Interreg
Balkan-Mediterranean
INNOPLATFORM

2017

National Study

Study of the Business Environment & Innovation Potential of Cyprus

15/12/2017

Author: Αναπτυξιακή Εταιρεία Λεμεσού Λτδ

The study is prepared under the project BMP1/1.2/2370/2017 “InnoPlatform” Financed by the Transnational Cooperation Programme "Balkan-Mediterranean" 2014-2020.

Project co-funded by the European Union and National Funds of the participating countries.

National Study of the

Business environment with a focus on the National Innovation Potential

Executive Summary

The present Study aims to provide a special focus on the Business environment with a focus on the National Innovation Potential for Cyprus. This is done by providing a detailed background on Cyprus socio-economic identity, such as data on population, public and private economy profile as well as data on their stability, that formulate the business environment under which innovation is called to operate. The created profile is then examined using the methodological tool of the EIS 2017 Framework. The national innovation environment is assessed through four specific categories of factors: (1) the framework conditions, (2) the investment climate, (3) the existing innovation activities of companies and (4) the impact innovation has on the work of the companies and the through them on the whole economy.

Following this profiling, the Study goes into innovation analysis using specific indicators of the methodology factors as recorded in the case of Cyprus referring to the economic profile of the period 2010-2017 and providing comparisons with the rest of EUIS regions both in terms of ranking and in terms of absolute numbers of the Cypriot economy. Data from EUROSTAT and National Statistical Office where required, to identify the Strengths and Weaknesses of Cyprus in Innovation Potential and conclusions are drawn accordingly for the present and the future of entrepreneurship in innovative fields as well as some suggestions on ways to overcome the problems and maximizing the positive aspects.

Table of Contents

Table of Figures

Background

The Republic of Cyprus is an island state in the eastern Mediterranean Sea, located south of Turkey west of Syria and Lebanon, northwest of Israel, north of Egypt, and southeast of Greece. It is the third largest and most populated island in the Mediterranean after Sicily and Sardinia. In past Cyprus was a British Colony until it was granted independence in 1960 after the Zürich and London Agreement between the United Kingdom, Greece, and Turkey. In 1974 Cyprus suffered an invasion by Turkey and as a result has been split into two states, The Republic of Cyprus on the west, and the unrecognized state of Northern Cyprus in the north, in violation of the Geneva Convention and various other UN resolutions. Currently, it is the only country in Europe that is being occupied by a neighbor state.

Cyprus has a population of around 854 thousand as per the last census in 2016. The national language is Greek with a high level of literacy in English due to its colonial past and large expat community. Compared to other regions in Central Europe Cyprus is not very densely populated with only about 92 people per square Km which slows down the exchange of know-how as well as makes the direct application of knowledge acquired from institutions more difficult. None the less Cyprus has an above average number of scientific publications and research papers, as well as a high level of adult literacy compared to the rest of the EU.

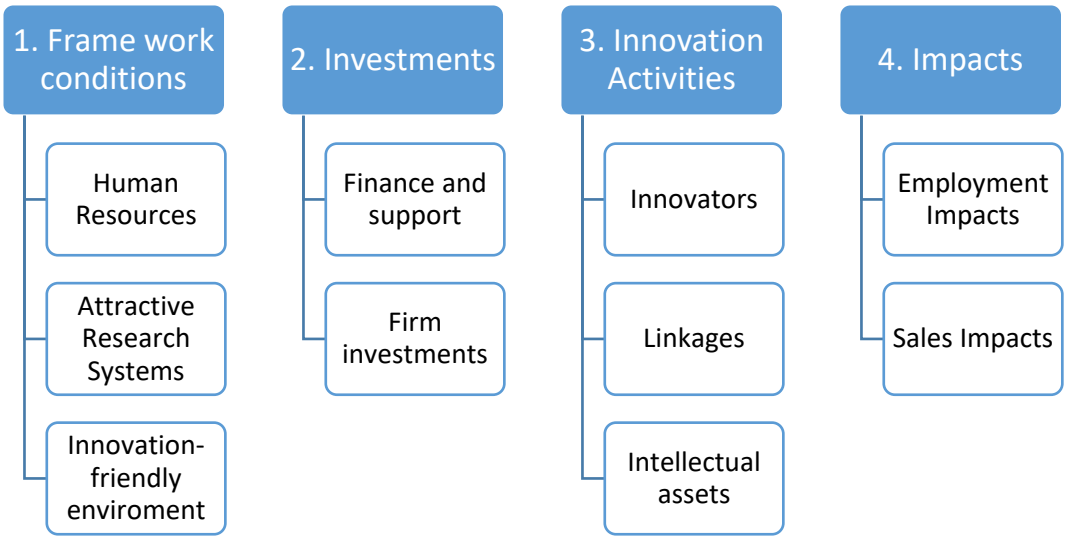
Being an Island Cyprus has a predominantly import and service-based economy with no real heavy manufacturing present as there are no neighboring states to easily trade with over land. One of the big challenges with innovation is the geographic limits to trade, as well as low levels of broadband penetration inhibiting e-commerce and web-based services as well as difficulty acquiring investor capital for new projects.

The EU ranks Cyprus as a moderate innovator, and considering the above we can see the struggle that Cyprus faces, none the less it has made considerable improvements in the past and taken steps forward towards not only technological innovation but also eco-innovation focusing on aspects such as solar power and construction. The aim of this report is to further investigate the socio-economic and business environment of the region and identify the dominant emerging industries as well as main drivers for innovation and regional competitiveness.

Methodology

The core methodology used in developing the National Studies of the business environment focused on the National Innovation Potential is the methodology of the EIS 2017 Framework. The national innovation environment is assessed through four specific categories of factors: (1) the framework conditions, (2) the investment climate, (3) the existing innovation activities of companies and (4) the impact innovation has on the work of the companies and the through them on the whole economy. The overall economy, business environment, and the socio-demographic trends affect these categories of factors either supporting or challenging the innovation of the companies.

The core methodology used in developing the Regional studies for identification of the dominant emerging industries is based on secondary data acquired mainly through the national statistical service and European statistical service (EUROSTAT). The report performs a comparative assessment of the performance of the countries focusing on the following indicators:



The deriving results from the collected data are then presented in Strengths / Weaknesses cross-examination in order to lead to verifiable conclusions for the National Study.

An Overview of Recent Macroeconomic Developments and Sector Analysis

Similarly to the findings of the current study, the findings of the third post-programme surveillance (PPS) mission of European Commission staff, in liaison with staff from the European Central Bank (ECB), which took place in Cyprus from 25 to 29 September 2017, states that Cyprus has been identified as experiencing excessive macroeconomic imbalances under the EU Macroeconomic Imbalance Procedure. The main points of the recent findings are:

- The **economic recovery in Cyprus** has gathered further strength, but sustaining growth over the medium term will require renewed reform momentum, continued fiscal discipline and acceleration in the resolution of non-performing loans (NPLs).
- **Growth should remain strong**, albeit somewhat decelerating over the medium term. It has been increasingly driven by domestic demand, while tourism remains buoyant with positive spillovers to other sectors of the economy.
- **Labour market** conditions have continued to improve, with employment increasing across sectors.
- **The real estate market** has stabilized and the construction sector is rebounding.
- High private sector debt, which is being reduced only gradually, continues to weigh on growth prospects.
- The widening of the **current account deficit** needs to be closely monitored given the high level of external debt.
- Fiscal performance benefited from the **favorable macroeconomic environment** and from prudent expenditure policies, but important medium-term risks remain.
- **Fiscal performance** in the first half of 2017 was stronger than expected, mainly driven by buoyant tax revenues.
- **Expenditure** increased at a much slower pace than revenues. On this basis, the general government could record a higher primary fiscal surplus in 2017 than last year.
- Risks remain for the medium term, such as the uncertain fiscal impact of the recent healthcare reform and the lack of a mechanism to contain increases in the **public wage bill** beyond 2018.
- The **very high level of NPLs**, albeit decreasing, remains the key vulnerability of the Cypriot economy, rendering it pressing to significantly accelerate the NPL resolution across all banks.
- The **banking sector** is showing some positive developments, notably strengthening general confidence which has contributed to the ample availability of liquidity.
- **New lending** is picking up, supported by the improving macroeconomic environment. The main issue remains the stock of NPLs, which is declining but remains high and continues to weigh on bank profitability. The recent increases in provisioning for NPLs, while welcome, have exerted further pressure on profitability in a low-interest rate environment.
- **NPLs** are declining in the banking sector as a whole, but **remain among the highest in the EU**. NPL restructuring is becoming more challenging, highlighting difficulties in working out retail and SME loans as well as tackling strategic defaults. This also

reflects the uneven efforts and success across banks to resolve NPLs in a sustainable manner, which underscores the pressing need to step up NPL resolution in banks that are lagging behind. To facilitate NPL reduction and private sector deleveraging, the authorities should increase their efforts to make insolvency and foreclosure-related legal proceedings more efficient. Swift approval of the securitization law would help create the secondary market for loans, which could accelerate balance sheet repair. Banks need to accelerate the rationalization of their operational model in order to shore up their currently weak underlying profitability.

- It will be important to proceed swiftly with the integration of the supervisor of the pension funds and insurance companies.
- Maintaining robust growth and safeguarding fiscal sustainability require a renewed commitment by all stakeholders to accelerate the structural reform momentum.
- The significant reform of the national healthcare system will need to be accompanied by reliable safeguards against possible cost overruns.
- A swift reform of the judiciary is needed, including by establishing a commercial court, updating the civil procedure code and adopting legislation on improving claim enforcement.
- The completion of the reform of the public administration would enhance the efficiency of the public sector and support fiscal sustainability.
- The authorities and other stakeholders should also make material progress in other essential areas**, including the privatization of major state-owned enterprises**, the reform of the electricity market, the creation of the sovereign wealth fund and the reform of the title deeds issuance and transfer system. A more determined implementation of the action plan for growth would bring significant long-term benefits as it would improve the business environment and facilitate investment. Risks for Cyprus’s capacity to service its debt to the European Stability Mechanism (ESM) remain low. Gross public debt-to-GDP stood at 107.1% at the end of 2016 and is expected to decline thereafter. Borrowing conditions for Cyprus have improved, driven also by European and global factors.
- Medium-term financing needs are moderate, notably due to Cyprus' active debt management, which included an early repayment of about 30% of the outstanding debt to the IMF in July 2017. Continued fiscal discipline, addressing more forcefully the high stock of NPLs and progress with growth-enhancing structural reforms, will also help consolidate and further improve investor confidence. Although Cyprus's excessive macroeconomic imbalances have started to unwind amid positive macroeconomic developments, the reform momentum needs to be strengthened. In February 2017, Cyprus was identified as experiencing excessive macroeconomic imbalances, which require specific monitoring in the context of the MIP.
- Cyprus is characterized by high levels of public, private and external debt, high non-performing loans, and high unemployment. These stock imbalances were reduced in 2016 and in the first half of 2017, although the new measures taken in 2017 to further facilitate the reduction of imbalances were limited in scope. Some measures were announced to accelerate private sector deleveraging and the reduction of NPLs, but

uncertainties remain as to their scope and implementation horizon. Significant structural reforms remain pending to help reduce public debt, improve competitiveness and raise potential growth.

Existing Capacity for Entrepreneurship and M&A activity

According to latest studies in Cyprus, the development of the Cyprus entrepreneurship and innovation ecosystem will be essential in helping to promote growth and economic prosperity. The ecosystem comprises complex relationships that are formed between actors or entities whose functional goal is to enable technology development and innovation.

After the recent financial crisis, Cypriot innovation actors appear to have slowly but steadily started to flourish, while at the same time adding value to the economy and enhancing the local ecosystem. Some of the aforementioned developments are briefly described below:

DisruptCyprus

The disruptcyprus.com online portal is a development of RiseTech Media and providing a news hub for startups, research, innovation, entrepreneurship and technology in Cyprus. The portal features news media coverage for more than 150 events in Cyprus and abroad and major following in social media. In addition, RiseTech Media recently launched disruptEurope.eu, a global human-curated news portal dedicated to sourcing and publishing the most disruptive news in the innovation and entrepreneurship in Europe, with the innovative addition of a modern artificial intelligence chatbot called disruptbot with news reading capacity, to facilitate searching. “Disrupt Cyprus 2016” is the flagship event of the Global Entrepreneurship Week (GEW) in Cyprus, organized for the third time by Industry Disruptors-Game Changers (ID-GC), the Youth Board of Cyprus and Way Out Communications. The event aims to foster dialogue and facilitate the exchange and realization of cutting-edge entrepreneurial practices and ideas. The highlight of this year’s event is the “Disrupt Cyprus Cup” final, the last part of an exciting competition that aims to identify the most innovative startups.

Gravity

Next generation venture building incubator, Gravity fosters and propels innovation through constant interaction, empowering founders to make an impact. This new approach addresses a gap in the entrepreneurship ecosystem by building startups from early-stage to a mature venture, bringing together entrepreneurs and ideas, while building a strong network capable of unifying a vast array of resources in the most effective way. Gravity is an initiative of the Cyprus Research and Innovation Center (CyRIC), a private professional research and innovation services company. In February 2016, the Company was certified by the European Business Network (EBN) as the first Business Innovation Center (BIC) in Cyprus. CyRIC offers incubation services to startups and SMEs and represents Cyprus at the Executive board of EBN.

Microsoft Innovation Center

European University Cyprus has been selected by Microsoft has selected to be its partner institution for the establishment of the only Microsoft Innovation Center (MIC) in Cyprus, to offer state of the art technology facilities for collaboration on innovative research, technology and software solutions, and to bring together government, academic, and industry participants. There are currently more than 100 MICs worldwide, which are centers open to students, professional software developers, IT professionals, entrepreneurs, start-ups and academic researchers. MICs provide content and services designed to enhance technology advances and stimulate local software economies through skills and professional training, industry partnerships and innovation.

IDEA

IDEA is a new incubator for innovative startups established by Bank of Cyprus in collaboration with CIIM (Cyprus International Institute of Management). It provides space, support, education and advice for businesses to become commercially viable. IDEA is located at the Bank of Cyprus building. Its declared goals are:

• To help new entrepreneurs and their businesses grow and succeed

• To stimulate and support the entrepreneurship and innovation culture in Cyprus

• To help develop the ecosystem of innovation in Cyprus

Structure of Cyprus Economy - Economy, Growth and Macroeconomic Stability

The GDP growth rate declined severely as a result of the 2012–13 Cypriot financial crisis, part of the wider European debt crisis and has dominated the country's economic affairs in recent times. After a three-and-a-half-year recession, Cyprus returned to growth in the first quarter of 2015. Cyprus successfully concluded its three-year financial assistance programme at the end of March 2016. Economic growth has exceeded expectations in recent quarters. It is forecast to reach 3.5% in 2017 and to ease but remain robust over 2018 and 2019. Domestic demand is expected to be the main growth driver.

