



Innovation Potential and Dominant Emerging Industries

Limassol Region, Cyprus

INNOPLATFORM

Innovations Platform and Tools for increasing the innovation capacity of SMEs in the Balkan Mediterranean Area

PREPARED BY: Αναπτυξιακή Εταιρεία Λεμεσού Λτδ

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Executive Summary

The present Study aims to provide a special focus on the Regional Dominant Emerging Industries 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.

Following this profiling and using the methodological tool of the EIS 2017 Framework, the Study goes into innovation analysis using specific indicators of the methodology factors as recorded in the case of Cyprus, with reference to the economic profile of the period 2010-2017. Moving on, the dominant and emerging Medium and High Technology Industries in Cypriot Economy are analyzed by sector and presented in terms of registered companies and actual employment size for the years 2015 and 2016 to provide its accurate profile of the post-economic crisis era. 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 impact of the most promising fields.

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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 Regional studies for identification of the dominant emerging industries comes from the EIS Regional 2017 Framework. 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.

Regional Context

Economy and Growth of Cyprus

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.

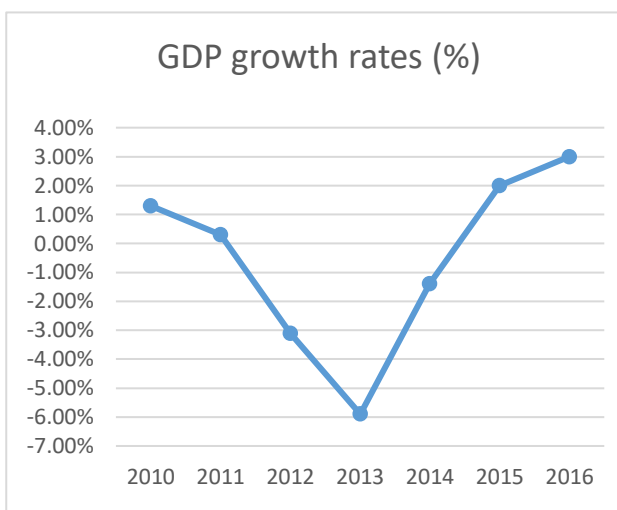


Figure 1 GDP growth rates (%)

Domestic demand is expected to be the main growth driver.

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.

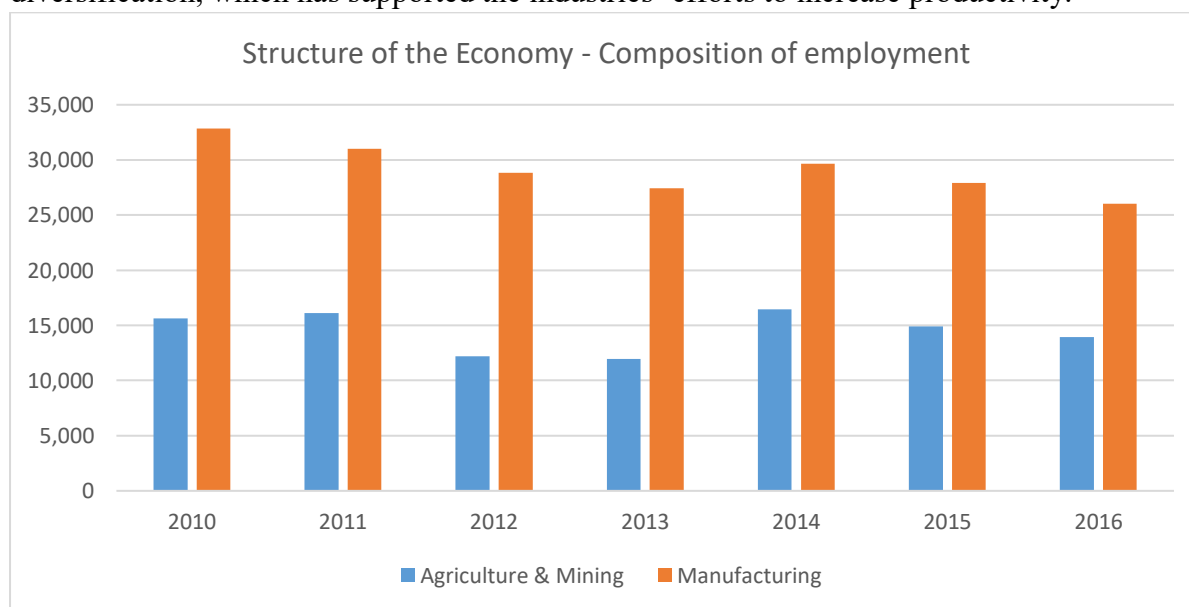


Figure 2 Structure of the Economy - Composition of employment

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)

Socio-demographic environment

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.

