectures of Eastern Macedonia and Thrace, in terms of Boudeville regional classification (Boudeville, 1966), are of "regional type 4", since $Or < 0$, $\Delta r > 0$ and $|Or| < |\Delta r|$ (according to the regional analysis literature, in the inequality between Or and Δr their absolute value is taken into account). Obviously the region in total is classified as "type 2" for the AFF industry.

This translates into a favorable industrial structure (concentration to low growth rate industrial activities, compared to nation's averages) whereas, regarding the AFF industry, positive local effects take place. Thus, the proposed measure is an industrial structure improvement.

Table 14. MEG: Mining-Electricity-Gas

	NATIONAL GROWTH EFFECT	INDUSTRIAL MIX EFFECT	LOCAL SHARE EFFECT	ACTUAL GROWTH
EVROS	-13.9	7.41	5.63	-0.86
XANTHI	-11.4	6.08	-8.56	-13.88
RODOPE	-36.31	19.38	-30.66	-47.59
DRAMA	-18.56	9.69	21.67	12.8
KAVALA	-26.34	14.06	12.58	0.3
SUM	-106.51	56.62	0.66	-49.23

With regard to the MEG industry (Table 14), for the prefectures and region:

- A. Evros: $Or > 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, therefore “regional type 1”, according to which there is a favorable industrial structure with positive local effects.
- B. Xanthi: $Or > 0$, $\Delta r < 0$ and $|Or| < |\Delta r|$, therefore “regional type 6”, according to which there is a **favorable industrial structure with positive local effects. The proposed measure is infrastructure improvement.**
- C. Rodope: $Or > 0$, $\Delta r < 0$ and $|Or| < |\Delta r|$, therefore “regional type 6”, according to which there is a **favorable industrial structure with negative local effects. The proposed measure is infrastructure improvement.**
- D. Drama and Kavala are of “regional types 1 and 2” respectively, therefore favorable industrial structure and positive local effects.
- E. The region in total is of “regional type 1”: $Or > 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, therefore favorable industrial structure and positive local effects.

Table 15. M: Manufacturing

	NATIONAL GROWTH EFFECT	INDUSTRIAL MIX EFFECT	LOCAL SHARE EFFECT	ACTUAL GROWTH
EVROS	-51.62	13.05	8.15	-30.42
XANTHI	-69.42	17.55	16.35	-35.52
RODOPE	-67.64	17.1	-21.7	-72.24
DRAMA	-59.45	15.03	-1.91	-46.33
KAVALA	-89	22.5	29.5	-37
SUM	-337.13	85.23	30.39	-221.51

With regard to the M industry (Table 15), for the prefectures and region:

- A. Evros: $Or > 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, therefore “regional type 1”, according to which there is a favorable industrial structure with positive local effects.
- B. Xanthi and Drama: $Or > 0$, $\Delta r < 0$ and $|Or| > |\Delta r|$, therefore “regional type 3”, according to which there is **favorable industrial structure but negative local effects. The proposed measure is infrastructure improvement.**
- C. Rodope: $Or > 0$, $\Delta r < 0$ and $|Or| < |\Delta r|$, therefore “regional type 6”, according to which there is a **favorable industrial structure but negative local effects. The proposed measure is infrastructure improvement.**

D. Kavala: $Or > 0$, $\Delta r > 0$ and $|Or| < |\Delta r|$, therefore “**regional type 2**”. Favorable industrial structure and positive local effects.

E. The region in total is of “**regional type 1**”: $Or > 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, therefore favorable industrial structure and positive local effects.

Table 16. C: Construction

	NATIONAL GROWTH EFFECT	INDUSTRIAL MIX EFFECT	LOCAL SHARE EFFECT	ACTUAL GROWTH
EVROS	-30.61	-17.2	-18.26	-66.07
XANTHI	-34.18	-19.2	-11.36	-64.74
RODOPE	-27.77	-17.94	-12.98	-58.69
DRAMA	-15.67	-10.12	25.2	-0.59
KAVALA	-47.7	-30.82	16.06	-62.46
SUM	-155.93	-95.28	-1.34	-252.55

With regard to the C industry (Table 16), for the prefectures and region:

A. Evros: $Or < 0$, $\Delta r < 0$ and $|Or| < |\Delta r|$, therefore “**regional type 8**”, according to which there is an unfavorable industrial structure and **negative local effects**. The proposed strategic measure is an industrial structure improvement.

B. Xanthi and Rodope: $Or < 0$, $\Delta r < 0$ and $|Or| > |\Delta r|$, therefore “**regional type 7**”, according to which there is an unfavorable industrial structure and **negative local effects**. The proposed strategic measure is infrastructure improvement.