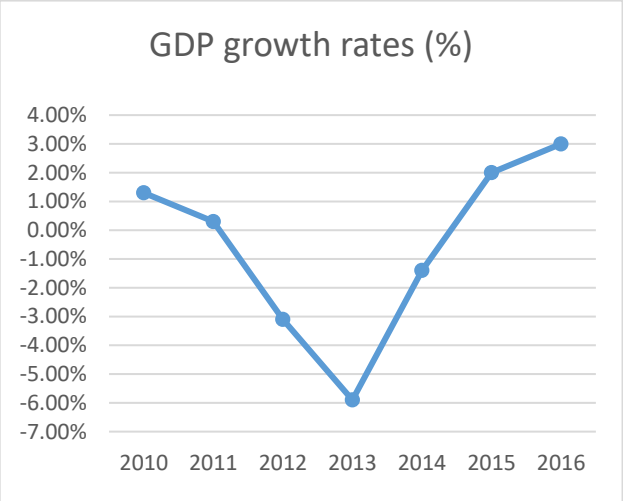


Figure 1 GDP growth rates (%)

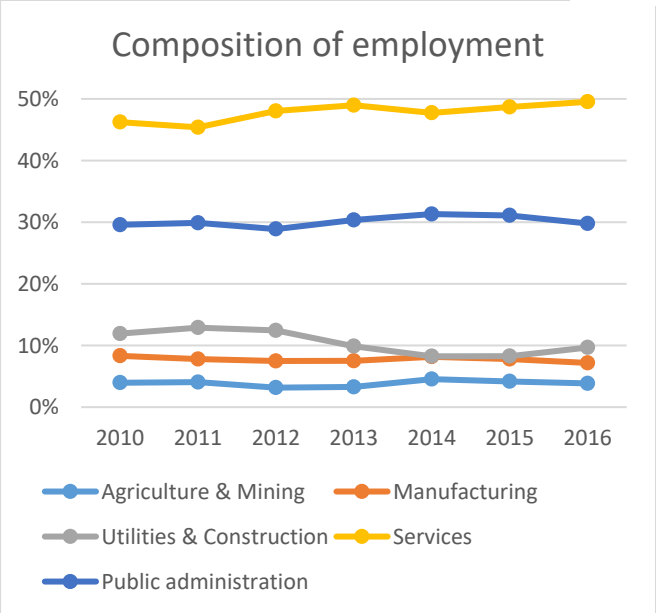


Figure 2 Composition of employment

As visible from the graph, Cyprus is mainly a Service economy with Company formation, tax planning, trusts, foreign exchange trading and fund administration are all strong segments of the business services industry, encouraged by a network of double tax treaties with 60 countries and a legal system based on English Common law. Although traditionally strong, primary sectors such as agriculture and manufacturing – contributing around 2% and 4.5% respectively to GDP – have faced challenges which have led both to follow a similar strategy of creating value-added products targeting niche markets willing to pay a premium for quality. Both sectors of the economy have placed a strong focus on innovation and diversification, which has supported the industries' efforts to increase productivity.

The main domestic export commodities are pharmaceutical products, raw and manufactured food products, and scrap products. The three leading import partners are Greece, the United Kingdom, and Italy. The island mainly imports hydrocarbons, machinery, chemicals, vehicles, and iron and steel. As a small open economy that is currently dependent on energy imports, Cyprus' trade balance is traditionally in deficit, while its services balance is normally in surplus.

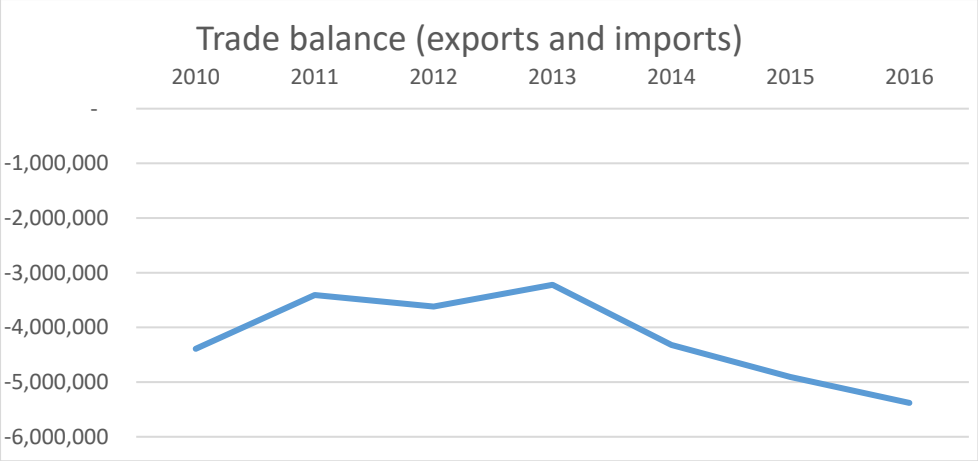


Figure 3 Trade balance (exports and imports)

Business environment

As evident from the graphs, the overall level of employment and the corresponding level of unemployment have changed drastically, following the economic crisis in 2013, ever since then, the economy has been attempting to recover and stabilize. After the first positive figure sin the overall GFP since 2011 in 2016, the economy is starting to recover, with increased buying power among the population there is also an increase in demand, creating a favorable growing market and therefore a fertile opportunity for entrepreneurs, improving the overall employment rate. It is also worthy of note that the majority of the Cyprus workforce is highly educated and can be considered knowledge workers and qualified specialists, which further underlines the service focused nature of the economy.

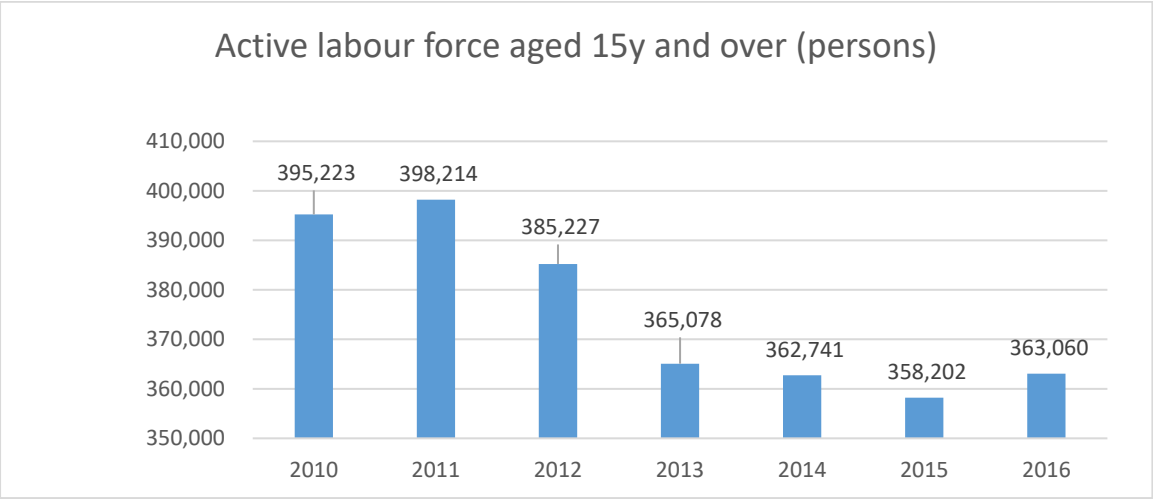


Figure 4 Active labour force aged 15y and over (persons)

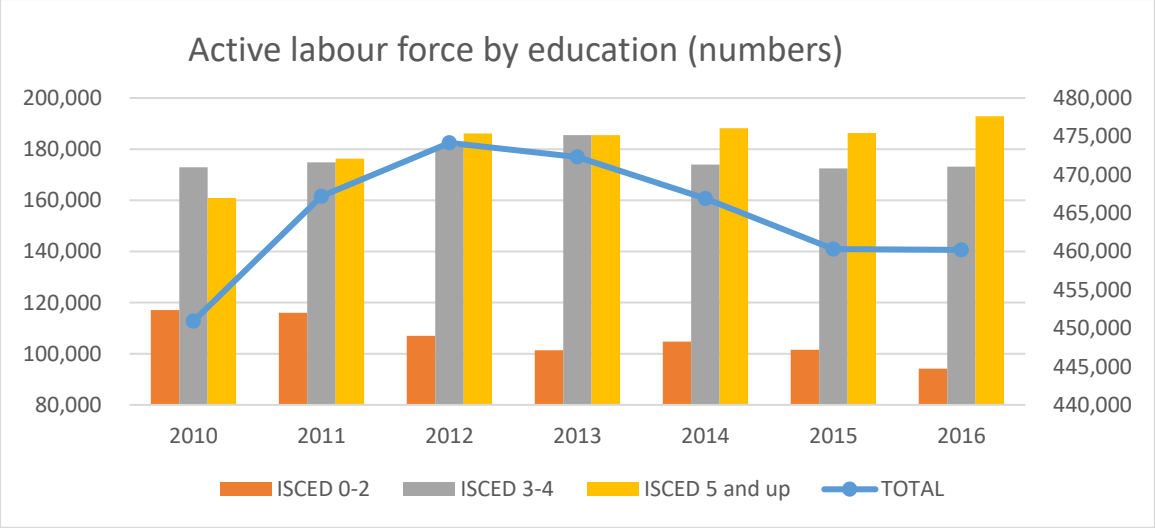


Figure 5 Active labour force by education (numbers)

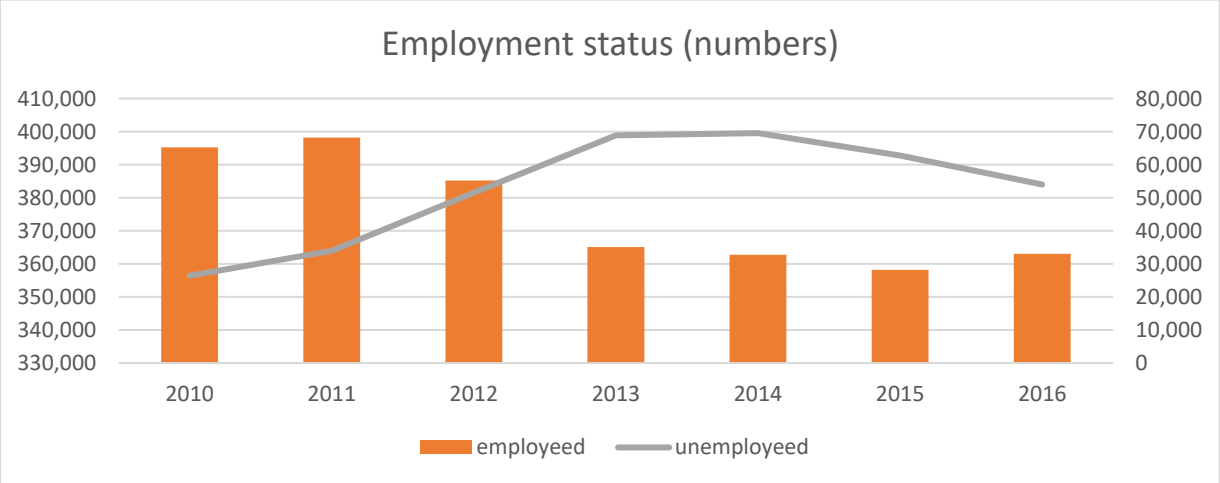


Figure 6 Employment status (numbers)

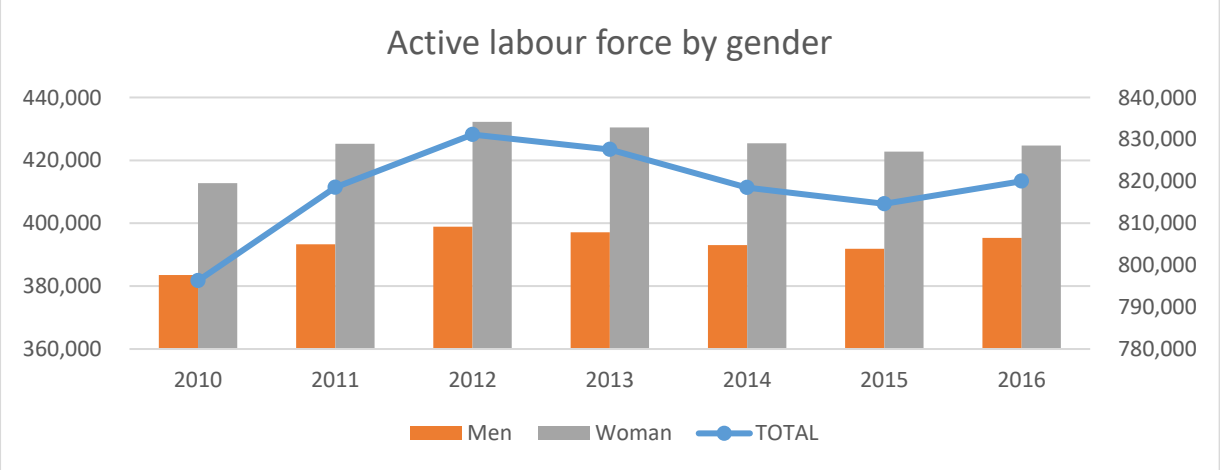


Figure 7 Active labour force by gender

Structure of the Private sector

The Cypriot economy is dominated by small, family-run enterprises with limited export orientation. The country's economy is dominated by the service sector, mainly tourism,

transport, and finance, with manufacturing representing only around 7 %. Such characteristics do not favor R&D. SMEs which provide mainly low-value-added support services are unlikely to invest in R&I. Most firms tend to concentrate on low-value-added products and services rather than taking risks on new products or export markets.

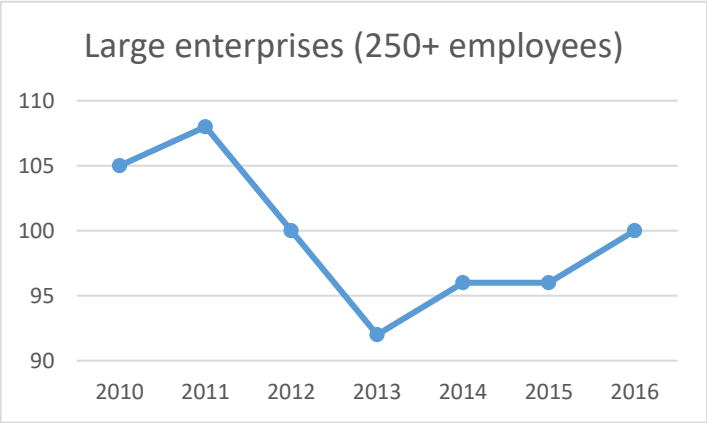


Figure 8 Large enterprises (250+ employees)

The percentage share of large enterprises with over 250 employees in the Cyprus market is extremely low (below 1%) and are usually highly specialized, such as pharmaceuticals, hospitality or service activities incidental to air transportation.

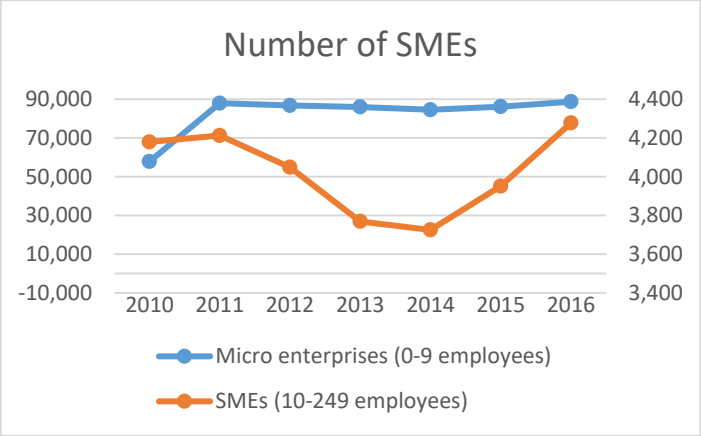


Figure 9 Number of SMEs

Small and medium-sized enterprises (SMEs) are the backbone of Europe's economy. They represent 99% of all businesses in the EU. The European Commission considers SMEs and entrepreneurship as the key to ensuring economic growth, innovation, job creation, and social integration in the EU. In the past five years, they have created around 85% of new jobs and provided two-thirds of the total private sector employment in the EU. In sectors such as biotechnology and information technology, relatively small numbers of new, technology-based firms are key suppliers of new technologies. The ability to exploit new technologies, and to respond quickly to changing market needs, give SMEs a pivotal role in the success of the European economy. Support for the creation of new ventures and spin-offs from research institutions and large companies, as well as the removal of barriers to their rapid growth and support for the transfer of know-how, also deserve to be accorded the highest priority. After the most recent financial crisis, the Cyprus government has been slowly trying to introduce initiatives aimed at addressing the access of financing for start-ups and SMEs and providing fiscal incentives for private sector investment in innovation.