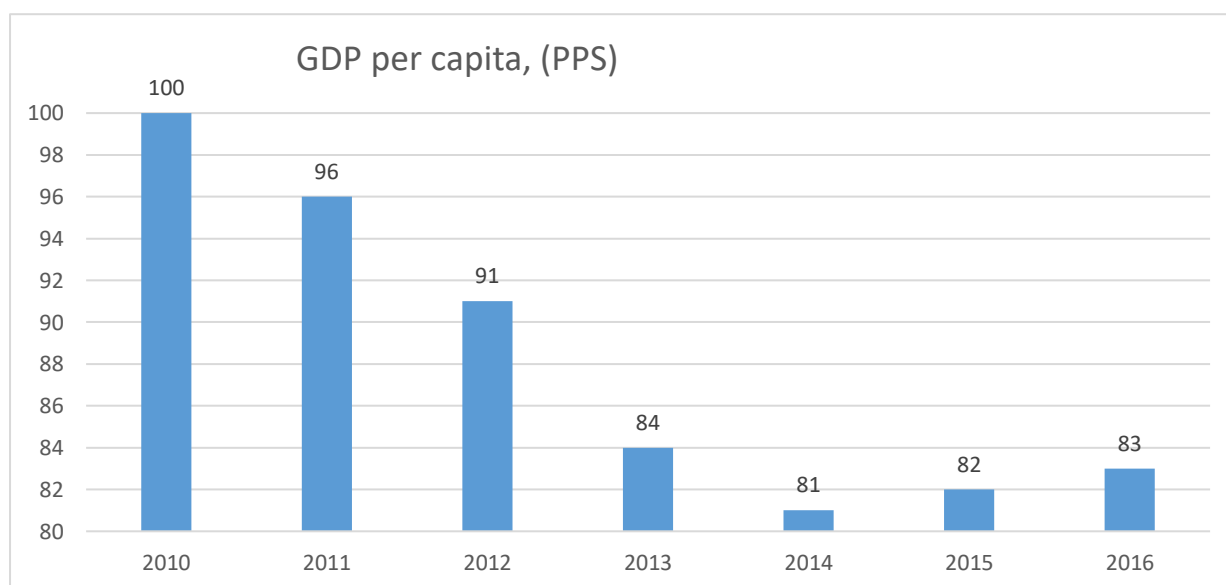


Figure 4 GDP per capita, (PPS)

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.