C. Drama: $Or < 0$, $\Delta r > 0$ and $|Or| < |\Delta r|$, therefore “**regional type 4**”. **Positive local effects** but unfavorable industrial structure. The proposed measure is an industrial structure improvement.

D. Kavala: $Or < 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, therefore “**regional type 5**”, according to which there is an unfavorable industrial structure but **positive local effects**. The proposed measure is an industrial structure improvement.

E. The region in total is of “**regional type 7**”: $Or < 0$, $\Delta r < 0$ and $|Or| > |\Delta r|$, therefore unfavorable industrial structure and **negative local effects**. The proposed strategic measure is infrastructure improvement.

Table 17. TTAFS: Trade-Transportation-Accommodation-Food Services

	NATIONAL GROWTH EFFECT	INDUSTRIAL MIX EFFECT	LOCAL EFFECT	SHARE	ACTUAL GROWTH
EVROS	-164.5	-18.48	-32.2		-215.18
XANTHI	-87.6	-9.84	15.4		-82.04
RODOPE	-91.85	-10.32	2.2		-99.97
DRAMA	-91.14	-10.24	1.4		-99.98
KAVALA	-310.43	-34.88	18.8		-326.51
SUM	-745.52	-83.76	5.6		-823.68

With regard to the TTAFS industry (Table 17), for the prefectures and region:

- A. Evros: $Or < 0$, $\Delta r < 0$ and $|Or| < |\Delta r|$, therefore “**regional type 8**”, according to which there are **negative local effects** and unfavorable industrial structure. The proposed measure is an industrial structure improvement.
- B. Xanthi: $Or < 0$, $\Delta r > 0$ and $|Or| < |\Delta r|$, therefore “**regional type 4**”, according to which there are **positive local effects** but unfavorable industrial structure. The proposed strategic measure is an industrial structure improvement.
- C. Rodope, Drama and Kavala: $Or < 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, therefore “**regional type 5**”. Positive local effects take place but unfavorable industrial structure. The proposed strategic measure is an industrial structure improvement.
- D. The region in total is of “**regional type 5**”: $Or < 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$. There are **positive local effects** but unfavorable industrial structure. The proposed strategic measure is an industrial structure improvement.

Table 18. FIA: Financial and Insurance Activities

	NATIONAL GROWTH EFFECT	INDUSTRIAL MIX EFFECT	LOCAL EFFECT	SHARE	ACTUAL GROWTH
EVROS	-16.73	7.05	1.87		-7.81
XANTHI	-11.03	4.65	0.51		-5.87
RODOPE	-12.46	5.25	-5.65		-12.86
DRAMA	-11.75	4.95	3.93		-2.87
KAVALA	-21	8.85	0.39		-11.76
SUM	-72.97	30.75	1.05		-41.17

With regard to the FIA industry (Table 18), for the prefectures and region:

- A. Evros, Xanthi, Drama and Kavala: $Or > 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, therefore “regional type 1”, which is a favorable industrial structure with positive local effects.
- B. Rodope: $Or > 0$, $\Delta r < 0$ and $|Or| < |\Delta r|$, therefore “regional type 6”, which implies **favorable industrial structure but negative local effects. The proposed measure is an industrial structure improvement.**
- C. **The region in total is of “regional type 1”:** $Or > 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, therefore favorable industrial structure and positive local effects.

Table 19. PSTA: Professional, Scientific and Technical Activities

	NATIONAL GROWTH EFFECT	INDUSTRIAL MIX EFFECT	LOCAL EFFECT	SHARE	ACTUAL GROWTH
EVROS	-18.52	-13	5.72		-25.8
XANTHI	-25.63	-18	4.72		-38.91
RODOPE	-24.56	-17.25	-4.91		-46.72
DRAMA	-23.5	-16.5	-14.74		-54.74
KAVALA	-22.8	-16	16.04		-22.76
SUM	-115.01	-80.75	6.83		-188.93

With regard to the PSTA industry (Table 19), for the prefectures and region:

- A. Evros and Xanthi: $Or < 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, therefore “regional type 5”. That is **positive local effects** but unfavorable industrial structure. The proposed measure is an industrial structure improvement
- B. Rodope: $Or < 0$, $\Delta r < 0$ and $|Or| > |\Delta r|$, therefore “regional type 7”, which is **negative local effects** and unfavorable industrial structure. This implies strategic measures at infrastructure improvement.
- C. Drama: $Or < 0$, $\Delta r < 0$ and $|Or| < |\Delta r|$, therefore “regional type 8”, according to which there are **negative local effects** and unfavorable industrial structure. The proposed measure is an industrial structure improvement.
- D. Kavala: $Or < 0$, $\Delta r > 0$ and $|Or| < |\Delta r|$, therefore “regional type 4”, which implies **positive local effects** but unfavorable industrial structure. The proposed strategic measure is an industrial structure improvement.
- E. **The region in total is of “regional type 5”:** $Or < 0$, $\Delta r > 0$ and $|Or| > |\Delta r|$, which implies **positive local effects** but unfavorable industrial structure. The proposed strategic measure is an industrial structure improvement.