The indicator measuring the share of foreign-controlled enterprises serves as a proxy for differences in foreign ownership rates between countries. Foreign ownership, including

ownership from both other EU Member States and non-Member States, is important as about 40% of business R&D expenditures in the EU Member States are by foreign affiliates, which is significantly higher compared to major international competitors. Cyprus has a very low level of foreign-controlled enterprises and again, being predominantly a service economy recovering from a financial crisis that is understandable.

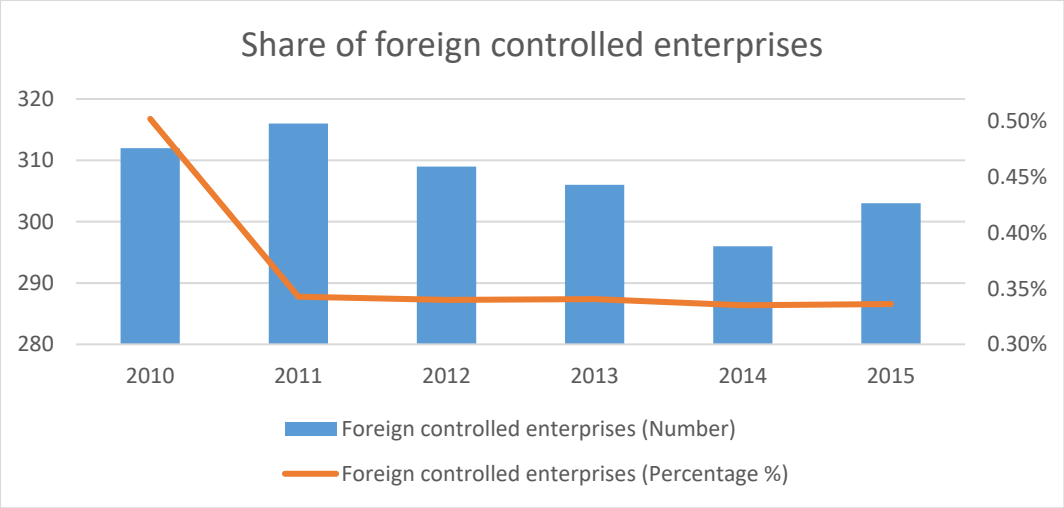


Figure 10 Share of foreign-controlled enterprises

Doing Business Indicators

Regarding the World Bank's Doing Business Indicators and more specifically the ones concerning the ease of Starting a Business, Cyprus is performing relatively well. More specifically, for 2017 the merging of procedures for Tax and VAT registration, and making company name search and reservation faster was recorded as a positive development. In other indicators, Cyprus appears to rank at 53, with a DTF score of 91,21. This places Cyprus in a rather low rank compared to other EU counties. Another low-ranking indicator relates to the cost required to complete each procedure required for creation[1], where Cyprus has a percentage of 12,2%, the second largest in the EU after Italy. On the other hand, positive indicators appear to be the number of days required for the registration (6), the number of procedures (5), and the paid-in minimal capital (as a percentage of income per capita at 0%).

[1] Cost is recorded as a percentage of the economy's income per capita. It includes all official fees and fees for legal or professional services if such services are required by law or commonly used in practice. Fees for purchasing and legalizing company books are included if these transactions are required by law. (World Bank)

Starting a Business (rank)	53
DTF [2]score for starting a business (0-100)	91,21
Procedures (number)	5
Time (days)	6
Cost (% of income per capita)	12,2
Minimum capital (% of income per capita)	0

Figure 11 Starting a Business Indicators for Cyprus

[2] The distance to frontier (DTF) measure shows the distance of each economy to the "frontier," which represents the best performance observed on each of the indicators across all economies in the *Doing Business* sample since 2005. An economy's distance to frontier is reflected on a scale from 0 to 100, where 0 represents the lowest performance and 100 represents the frontier. (World Bank)

Socio-demographic environment

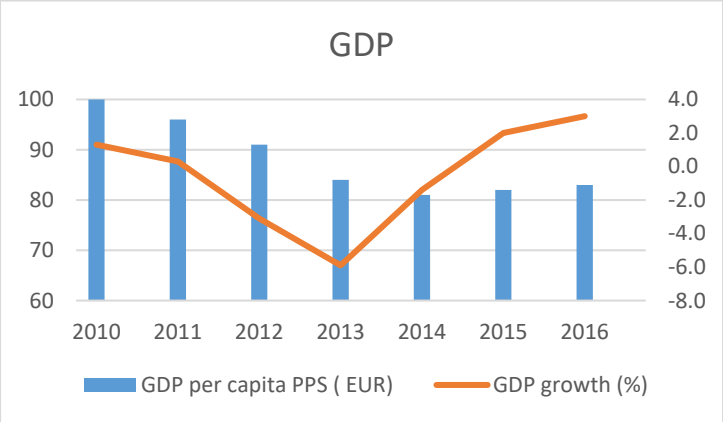


Figure 12 GDP

As previously mentioned the GDP is finally showing signs of recovery from the crisis and haircut in 2013 with positive growth. While still not at the pre-2013 levels, the GDP Per Capita is also showing signs of a slow but steady recovery post-crisis.

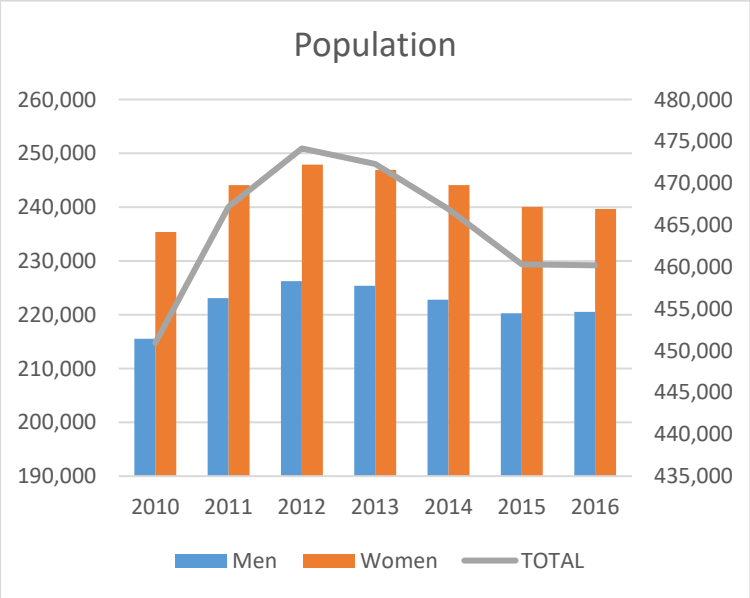


Figure 13 Population

Cyprus population has been steadily increasing until 2013 where it started slowly declining until 2015, and finally plateaued from 2015 onwards. As is evident from the graphs, Cyprus has a disproportionately female population (52%) compared to male population (48%). A statistic that can also be observed in the literacy figures that can be seen below. There is a higher degree of completion of tertiary education by women compared to men, which can be justified both by the higher female population, as well as the tendency for men to focus on careers rather than education in Cypriot culture. However, in the recent years, this statistic has improved, with the number of men with an upper secondary education slightly exceeding that of women.

Overall as seen in the tables below, Cyprus has a rather high level of education with over 40% for both men and women having completed upper secondary or tertiary education which is a general indicator of the supply of advanced skills. It is not limited to science and technical fields, because the adoption of innovations in many areas, in particular in the service sectors, depends on a wide range of skills.

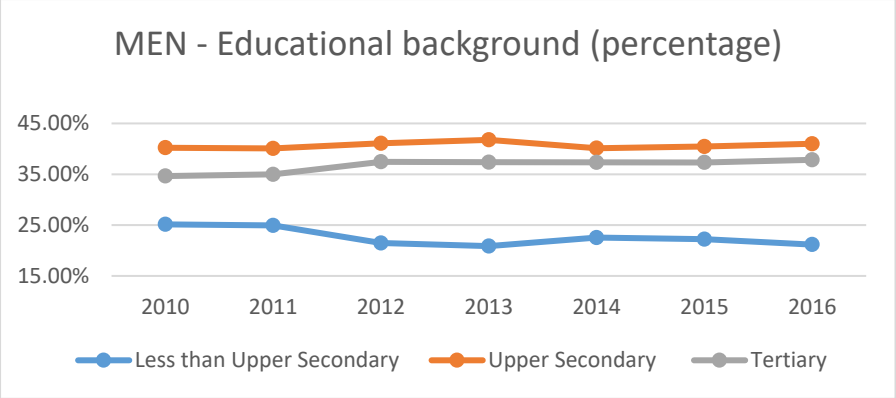


Figure 14 MEN - Educational background (percentage)

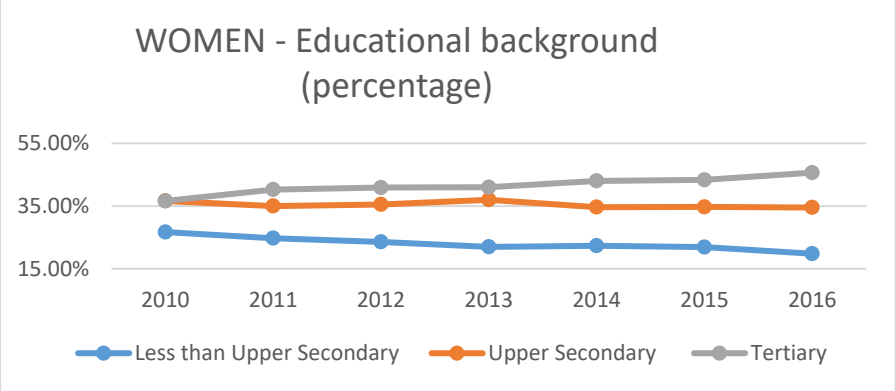
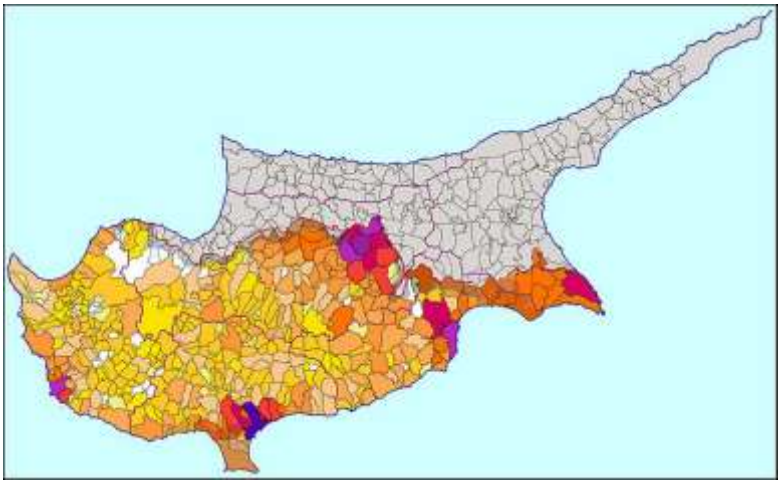


Figure 15 WOMEN - Educational background (percentage)

Population Density

The population density of Cyprus has remained relatively unchanged through the past years according to government statistics and is at 9 people per square kilometre, which inhibits the diffusion of knowledge and know-how through society, furthermore the relatively low level of urbanization leads to a somewhat decentralized infrastructure between government and University services further reducing the available training opportunities. The map shows the density more accurately, where the darker regions are the population centers of the four major cities present along with their surrounding suburbs.



Innovation Environment

Description of the National Innovation System

The R&I system in Cyprus is relatively new. It evolved mainly in the early 1990s with the establishment of the University of Cyprus in 1992 and of the Research Promotion Foundation in 1996, which aims to promote the development of scientific research, technology, and innovation. In the last decade, Cyprus has achieved a significant increase in its R&D intensity, which has led to improved excellence in science and technology. However, R&D investment relies predominantly on public expenditure, with 72 % of total R&D expenditure (Gross Domestic Expenditure on Research and Development - GERD) being financed by the government in 2012 – one of the highest percentages in the EU. BERD (Business Enterprise Research & Development) remains very low at about 14 % of total R&D expenditure in 2012 and has declined by a further 8.5 % since 2007.

The Cypriot economy has been in financial distress since 2011, initiated by the global economic crisis and exacerbated by the losses suffered from a restructuring of Greek state bonds, in which the local banking system had invested heavily. The debt crisis in Cyprus peaked in March 2013, when the EU-ECB-IMF Troika and the Cyprus government agreed to a Memorandum of Economic and Financial Policies, including a financial rescue package, structural reforms and a mandatory 'trimming' of bank deposits above EUR 100 000 to save the over-indebted banks and ease credit pressures on the government.

The latest economic developments in the country will undoubtedly also affect the R&I sector, in particular, future government expenditure on R&D.

On the positive side, however, the new government (as of March 2013) has announced that significant effort will be put into R&I in an attempt to exit from the financial crisis. As a result, a National Committee on Research, Innovation and Technological Development (NCRITD) was set up by the Council of Ministers in September 2013, comprising distinguished experienced scientists coming from the Cypriot academic, research and business sectors, to review the national R&I system and to make relevant recommendations on its governance to the President of the Republic of Cyprus. The work of the NCRITD was completed in March 2014 and its outcomes submitted to the President. Its report proposes the creation of a new system structured on four levels (strategic, political, operational/implementation, and research stakeholders), which integrates research, innovation, and entrepreneurship. The study proposes, among others, the appointment of a commissioner for research, innovation and entrepreneurship, the creation of a new DG covering these sectors under the Ministry of Finance, the establishment of an advisory committee, and the redesign of the role of the Research Promotion Foundation (RPF) to accommodate technology transfer activities. The study is currently being reviewed by the presidency.

Furthermore, the Smart Specialisation Strategy for R&I, an ex-ante conditionality for the use of European Structural and Investment Funds (ESIF) for R&I in Cyprus is expected to be

finalized in spring 2014. The sectors identified through this process are tourism, energy, construction, shipping, health, ICT and the environment.

The outcome of the two above-mentioned reports is expected to prove useful for the drawing up of the National 2014-20 R&I Strategy which should be completed by the end of 2014. This strategy will be implemented mainly through programmes of the Research Promotion Foundation, which is the main funding agency for R&I in Cyprus.