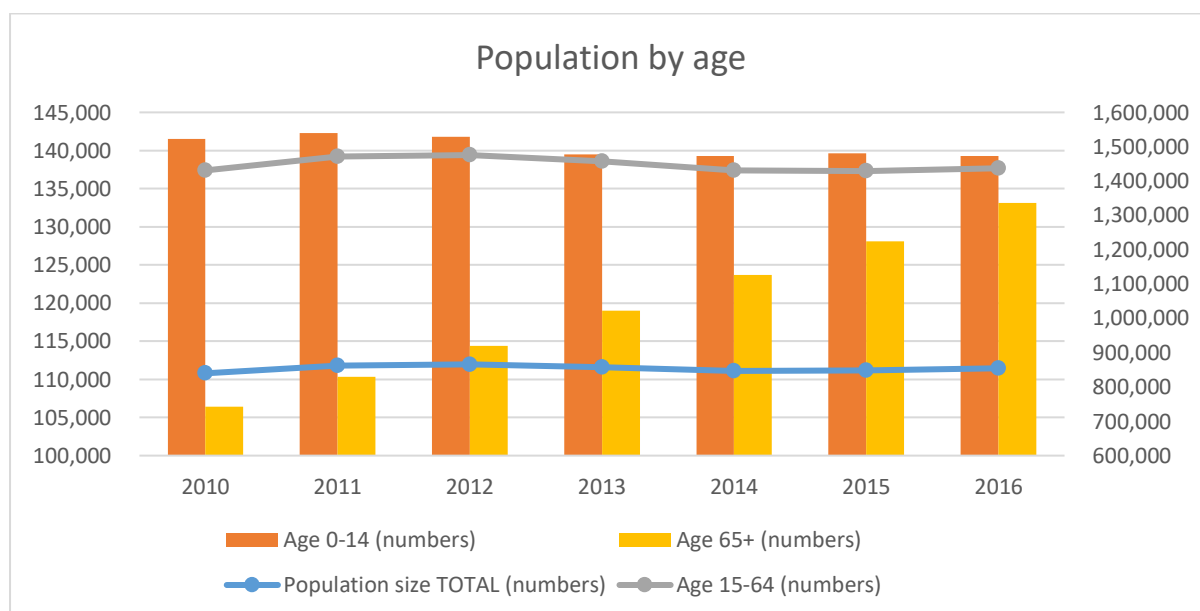


Figure 5 Population by age

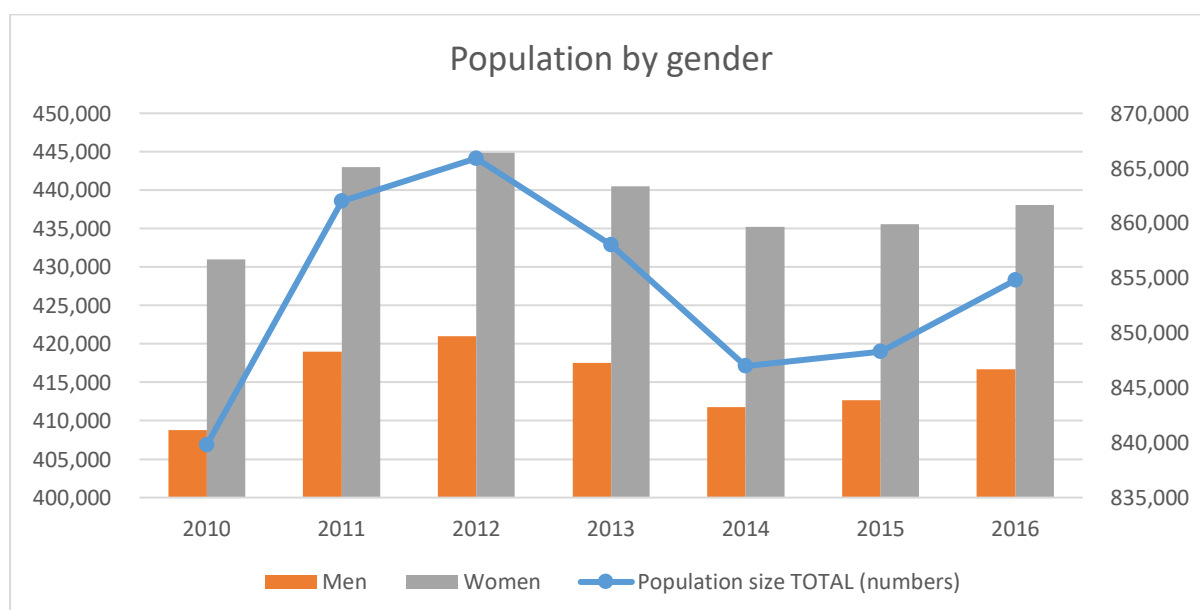


Figure 6 Population by gender

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.