6. Conclusion

In conclusion, the analysis of our data leads to a specialized proposal for the creation of the first LDI, as a mechanism for strengthening the local business ecosystems, in the Eastern Macedonia and Thrace region. The logic behind this is to provide a privileged developmental “cure” to the weakest localities of Greece today.

This target-region we picked appears to fit in the qualitative and quantitative criteria, compared to the rest of the Greek regions, and, therefore, the proposed policy approach could be prioritized in this particular area.

References

In English

- Ács, Z. J., Szerb, L., Autio, E., & Lloyd, A. (2017). *The Global Entrepreneurship Index 2017*. Washington, D.C: Global Entrepreneurship Development Institute. https://doi.org/10.1007/978-3-319-65903-9_3
- Anggraeni, E., Den Hartigh, E., & Zegveld, M. (2007). Business ecosystem as a perspective for studying the relations between firms and their business networks. *ECCON 2007*.
- Barff, R. A., & Knight, P. L. (1988). Dynamic Shift-Share Analysis. *A Journal of Urban and Regional Policy*, 19(2), 1-10. <https://doi.org/10.1111/j.1468-2257.1988.tb00465.x>
- Blakely, E. (1989). *Planning Local Economic Development*. SAGE.
- Boudeville, J. (1966). *Problems of Economic Regional Planning*. Edinburg University Press.
- Chang, V., & Uden, L. (2008). Governance for E-learning ecosystem. (IEEE, Ed.) *Digital Ecosystems and Technologies, 2008. DEST 2008. 2nd IEEE International Conference on*. <https://doi.org/10.1109/DEST.2008.4635164>
- Desai, N., Mazzoleni, P., & Tai, S. (2007). Service Communities: A Structuring Mechanism for Service-Oriented Business Ecosystems. *Digital EcoSystems and Technologies Conference, 2007. DEST '07. Inaugural IEEE-IES*. <https://doi.org/10.1109/DEST.2007.371957>
- Eurostat. (2011). *Key figures on European business with a special feature on SMEs*. European union. Luxembourg: Publications Office of the European Union.
- Fragidis, G., Koumpis, A., & Tarabanis, K. (2007). The Impact of Customer Participation on Business Ecosystems. In L. M. Camarinha-Matos, H. Afsarmanesh, P. Novais, & C. Analide, *Establishing the Foundation of Collaborative Networks. IFIP — The International Federation for Information Processing* (Vol. 243, pp. 399-406). Springer, Boston, MA. https://doi.org/10.1007/978-0-387-73798-0_42
- Iansiti, M., & Levien, R. (2004). Strategy as Ecology. *Harvard Business Review*, 68-81.
- Li, Y. R. (2009). The technological roadmap of Cisco's business ecosystem. *Technovation*, 29(5), 379-386. <https://doi.org/10.1016/j.technovation.2009.01.007>