Finally, due to the prevailing economic crisis in the country and the resulting liquidity constraints, the main source of public funding for the implementation of the new R&I strategy is expected to come from the ESIF for the 2014-20 period. The bulk of the funding that will be allocated for R&I from the ESIF Operational Programme for Cyprus will be spent through the DESMI 2014-20, which is the national Framework Programme for R&I designed and implemented by the RPF. In parallel, the Technology Service at the Ministry of Energy, Commerce, Industry, and Tourism will implement schemes for promoting specifically business innovation.

1. Framework conditions

Cyprus has a highly developed system of primary and secondary education offering both public and private education. The high quality of instruction can be attributed in part to the fact that nearly 7% of the GDP is spent on education which makes Cyprus one of the top three spenders of education in the EU along with Denmark and Sweden.

The majority of Cypriots receive their higher education at Greek, British, German, other European and North American universities. It is noteworthy that Cyprus currently has the highest percentage of citizens of working age who have higher-level education in the EU at 30% which is ahead of Finland's 29.5%. In addition, 47% of its population aged 25–34 have tertiary education, which is the highest in the EU. The body of Cypriot students is highly mobile, with 78.7% studying in a university outside Cyprus.

The general trend for human resources in Cyprus is positive in most of the measured areas after their relative decline in the years of the country’s financial decline. The indicators, however, provide a complex image in the second level examination. More specifically, the doctorate graduates indicator (1.1.1.) is ranked lower in EUIS regions (place 34 in 2015), than the tertiary education graduate’s one, which is on the top level (ranking consistently within top 3). The lifelong learning indicator ranks higher than doctorate graduates, at ranks 17 to 22 over the 2010-2017 period. In evaluating An important element to be considered is that the entirety of Cyprus is regarded as a region in EUIS, and that means that the provided data are country median, whereas the majority of EU countries is ranked on a regional scale. In that sense, the actual country to country comparison for Cyprus can be higher than recorded in data, especially in those indicators that appear to be lagging. Another important element is the contrast between a large number of tertiary education graduates and considerably smaller amount human resources for research, due to the constant brain drain towards countries such as the UK and USA.

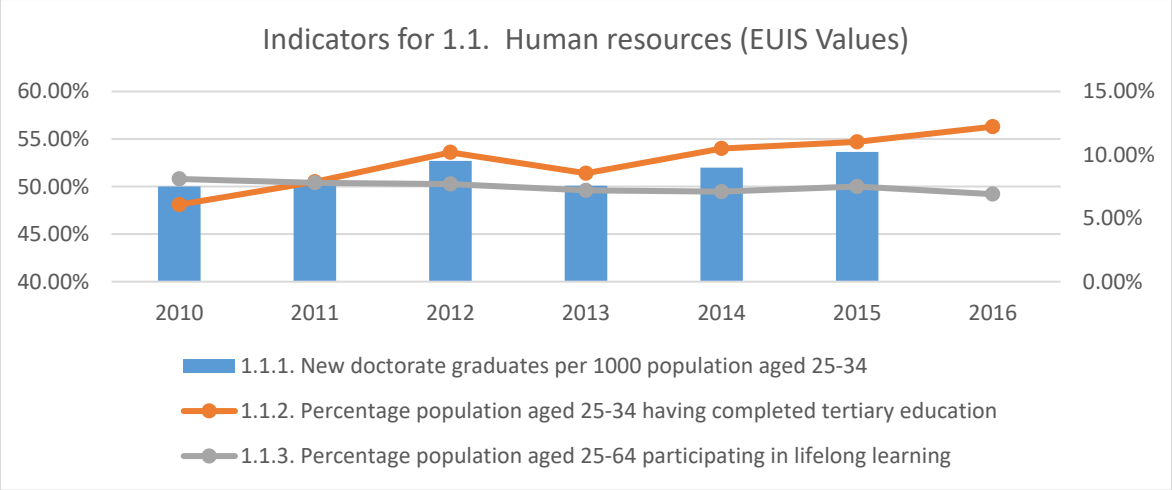


Figure 16 Indicators for 1.1. Human resources (EUIS Values)

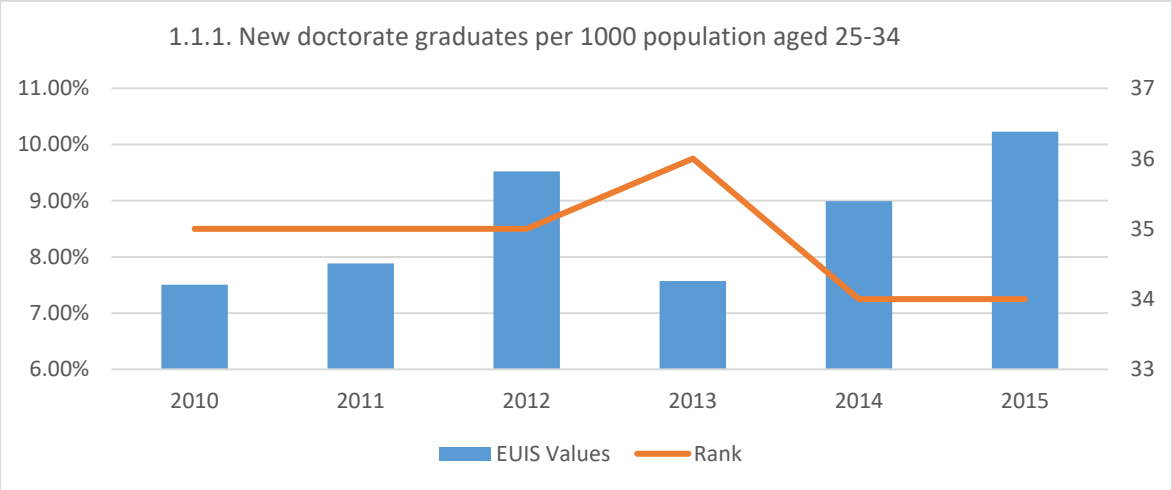


Figure 17 1.1.1. New doctorate graduates per 1000 population aged 25-34

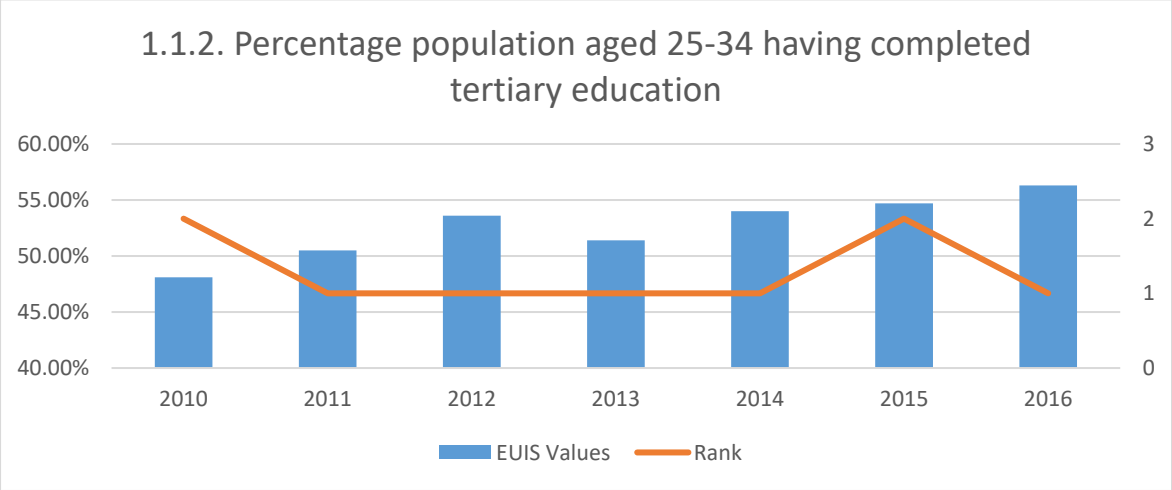


Figure 18 1.1.2. Percentage population aged 25-34 having completed tertiary education

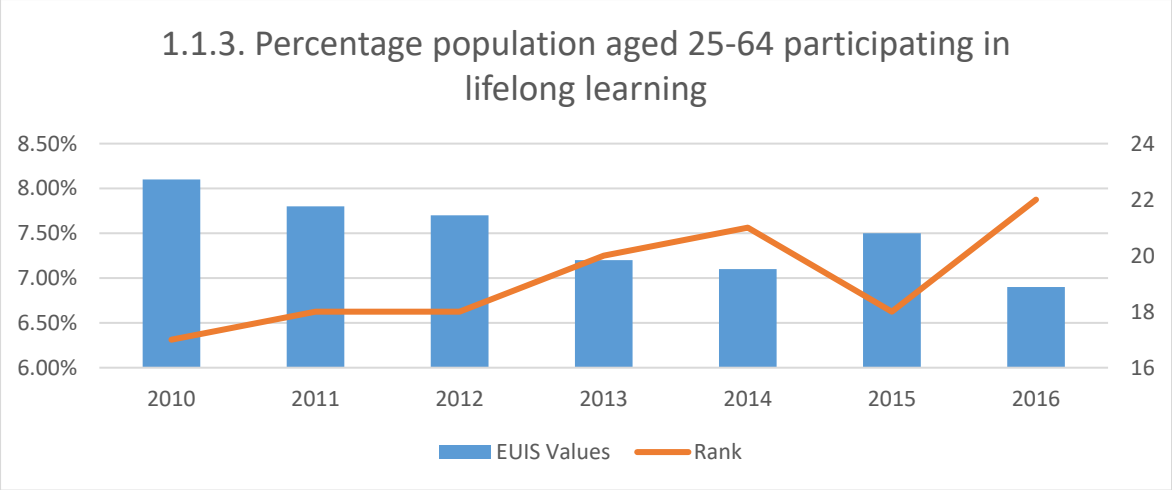


Figure 19 1.1.3. Percentage population aged 25-64 participating in lifelong learning

Cyprus ranks very satisfactorily as to the attractiveness of the research conducted ranking at the top 15 of indicators 1.2.1 and 1.2.2, with the first remaining in place between 15 and (currently) 13 during the whole of the examined period and the second one showing signs important improvement over the last 2 years rising from rank 22 to rank 14. The indicator most affected by the economic and fiscal crisis was 1.2.3. (Foreign doctorate students as a percentage of all doctorate students), a rather normal development considering the unstable condition created in the country during the 2012-2015 period. Even in that case though the recent trend shows an improvement towards pre-crisis levels.

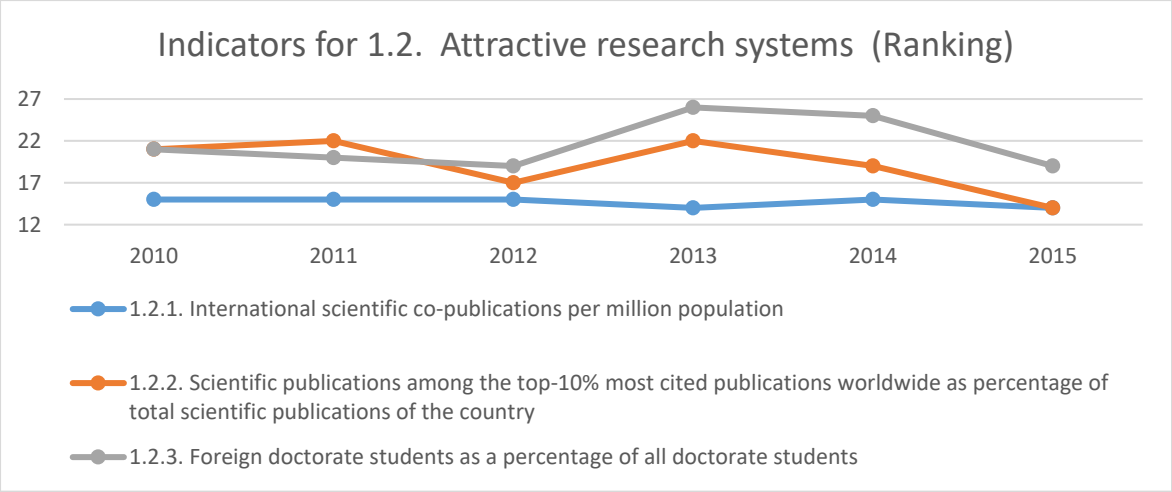
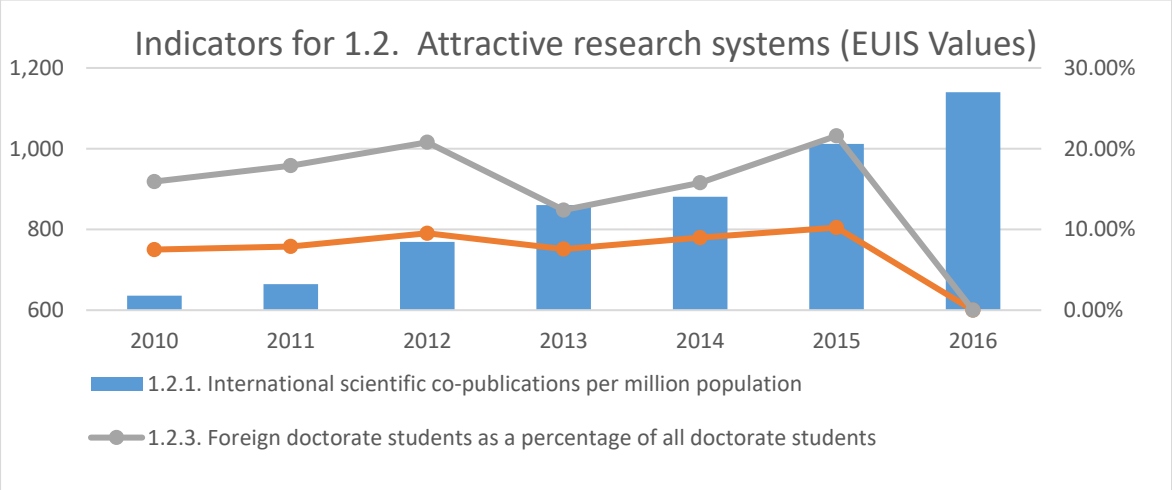


Figure 20 Indicators for 1.2. Attractive research systems (Ranking)



Indicators regarding the innovation-friendly environment are rather stable, with Cyprus scoring a rank of 30 in indicator 1.3.1. (2016) presenting a slight improvement from its position in rank 32 over the examined period. As to indicator 1.3.2 (Opportunity-driven entrepreneurship), 2016 show a slight step down to rank 21 from the previous measurement in 2015 (Rank 19), not changing, however, the overall picture which places the country as a border entry in the Top 20 division.