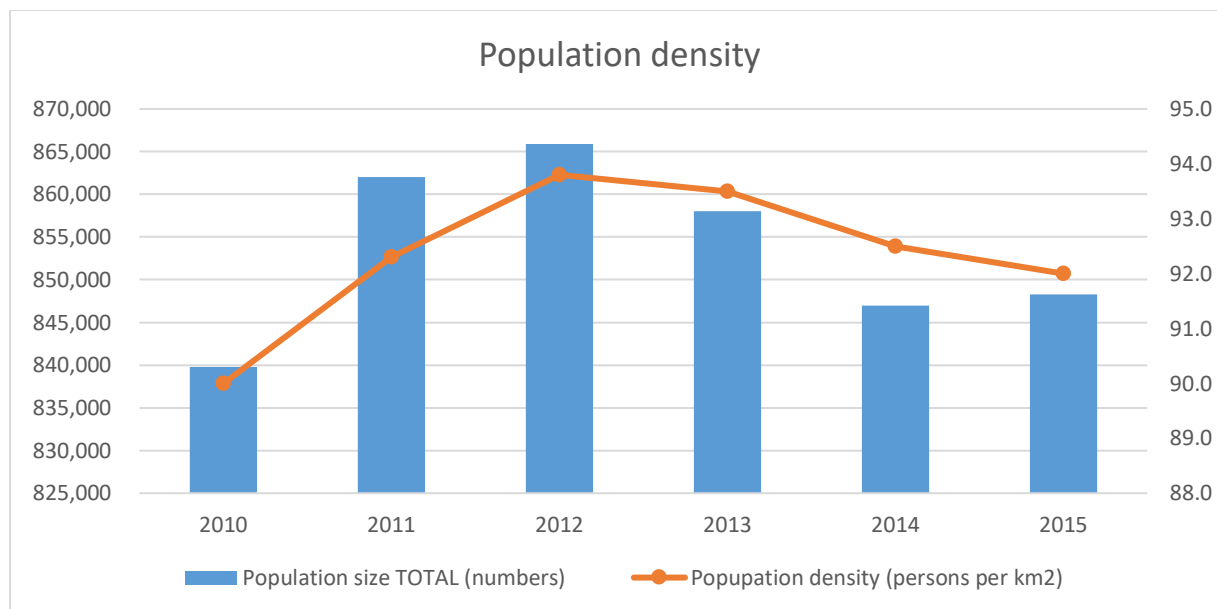


Figure 7 Population density

Active Labour Force Data

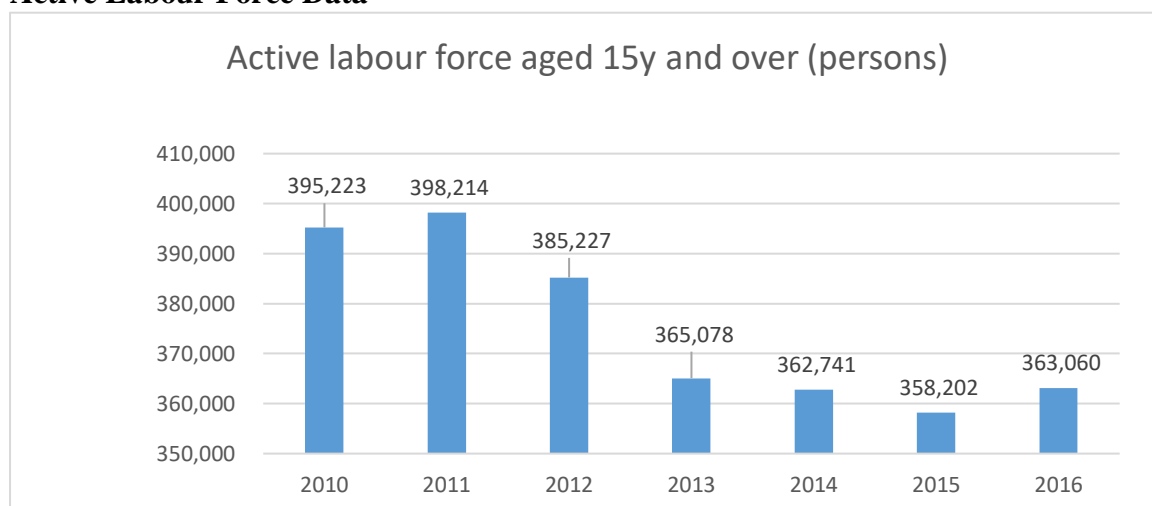


Figure 8 Active labour force aged 15y and over (persons)

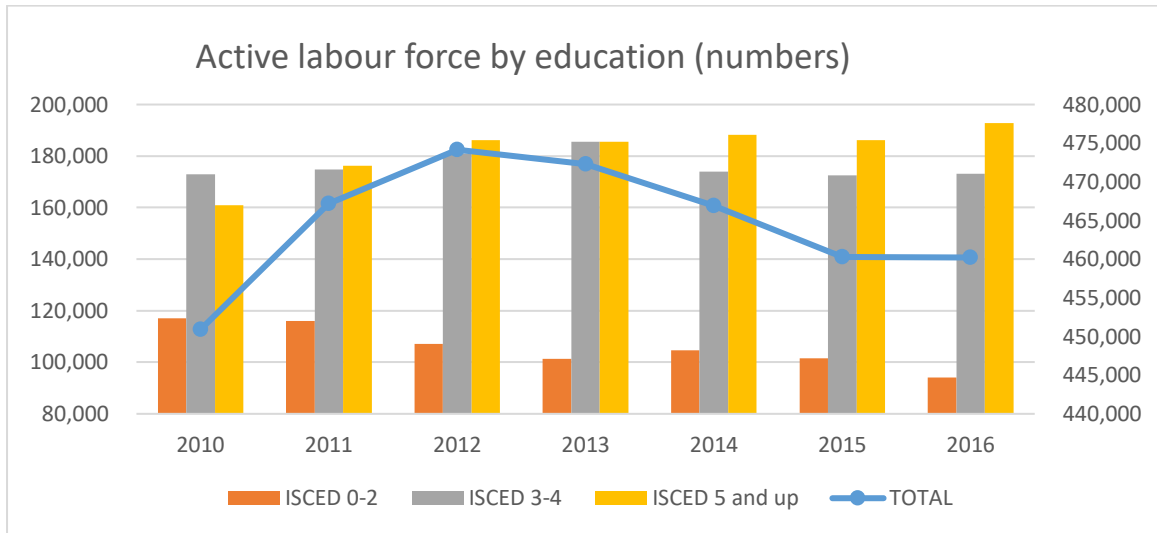


Figure 9 Active labour force by education (numbers)

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 in the overall GDP 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.

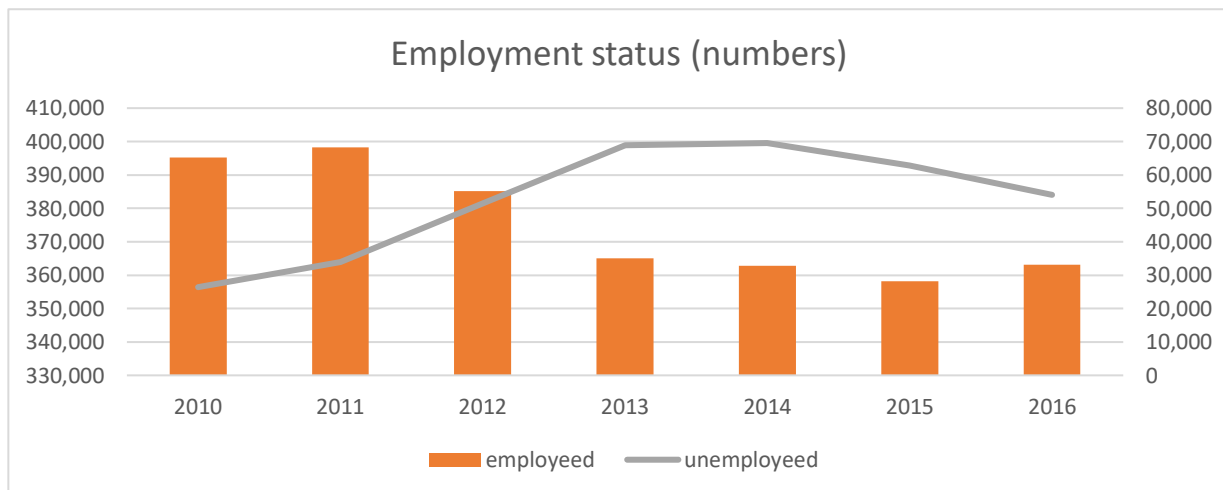


Figure 10 Employment status (numbers)