- Marín, C. A., Stalker, I., & Mehandjiev, N. (2007). Business Ecosystem Modelling: Combining Natural Ecosystems and Multi-Agent Systems. In M. Klusch, K. V. Hindriks, M. P. Papazoglou, & L. Sterling, *Cooperative Information Agents XI. CIA 2007. Lecture Notes in Computer Science* (Vol. 4676, pp. 181-195). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-75119-9_13
- Moore, J. F. (1993). Predators and prey: A new ecology of competition. *Harvard Business Review*, 71(3), 75-86.
- Moore, J. F. (1996). *The death of competition: leadership and strategy in the age of business ecosystems*. New York: Harper Business.
- Moore, J. F. (2014). *Shared Purpose: A thousand business ecosystems, a connected community, and the future* (3rd ed.). First Ecosystem.
- Peltoniemi, M. (2005). Business Ecosystem: A conceptual model of an organisation population from the perspectives of complexity and evolution. *e-Business Research Center, Research Reports 18*.
- Peltoniemi, M., & Vuori, E. (2004). Business ecosystem as the new approach to complex adaptive business environments. *Proceedings of eBusiness Research Forum*, 18, 267-281.
- Rong, K., & Shi, Y. (2015). *Business Ecosystems: Constructs, Configurations, and the Nurturing Process*. Palgrave Macmillan UK. <https://doi.org/10.1057/9781137405920>
- Schwab, K., Sala i Martin, X., & World Economic Forum. (2016). *The Global Competitiveness Report 2016-2017*. World Economic Forum.
- Tansley, A. (1935, July). The Use and Abuse of Vegetational Concepts and Terms. *Ecology*, 16(3), 284-307. <https://doi.org/10.2307/1930070>
- Vlados, Ch. (1996). International restructuring dynamics of competitive advantage. *Middle East Forum*, 1, 233-252.
- Vlados, Ch. (2005, October). The Insertion of Greek Firms into Globalization: The Dynamics of the Triangle of Strategy, Technology and Management. *Tome of proceedings of International Conference: "Managing Global Trends and Challenges in a Turbulent Economy"*. University of the Aegean, Department of Business Administration.
- Vlados, Ch. (2012). The Search of Competitiveness and the Entrepreneurial Evolution in a Global Environment: Toward a new approach of Development Dynamics based on the case of Greek Productive System. *Journal of Management Sciences and Regional Development*. Issue 8, January 2012.
- Vlados, Ch., Katimertzopoulos, F. (2017). Local Support Mechanisms for Entrepreneurship: The Approach of Local Development and Innovation Institutions. *International Journal of Business and Economic Sciences Applied Research*, 10(1).

Williamson, P. J., & De Meyer, A. (2012). Ecosystem Advantage: How to Successfully Harness the Power of Partners. *California management review*, 55(1), 24-46. <https://doi.org/10.1525/cmr.2012.55.1.24>

In Greek

Βλάδος, Χ. Μ. (2006). *Η Δυναμική της Παγκοσμιοποίησης και οι Επιχειρήσεις στην Ελλάδα*. Αθήνα: Κριτική.

Βλάδος, Χ. Μ. (2007). Η Δυναμική της Παγκοσμιοποίησης και η Νέα Προβληματική της Τοπικής Ανάπτυξης: Στοιχεία για την σύσταση Μηχανισμών Ενίσχυσης του Καινοτομικού Δυναμικού των Τοπικών Παραγωγικών Συστημάτων. Στο Συλλογικό Έργο *Ειδικά Θέματα Ανάπτυξης σε Λιγότερο Ευνοημένες Περιοχές (ΛΕΠ)*. Gutenberg.

Βλάδος, Χ. Μ. (2016). *Στρατηγική Μικρομεσαίων Επιχειρήσεων σε συνθήκες κρίσης: Η προσέγγιση STRA.TECH.MAN*. Αθήνα: Κριτική.

Γενική Γραμματεία Βιομηχανίας. (2016). *Χαρτογράφηση των Επιχειρηματικών Αναγκών των Ελληνικών υφιστάμενων & υπό σύσταση Start-up Επιχειρήσεων*. Retrieved April 19, 2017, from http://startupgreece.gov.gr/sites/default/files/hartografisi_anagkon_20.12.2016_0.pdf

Εθνικό Κέντρο Τεκμηρίωσης. (2015). *Έρευνα, Ανάπτυξη και Καινοτομία στις Ελληνικές Περιφέρειες*.

Ελληνική Στατιστική Υπηρεσία (ΕΛΣΤΑΤ). (2017). *Περιφερειακοί Λογαριασμοί*. Πειραιάς.

Ίδρυμα Οικονομικών & Βιομηχανικών Ερευνών. (2015). *Απολογισμός 2015*. IOBE. Retrieved April 19, 2017, from http://iobe.gr/docs/IOBE_Report_2015.pdf

Κόνσολας, Ν. (1984). *Σύγχρονη περιφερειακή οικονομική πολιτική*. Αθήνα: Παπαζήση.

Λαμπριανίδης, Λ. (2002). *Στοιχεία Οικονομικής Γεωγραφίας*. Αθήνα: Πατάκη.

Παπαδασκαλόπουλος, Α. (1990). *Βασικές μέθοδοι Περιφερειακής Ανάλυσης*. Αθήνα: Παπαζήση.

Πολύζος, Σ. (2011). *Περιφερειακή Ανάπτυξη*. Αθήνα: Κριτική.

Note

Note 1. All the data were retrieved and calculated from the Hellenic Statistical Authority (Ελληνική Στατιστική Υπηρεσία (ΕΛΣΤΑΤ), 2017).

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