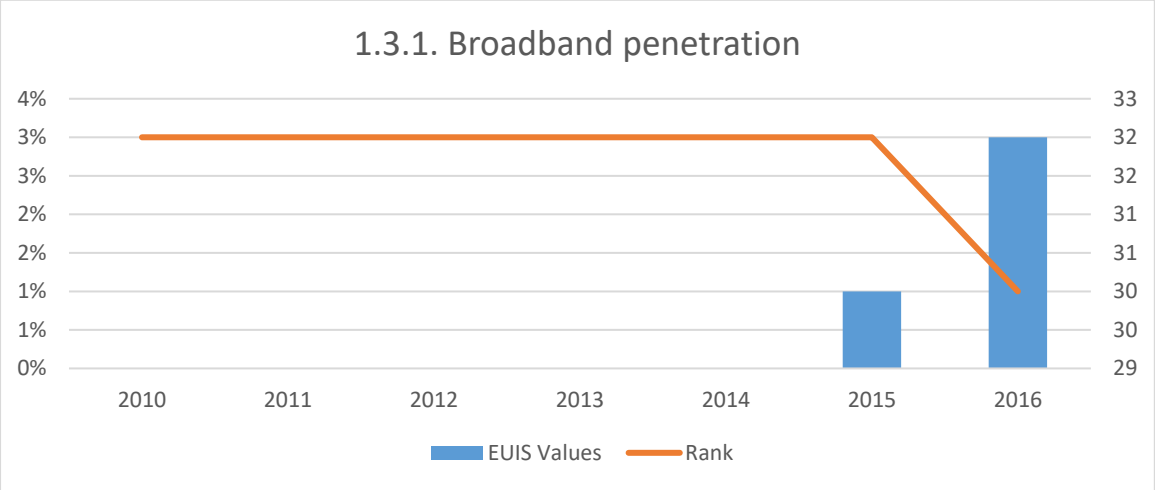


Figure 22 1.3.1. Broadband penetration

Figure 21 Indicators for 1.2. Attractive research systems (EUIS Values)

Figure 23 1.3.2. Opportunity-driven entrepreneurship (GEM Motivational index) - Ranking

2. Investments

Any R&I challenges faced by Cyprus have been further exacerbated following the strict austerity measures imposed in the county as a result of the severe economic crisis which peaked in early 2013. It is also possible though that the same condition can have benefited from smart fiscal consolidation and the focus on leading edge or major potentials such as ICT, environmental technologies, and the energy sectors.

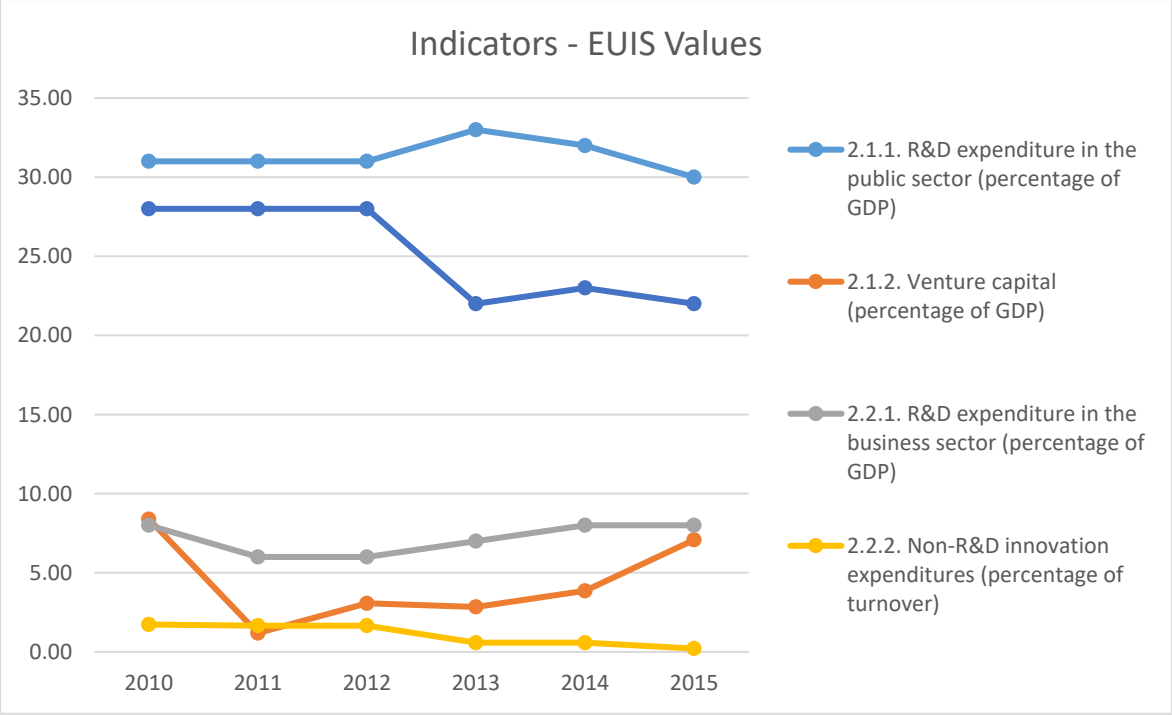


Figure 24 Indicators - EUIS Values

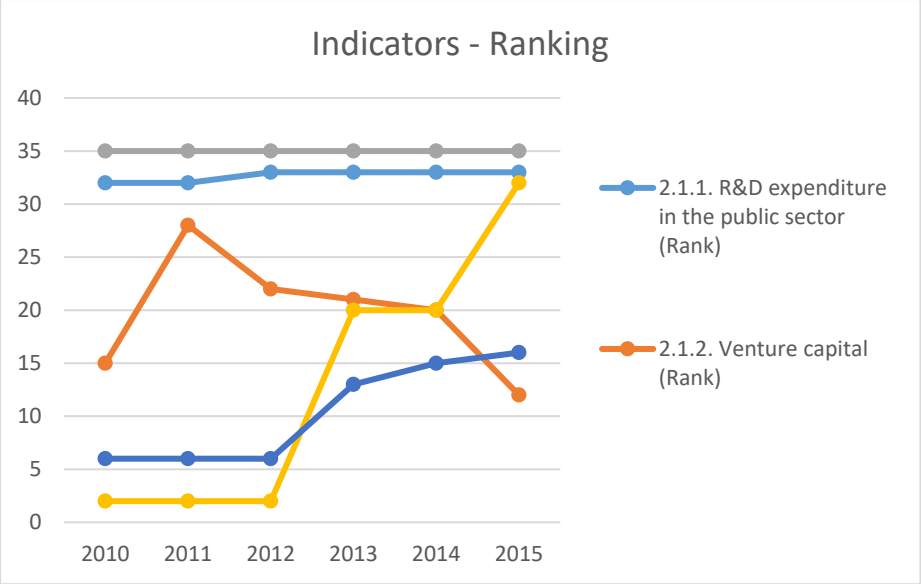


Figure 25 Indicators - Ranking

Cyprus' ranking regarding the Public Sector R&D expenditure has not changed considerably during the examined period losing only one position (33 compared to 32 pre-crisis) despite its absolute value decrease since this was almost directly proportional to the national GDP's decrease. On the other hand, following its steep fall during the economic crisis, the indicator 2.1.2. (Venture Capital) ranking has almost fully recovered to pre-crisis levels, both in percentage values and rank (12).

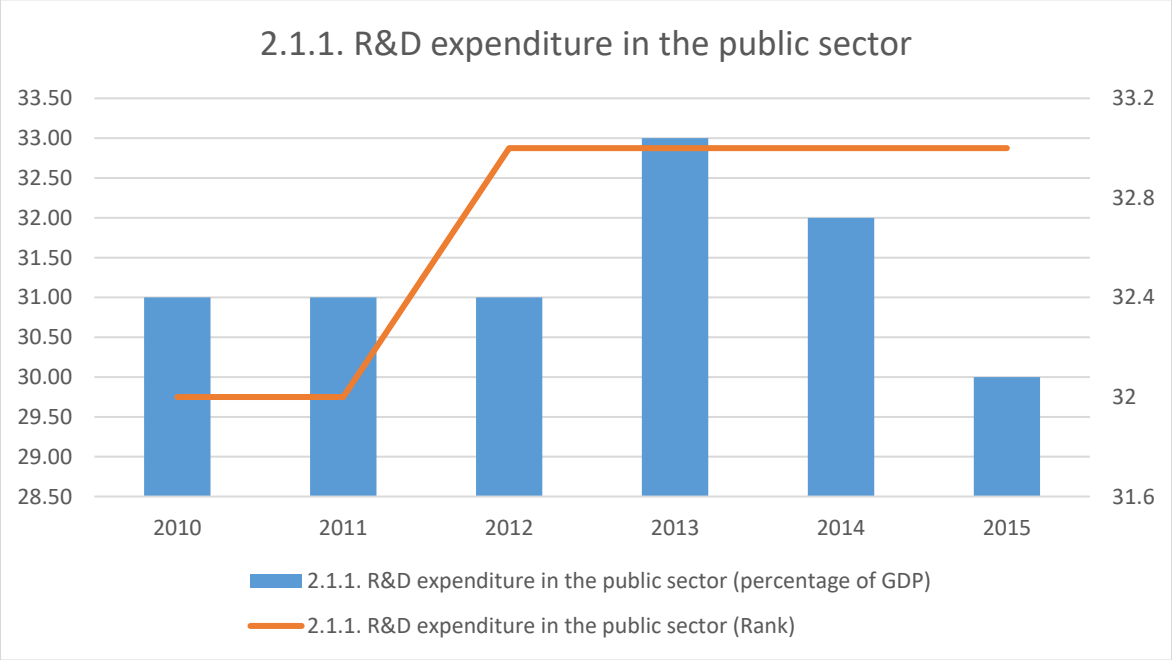


Figure 26 2.1.1. R&D expenditure in the public sector

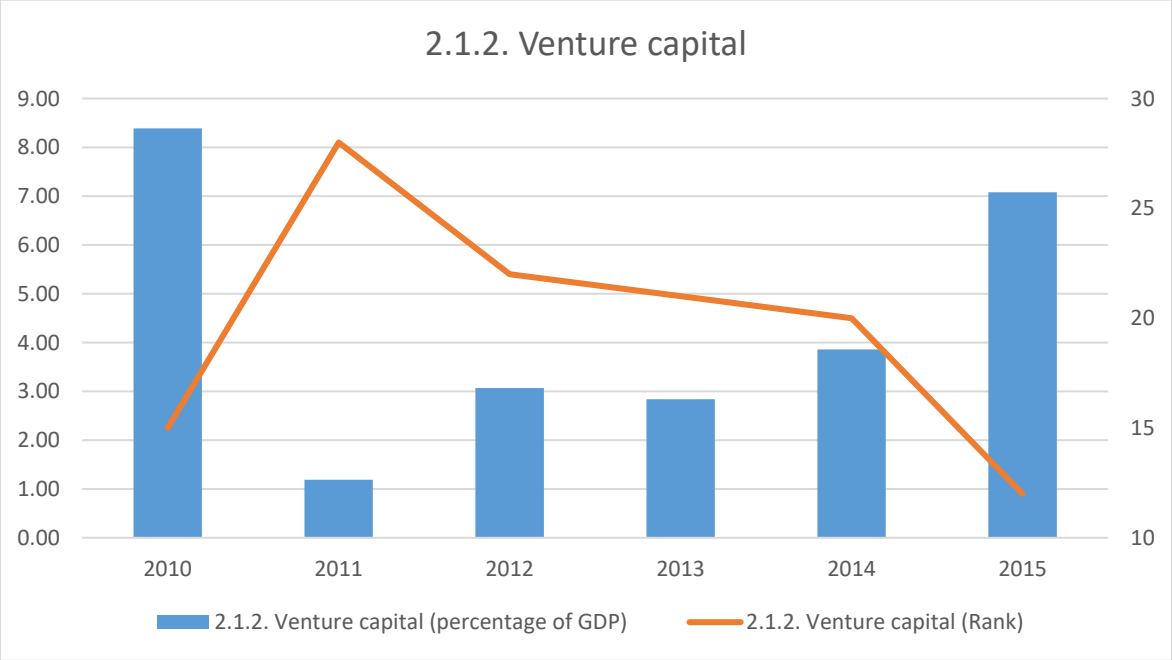


Figure 27 2.1.2. Venture capital

Firm investments indicators have in general been hit severely by the economic crisis of 2013. The major impacts can be seen in the non-R&D expenditures, where the pre-crisis rank of 2 has slumped to 32 in 2016. At the same time R&D investment appears to be stable, at a rather medium ranking at 35 of EUIS regions, and so has managed to increase its percentage as part of business sector GDP.