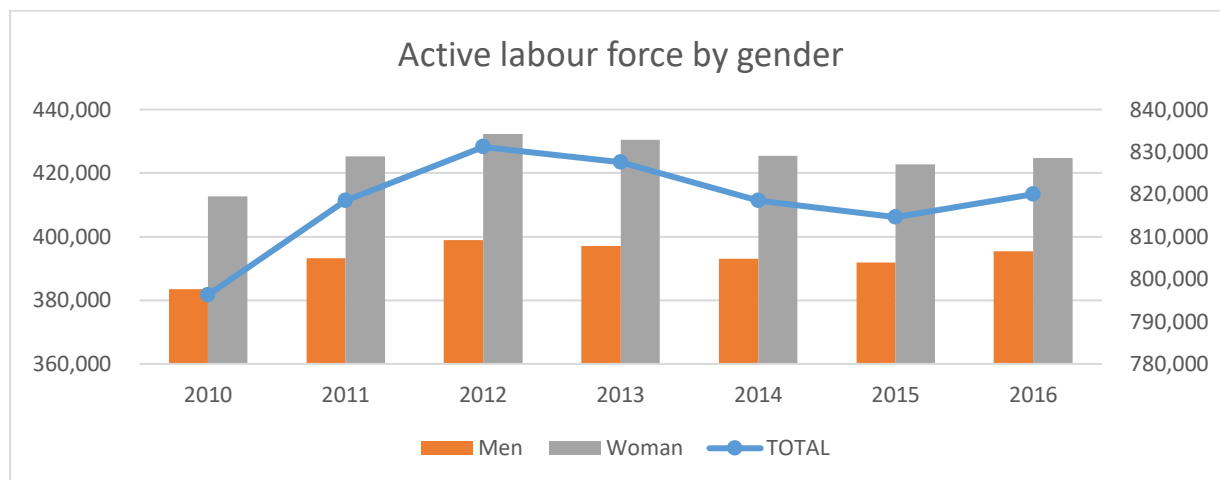


Figure 11 Active labour force by gender

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.

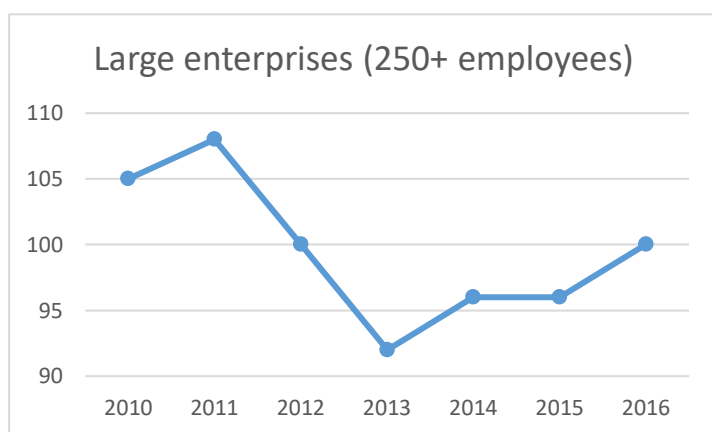


Figure 12 Large enterprises (250+ employees)

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.

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%

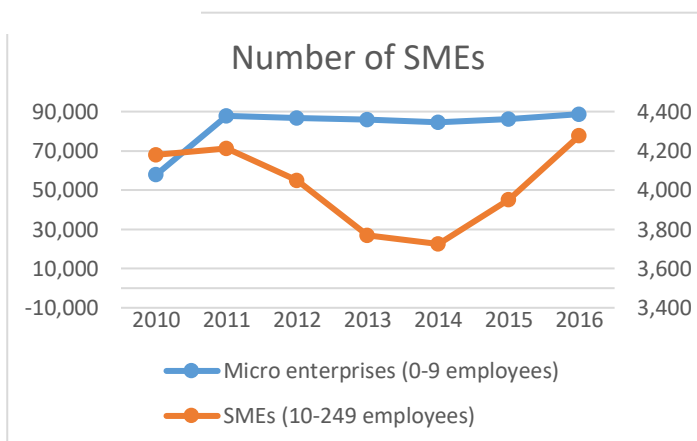


Figure 13 Number of SMEs

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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 the 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.