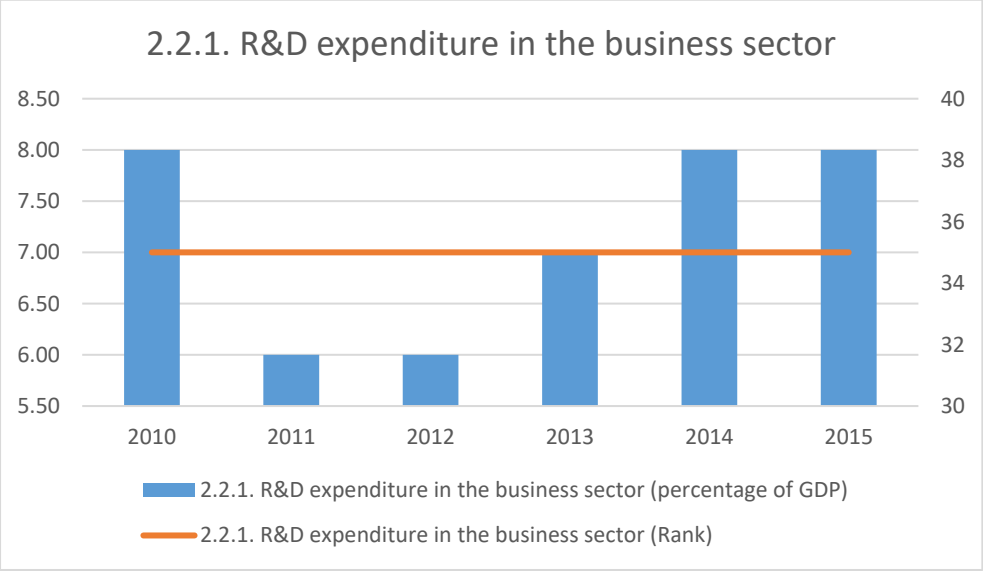


Figure 28 2.2.1. R&D expenditure in the business sector

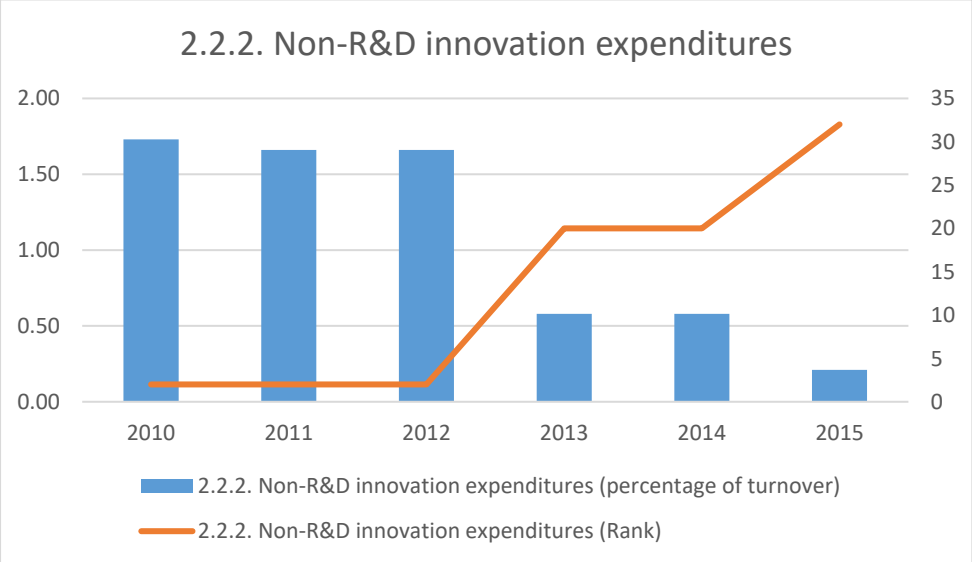


Figure 29 2.2.2. Non-R&D innovation expenditures

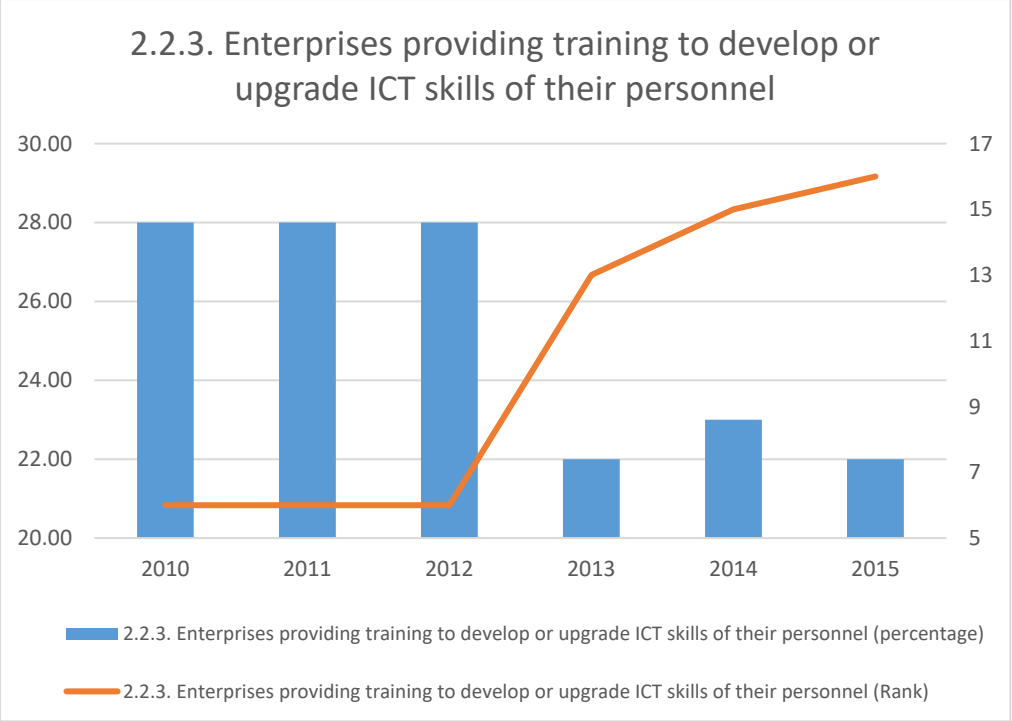


Figure 30 2.2.3. Enterprises providing training to develop or upgrade ICT skills of their personnel

3. Innovation activities

Innovators Data

The overall trend of Innovators Indicator is downward in all of its categories, where Cyprus has fallen from the Top 10 category to Top 20 (3.1.1: 18, 3.1.2: 22, 3.1.3: 14, Data for 2015). It is, however, a fact that this trend begins before the peak of the economic crisis and therefore cannot be directly linked to it, with the possible exception of SMEs In-house innovation. According to EU Data, a persistent stagnation was observed in the activities in Cyprus since 2009, with the level 0,5% of GDP set by the then government met but not surpassed.

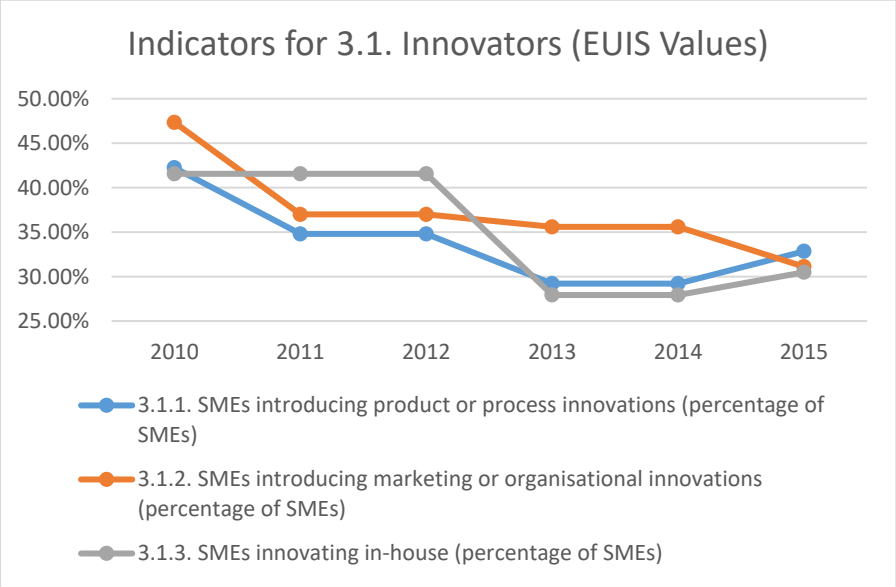


Figure 31 Indicators for 3.1. Innovators (EUIS Values)

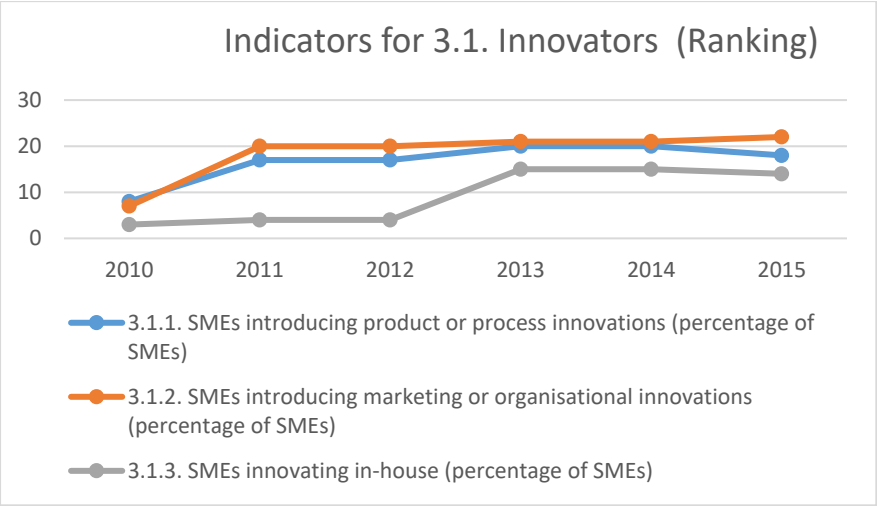


Figure 32 Indicators for 3.1. Innovators (Ranking)

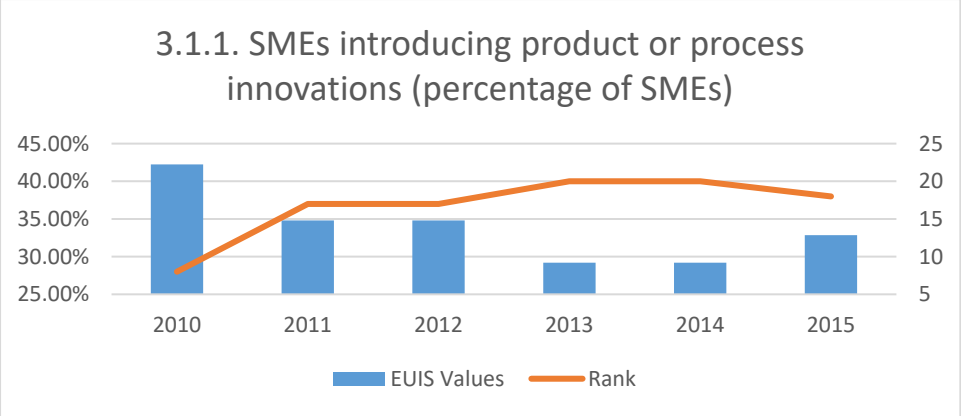


Figure 33 3.1.1. SMEs introducing product or process innovations (percentage of SMEs)

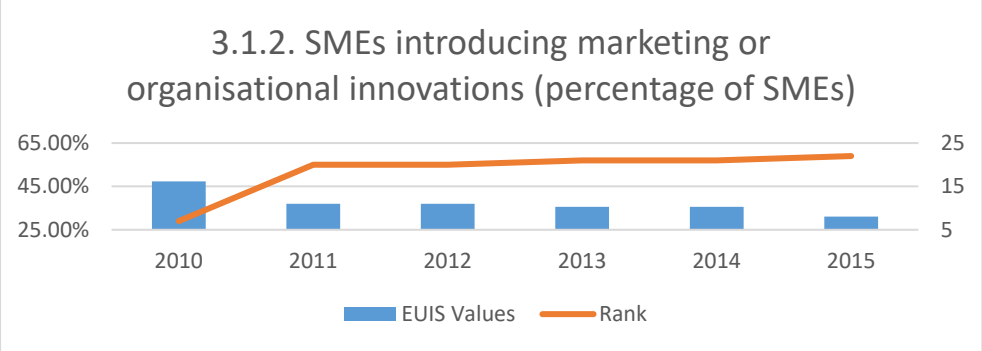


Figure 34 3.1.2. SMEs introducing marketing or organizational innovations (percentage of SMEs)

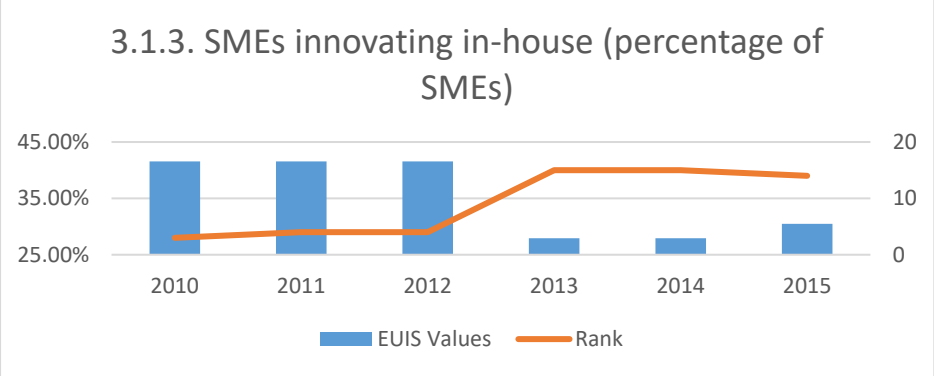


Figure 35 3.1.3. SMEs innovating in-house (percentage of SMEs)

Linkages

Indicator 3.2 and its parts show an overall negative trend in both SMEs collaboration in innovation and the public-private publications over the 2010-2017 period. In 2015, this fall was especially steep for SMEs indicator (Rank 16 compared to 5 in 2014), whereas the slight improvement in indicator 3.2.2. has not been enough to bring it to pre-crisis status, both in terms of EUIS ranking and absolute numbers.

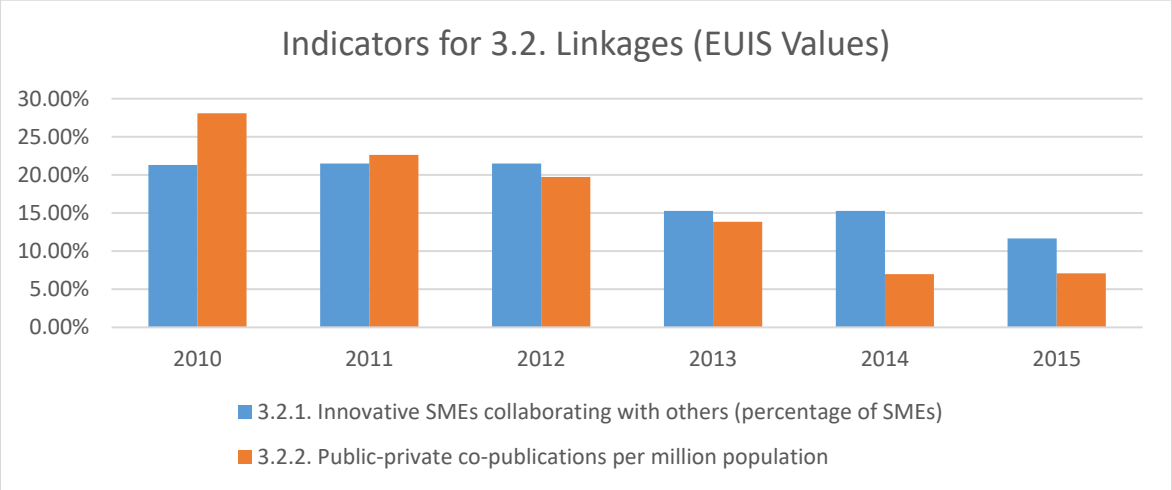


Figure 36 Indicators for 3.2. Linkages (EUIS Values)

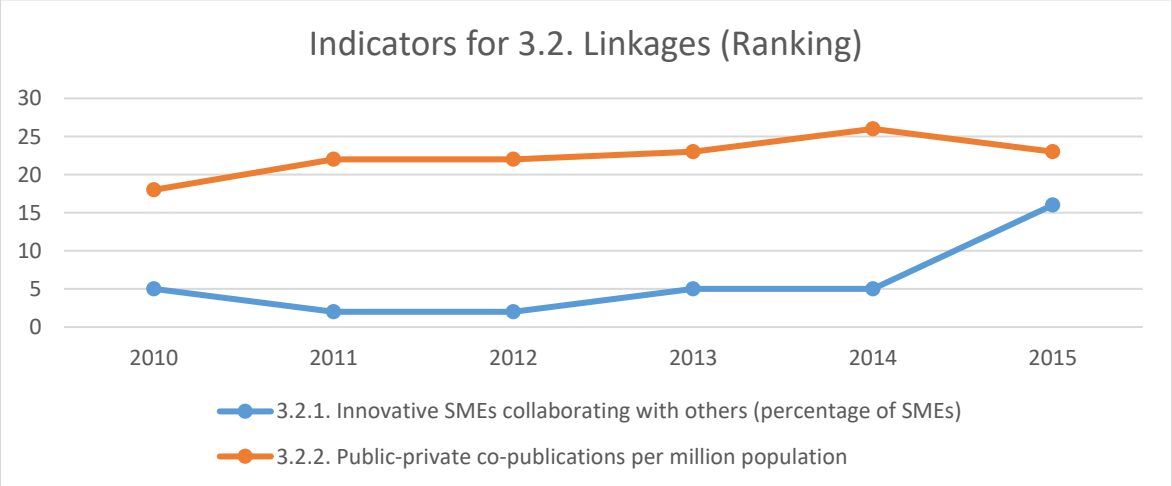


Figure 37 Indicators for 3.2. Linkages (Ranking)

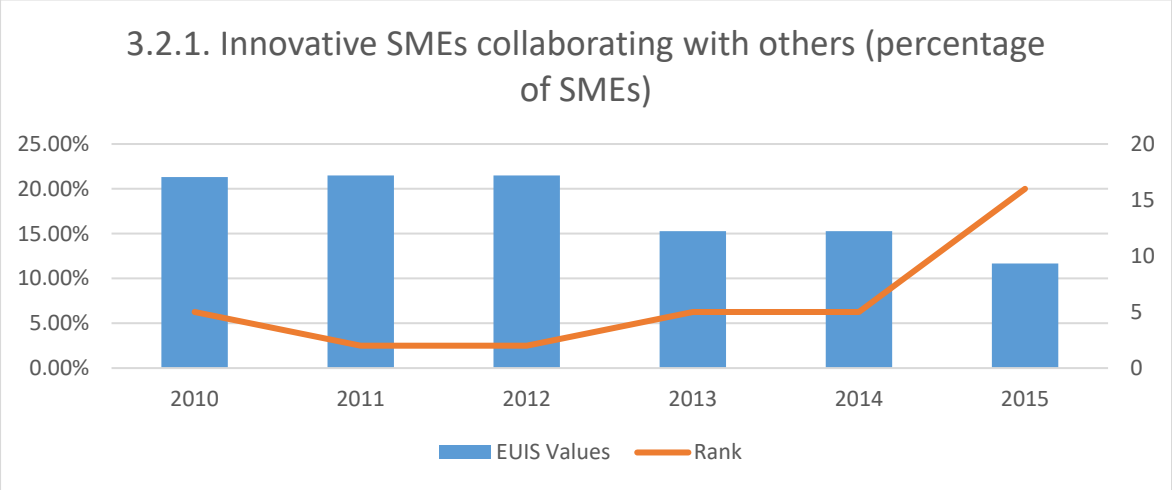


Figure 38 3.2.1. Innovative SMEs collaborating with others (percentage of SMEs)

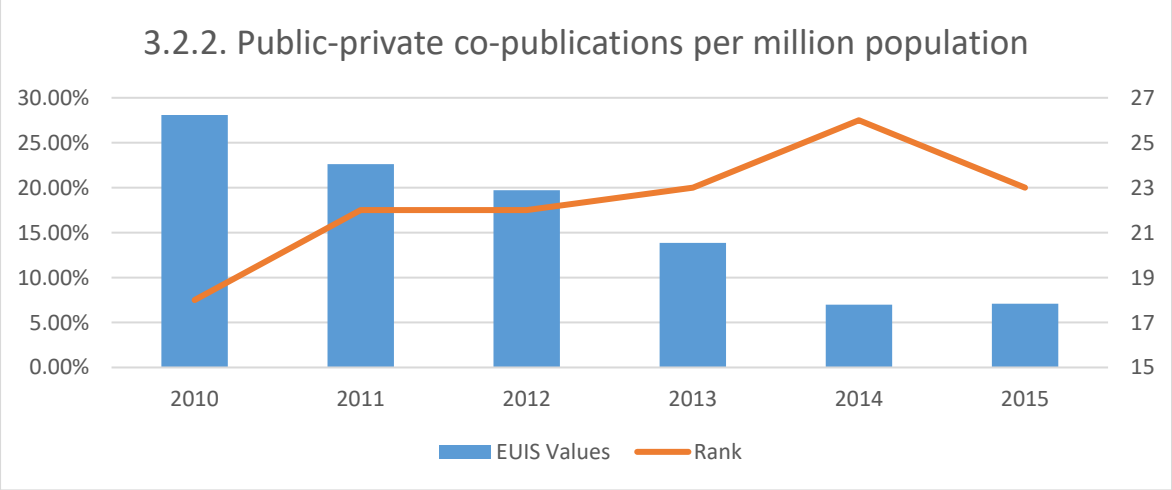


Figure 39 3.2.2. Public-private co-publications per million population

Intellectual assets

The intellectual assets general and specific indicators are the most promising for Cyprus in the Innovation Activities category both in absolute and in ranking terms. All three sub-indicators have been improved in the last years to beat their the pre-crisis levels, with the indicator 3.3.2. to have been measured as top in 2016 in EUIS rankings. In short, this seems to be a category where the R&D investments have paid off the most.

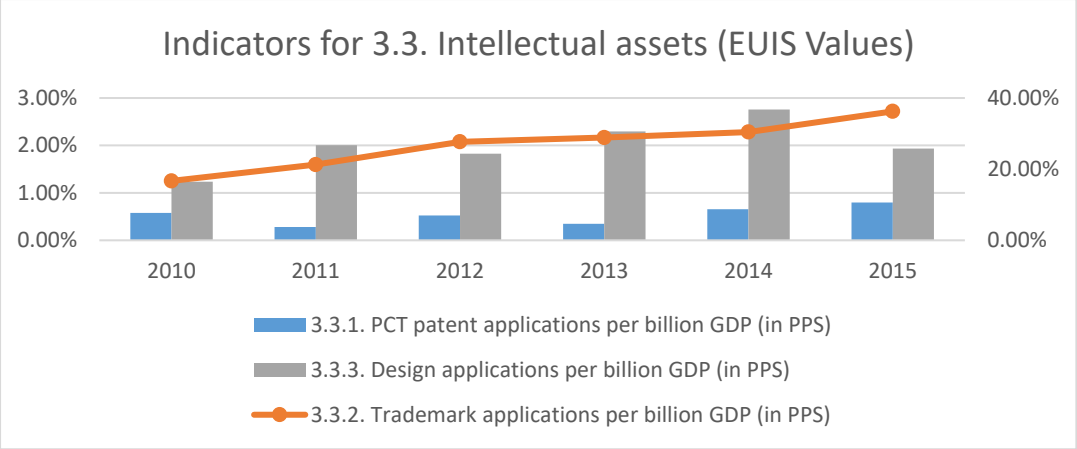


Figure 40 Indicators for 3.3. Intellectual assets (EUIS Values)

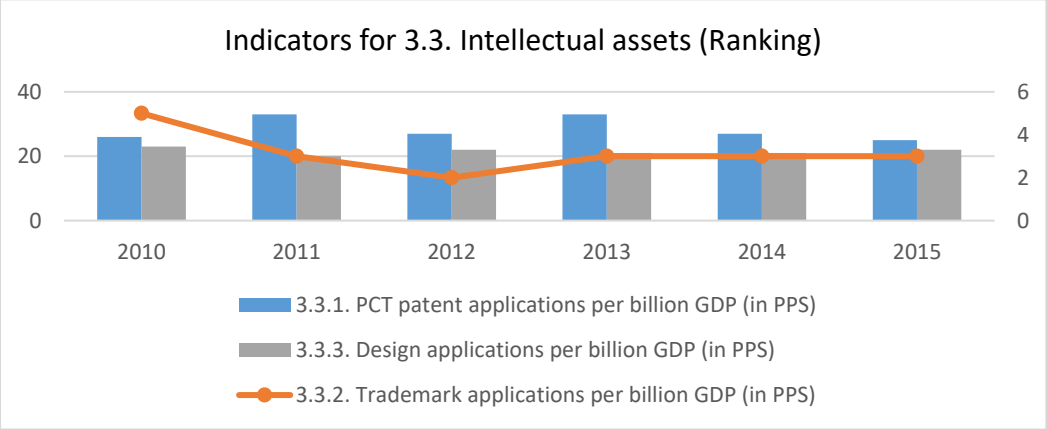


Figure 41 Indicators for 3.3. Intellectual assets (Ranking)

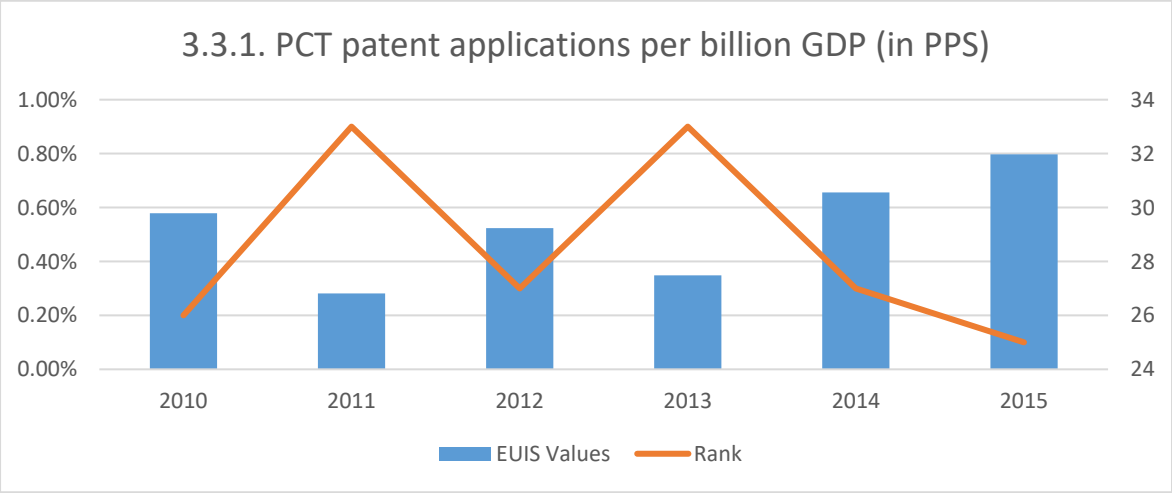


Figure 42 3.3.1. PCT patent applications per billion GDP (in PPS)

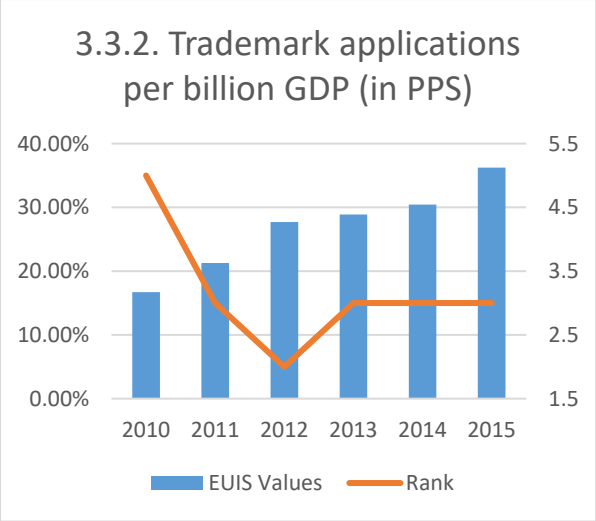


Figure 43 3.3.2. Trademark applications per billion GDP (in PPS)

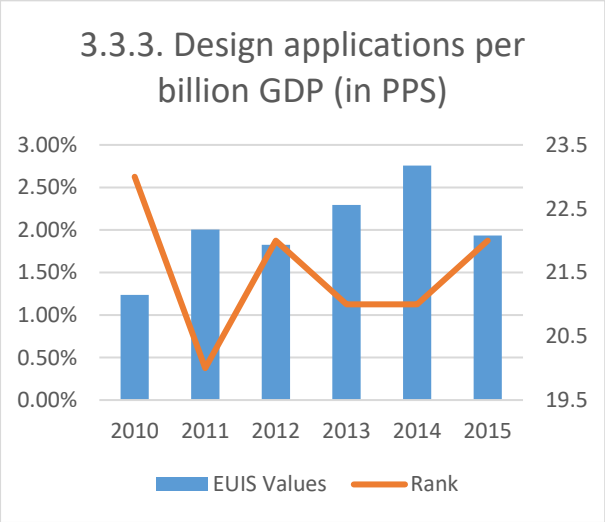


Figure 44 3.3.3. Design applications per billion GDP (in PPS)

4. Impacts

Employment impacts

Innovation appears to be an important factor for Cyprus employment totaling steadily over 16% of total employment, giving the country an EUIS ranking of 10. The employment however of fast-growing enterprises seems to have fallen in percentage over the last 2 years retaining an overall rank of 29 within the EUIS regions. This can be connected with either the decline of SME's activities presented in Category 2 or with the improvement of ratings in other economic sectors not dealt with in this research.

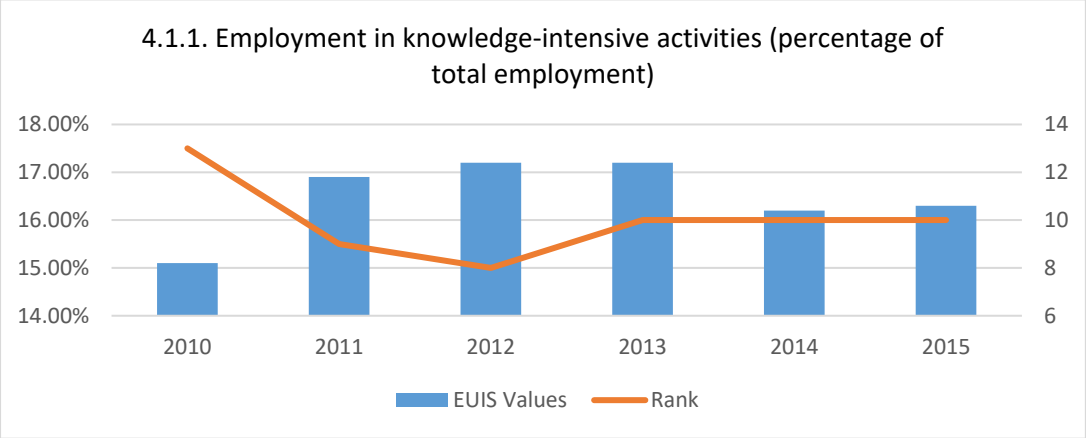


Figure 45 4.1.1. Employment in knowledge-intensive activities (percentage of total employment)

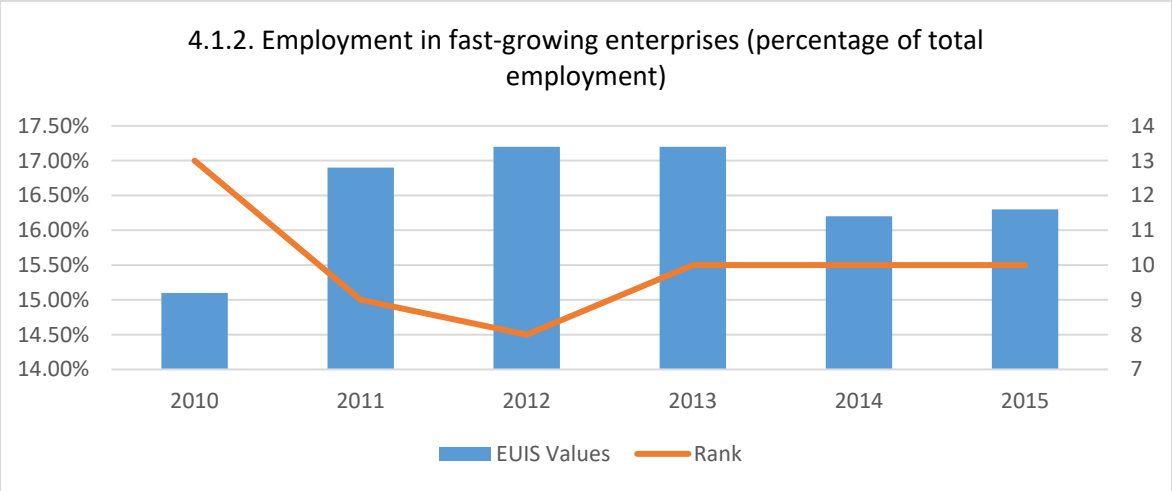


Figure 46 4.1.2. Employment in fast-growing enterprises (percentage of total employment)

4.2 Sales impacts

Regarding the impact of innovation in companies' sales, the indicators vary. In indicator 4.2.1. Cyprus has regained its 2010 rank of 24 while at the same time increased the percentage of the medium and high technology products. This shows that the rest of EUIS regions have increased their absolute values so that a simple return to pre-crisis numbers does not suffice to improve the countries ranking. The export of knowledge-intensive services high percentage (69% of total) and rank of 10 is consistent with the relating employment indicator presented above and highlights the importance of innovation for Cypriot economy. The one negative trend recorded in indicator 4.2, was met on indicator 4.2.3. where Cyprus had retained a relatively high rank of 10 (7 in 2010) even in the period of its crisis but lost rapidly ranks on 2015 falling to 34.