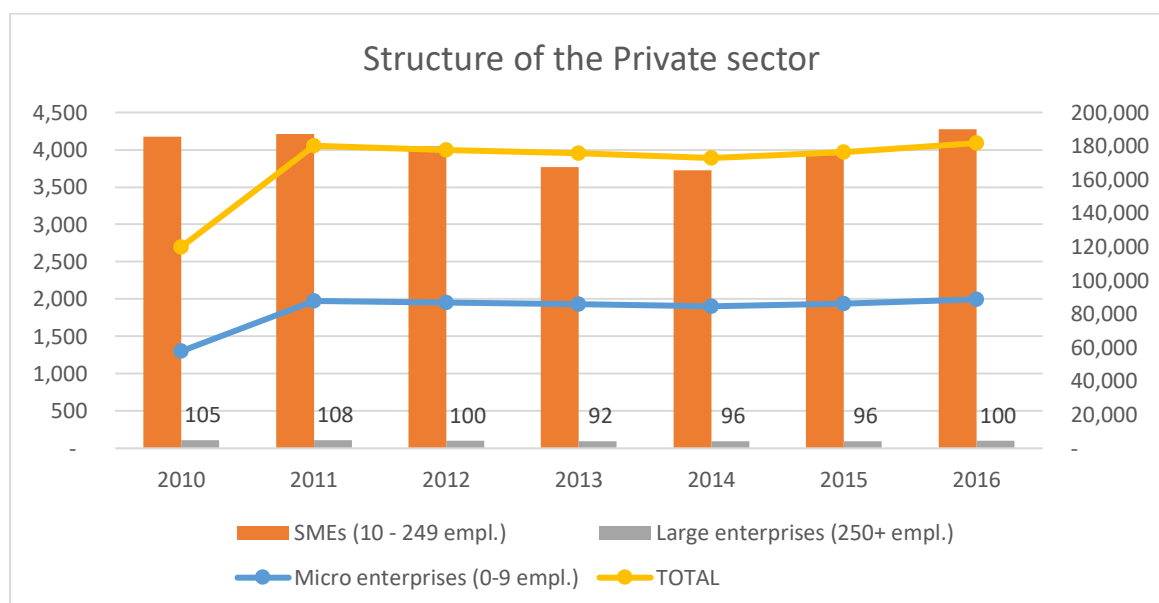


Figure 14 Structure of the Private sector

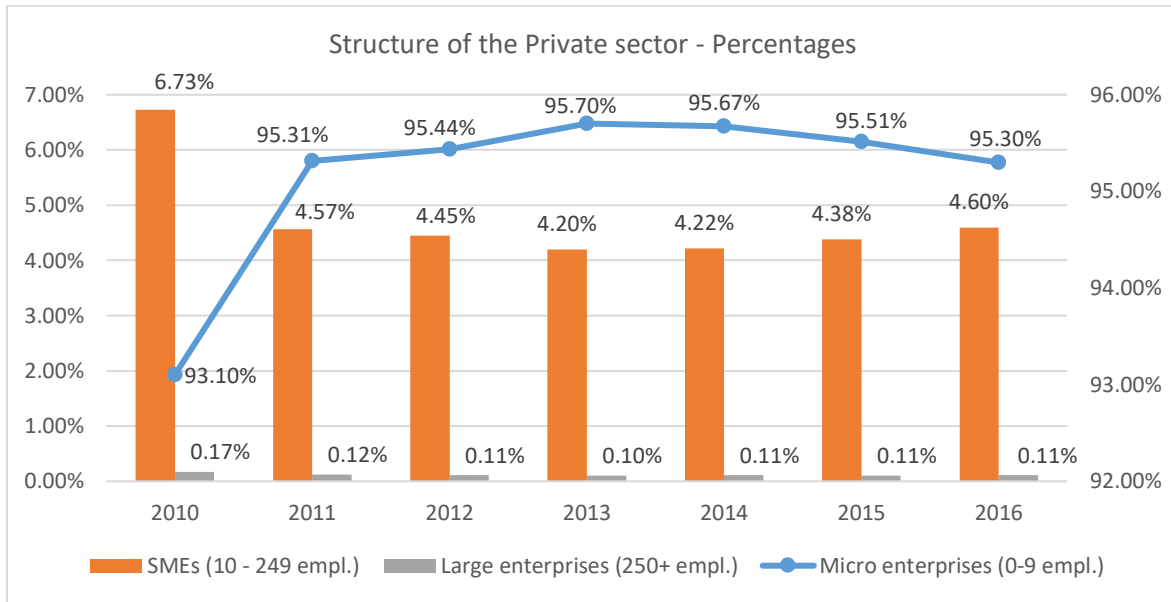


Figure 15 Structure of the Private sector - Percentages

Innovation Environment and Performance

Description of the Regional 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.

Human Capital and R&D activities in the region

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.

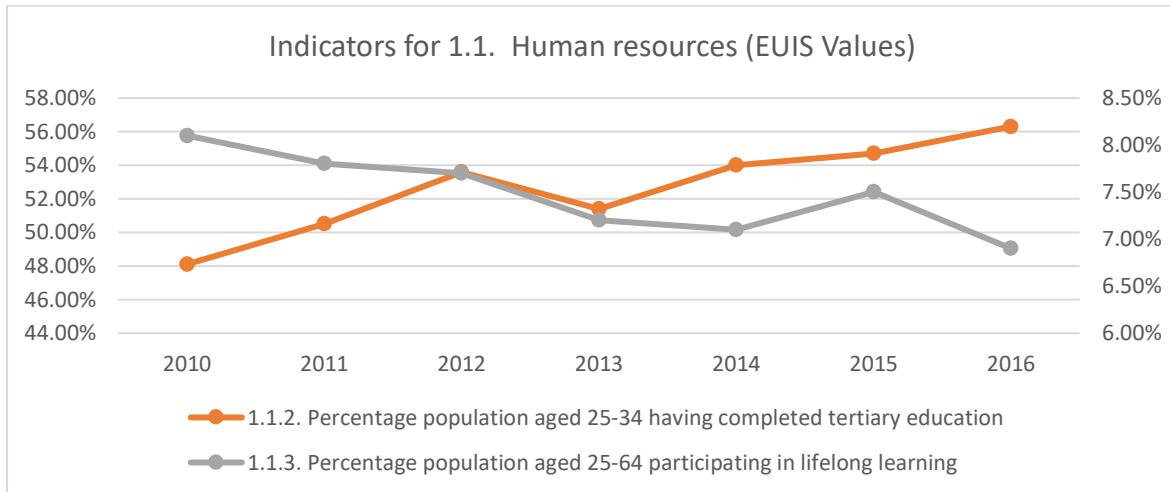


Figure 16 Indicators for 1.1. Human resources (EUIS Values)