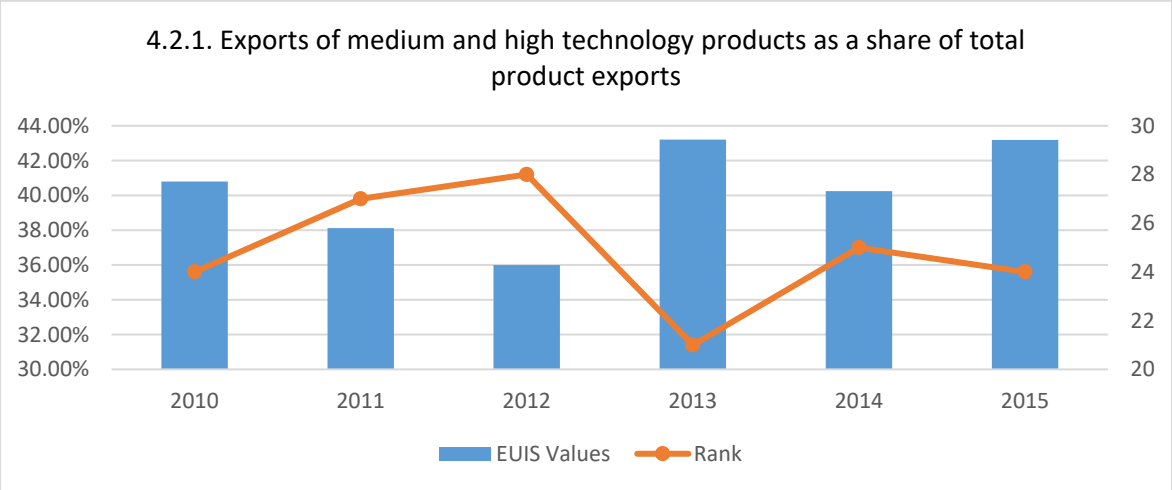


Figure 47 4.2.1. Exports of medium and high technology products as a share of total product exports

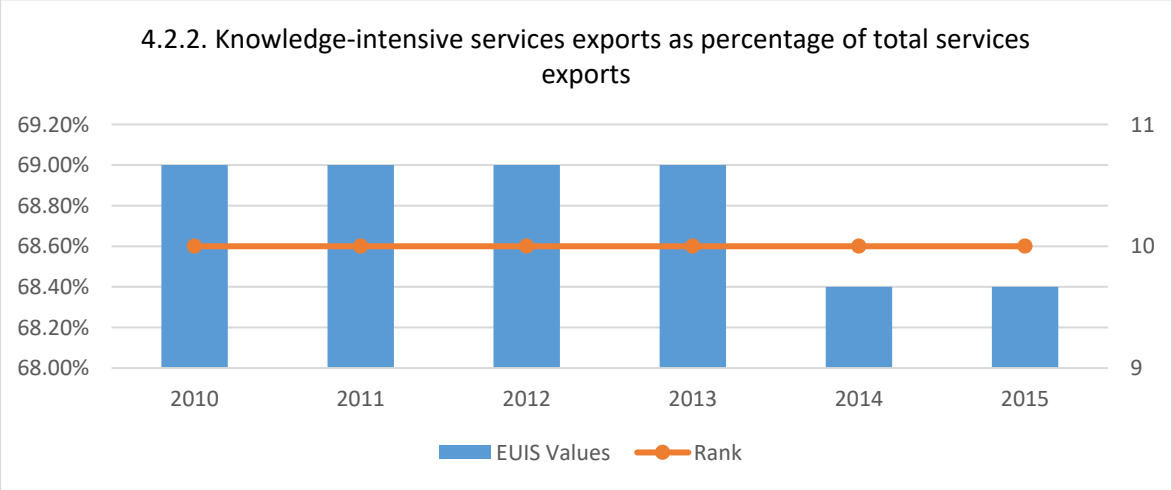


Figure 48 4.2.2. Knowledge-intensive services exports as percentage of total services exports

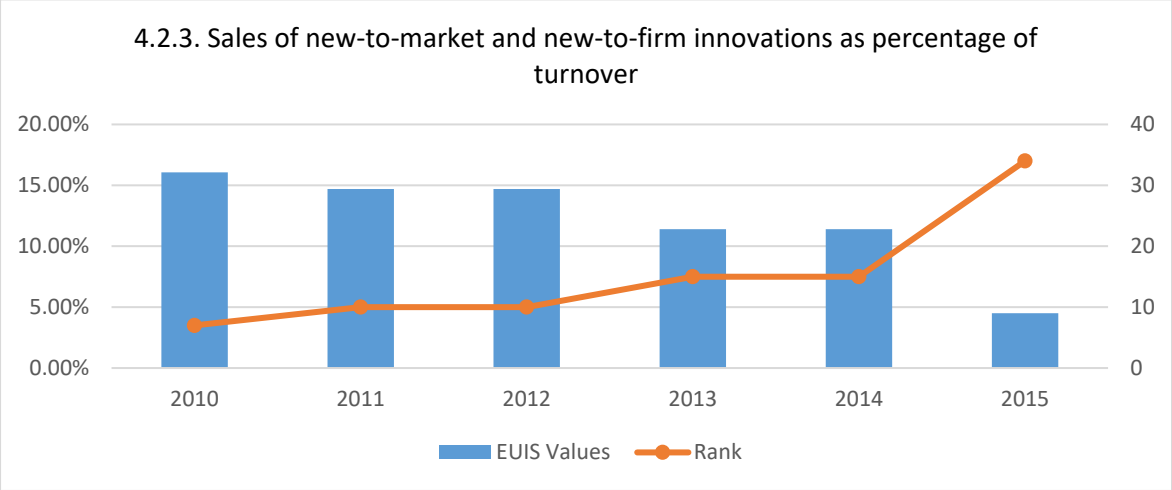


Figure 49 4.2.3. Sales of new-to-market and New-to-firm innovations as percentage of turnover

Strengths and Weaknesses

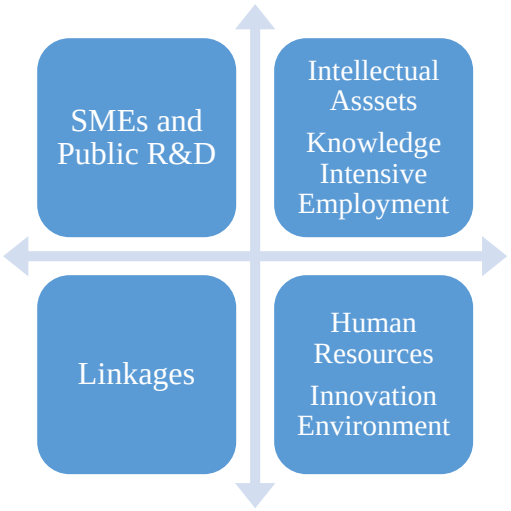


Figure 50 Strengths and Weaknesses

EU reports show that in key areas of scientific specialization, like socio-economic sciences and ICT, the impact on Cypriot economy is similar to the world average, suggesting that there is potential for further improvement. In addition, despite the relatively low levels of scientific specialization in energy and materials, these are areas with strong potential impact, implying that Cyprus will probably benefit from concentrating efforts towards the energy technologies and materials sectors.

As the excellence in research correlates to more cooperation with researchers from other European countries and beyond, to increase its research excellence Cyprus must benefit from actively supporting and providing incentives for its researchers to connect to EU research networks.

Conclusions and Recommendations

In World Economic Forum's Global Competitiveness Report 2015-2016, Cyprus ranks 65th out of 140 economies assessed. Of the 36 advanced economies, it only ranks higher than Slovakia and Greece. The country's capacity to leverage talent is at the heart of improving competitiveness. However, the recent high unemployment figures of the post-crisis years risk prolonged lower demand but also the de-skilling of a significant segment of the labor force.

Its national/regional profile regarding Innovation and its linkages to Economy and Entrepreneurship has been described in detail in the sections above providing valuable input for potential analysis and interpretation, depending on the needs and interests of a variety of stakeholders. That said, there are a number of conclusions that can be excluded out the analysis:

Innovation played an important role in boosting economic competitiveness in Cyprus, despite the relatively low availability of highly trained human resources, both as doctoral graduates and business enterprise researchers.

Demand for skilled personnel can be compromised by the relatively low funding of research and the unsuitability of local businesses in Cyprus, often unsuitable and unwilling to incorporate large numbers of the increasing tertiary educated community.

Domination of Cyprus business sector by the focus on services by very small enterprises where innovation culture remains quite undeveloped.

Inability to make full of Cyprus's relative strengths (large educated human resources pool, a favorable tax regime and one of the best lifestyle destinations in the world), it has made little progress in the entrepreneurship field.

Need for efficiency and cost-cutting public operation- "doing more with less" or how to improve productivity through e-government - mobility of staff, simplification of procedures, disengagement from selected activities, more public-private partnerships.

Mobilization of stakeholders must be as broad as possible, as public-private cooperation is necessary due to obvious deficiencies of SME's in a post-economic crisis financial environment.

Reasons for the current state of affairs:

The most problematic factors for doing business in Cyprus were reported to be access to financing, inefficient government bureaucracy, corruption, insufficient capacity to innovate and restrictive labour regulations.

SME's: a problem or an opportunity

SMEs and entrepreneurship, are according to EU, keys to ensuring economic growth, innovation, job creation, and social integration in the EU. In the past five years, they have created around 85% of new jobs and provided two-thirds of the total private sector employment in the EU (EUROSTAT).

In sectors such as biotechnology and information technology, relatively small numbers of new, technology-based firms are key suppliers of new technologies. Their ability to exploit new technologies, and to respond quickly to changing market needs, give SMEs a pivotal role in the success of the European economy. For these reasons, support for the creation of new ventures and spin-offs from research institutions and large companies, as well as the removal of barriers to their rapid growth and support for the transfer of know-how, also deserve to be accorded the highest priority. After the most recent financial crisis, the Cyprus government has been slowly trying to introduce initiatives aimed at addressing the access of financing for start-ups and SMEs and providing fiscal incentives for private sector investment in innovation.

The development of the Cyprus entrepreneurship and innovation ecosystem is vital in helping to promote growth and economic prosperity. The ecosystem comprises complex relationships that are formed between actors or entities whose functional goal is to enable technology development and innovation. In the years after the recent financial crisis, Cypriot innovation actors have slowly but steadily started to flourish, simultaneously adding value to the economy and enhancing the local ecosystem.

Open and Closed Economies

According to economic theory and intuition, competitive markets promote higher productivity and efficiency. Many sectors of the Cypriot economy have been sheltered from competition. As the country needs to and has slimmed down and reform its public sector and open up its markets to competition. An agenda of well-designed structural reform can make the economy more efficient and competitive and better suited to face the challenges lying ahead.

Two main bottlenecks in the “innovation-to-industry relations” system: ► limited human resources in the S&E area (small demand from business) ► limited engagement of business to R&D activities (no big companies / high-tech industry)

Required Endorsements and Policy Approaches

1. Need for a comprehensive and holistic Digital Strategy to:

1. “Connect Cyprus”

2. “Modernize public administration and provide public electronic services” cross-sectoral horizontal framework

3. “Inclusion of all into digital Cyprus”

6. “ICT for the environment” “infrastructural” level

4. “Education and Learning” addressing labour force’s capacities

5. “Digital Entrepreneurship” the primary area of the RS3

2. Various stakeholders from all major MHT sectors can help support the innovation process, but most will require technical assistance to formulate their needs within the framework of a national strategy

- Investors and enterprises
- Knowledge-based institutions:
- Public bodies (national and regional)
- Civil society actors: NGOs in relevant fields (social, environmental), trade unions, political parties, associations
- International experts

As the concept of creating value through ideas is developing the potential of becoming a key driver of economic growth, the development of Start-Up's sector is essential for Cyprus. As a follow up to this predicament, significant incentives have been introduced by the Cyprus government in order to boost innovation and entrepreneurship, such as the approval of a package of tax incentives of investment into start-ups, as well as the introduction of the Start-up Visa for third-country nationals. At the same time new business opportunities (solar, hydrocarbons), cross-sectoral linkages (food & special tourism), common new technologies (ICT), value chains and clusters (food, shipping, professional services, special tourism).

3. Government services: Pressure of reduction of public sector employment and operating budgets. At the same time, ICT seems to be the underlying tool to achieve multiple goals crossing the boundaries of various sectors, especially in the public sector.

4. Bottom-Up Approach

Local stakeholders have little experience with such approaches as strategies and policies have always been "designed for them". This requires the development of a novel policy-making tool for Cyprus, where all stakeholders must own the process and enter the process of designing together.

5. Tax Incentives

The new taxing incentives of the Cypriot Government are a step towards the right direction. The tax incentives package includes an up to 50% tax exemption on investment in innovative and start-up companies. The exemption extends to individuals who invest in an innovative enterprise, either directly or through an investment fund. The maximum annual amount to be exempted is €150,000. The investment could be in the form of acquiring shares, a loan or providing guarantees to innovative enterprises.

Innovation is defined as having spent 10% of its operating expenses on research and development in at least one of the last three years, determined by an external auditor. Start-ups will be assessed based on their business plan.

The definition of innovative enterprise has also changed to a broader theme less restrictive and can be more effectively used by businesspeople, and young people with innovative ideas that can be turned into entrepreneurship and commercial products.

6. Start-Up Visa

The introduction of the Start-up Visa for third-country nationals is expected to further enhance the attractiveness of the Cypriot economy to individual investors and groups of investors. These investors will have to be citizens of third countries, with a 50 thousand euro capital, who will set up their headquarters and their tax residency in Cyprus, will be

university graduates and have a good knowledge of either Greek or English, while businesses must be certified startups.

7. Intellectual Property (IP) regime)

The "nexus Approach" introduced by the OECD limits application of the IP box regime if research and development (R&D) is being outsourced to related parties, linking the benefits of the regime with the R&D expenses incurred by the taxpayer.

Under the new regime, qualifying taxpayers will be eligible to claim a tax deduction equaling 80% of qualifying profits resulting from the business use of the qualifying assets, a waivable right partially or in whole.

References and Bibliography

Reports and Journals

1. European Commission (2014). Cyprus - Research and Innovation performance
2. Cyprus Innovation and Entrepreneurship Dynamics (2017), (2)
3. Clerides, S. (2012). Cyprus Economic Policy Review, 6(2), 81-88

Data Sources

1. Central Bank of Cyprus
2. European Innovation Scoreboard 2017
3. EUROSTAT
4. Statistical Service of Cyprus (CYSTAT)
5. CWTS Leiden Ranking 2017
6. Global Entrepreneurship Monitor (GEM)
7. Patent data from the OECD;
   European Union Intellectual Property Office (EUIPO)
8. World Intellectual Property Office (WIPO
9. UN ComTrade

Appendixes

PP Name	PP	Country
Center for Knowledge Management	LP (PP1)	The former Yugoslav Republic of Macedonia
Computer Technology Institute and Press "Diophantus"	PP2	Greece
UET Centre	PP3	Albania
Burgas Free University	PP4	Bulgaria
Limassol Chamber of Commerce and Industry	PP5	Cyprus
Association of Information Technology Companies of Northern Greece (SEPVE)	PP6	Greece

National Study

Interreg
Balkan-Mediterranean
INNOPLATFORM

InnoPlatform project is co-funded by the European Union
and National Funds of the participating countries