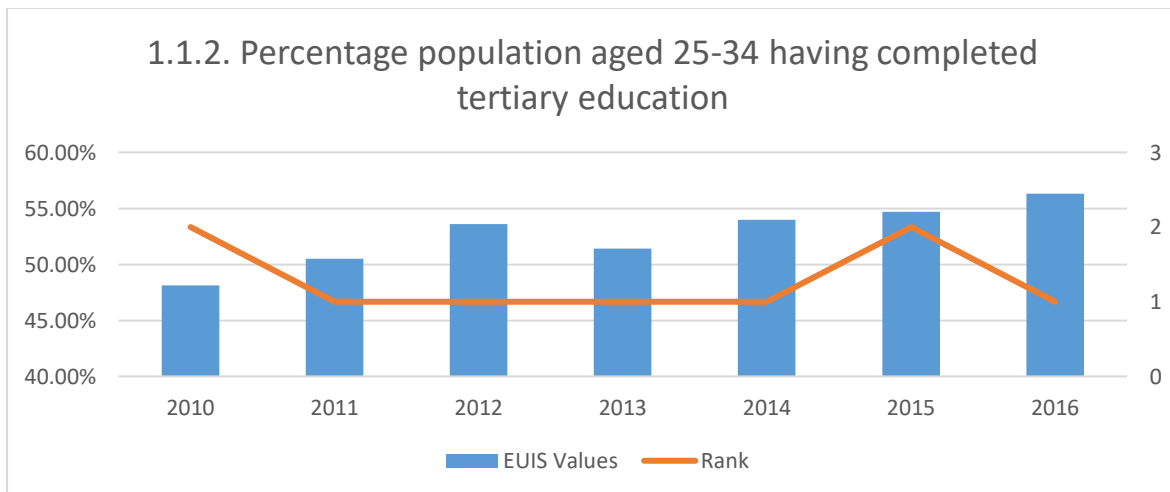


Figure 17 1.1.2. Percentage population aged 25-34 having completed tertiary education

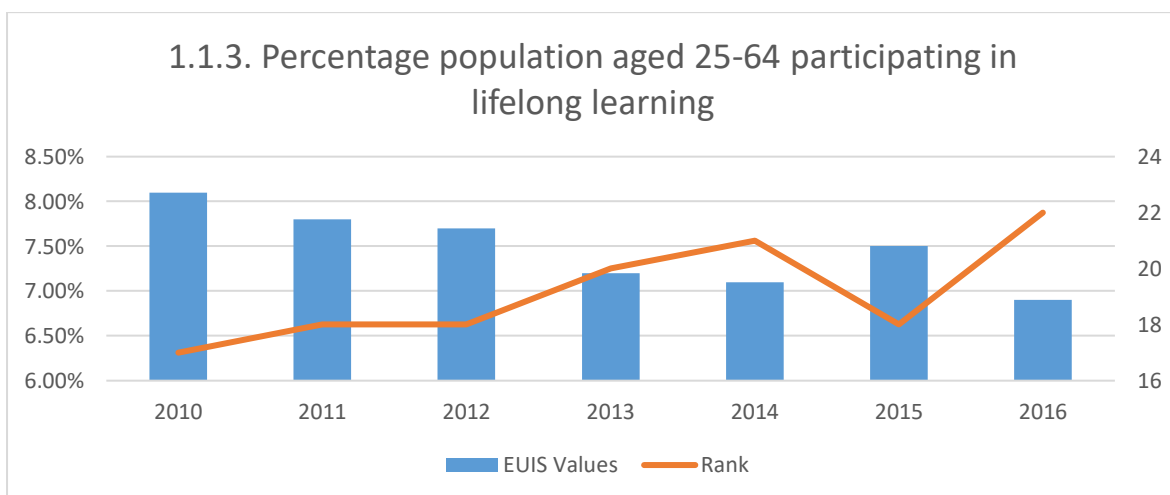


Figure 18 1.1.3. Percentage population aged 25-64 participating in lifelong learning

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.

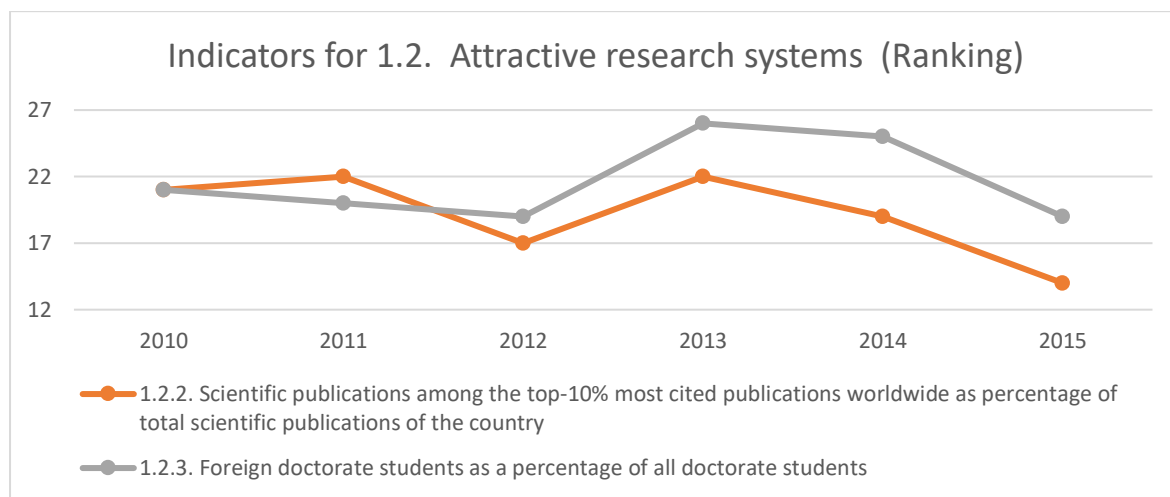


Figure 19 Indicators for 1.2. Attractive research systems (Ranking)

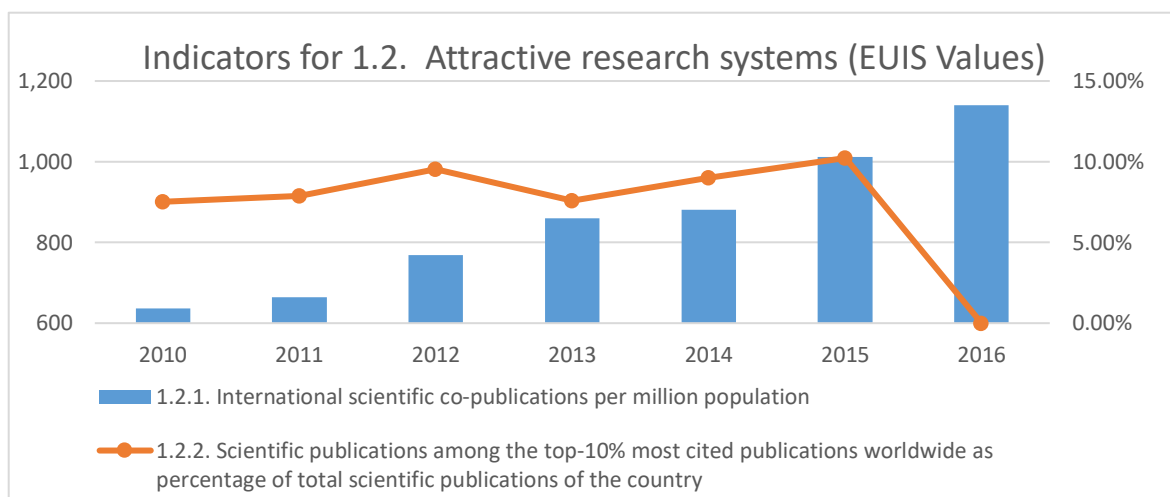


Figure 20 Indicators for 1.2. Attractive research systems (EUIS Values)

Regional investments in R&D

Cyprus' ranking regarding the Public Sector R&D expenditure has not changed considerably during the examined period (2010-2017) 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).

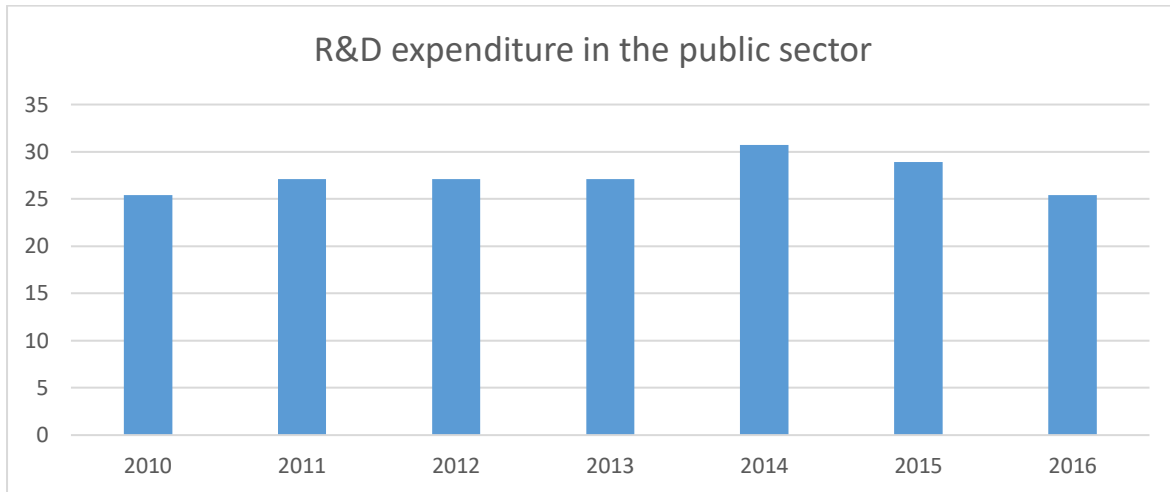


Figure 21 R&D expenditure in the public sector

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.

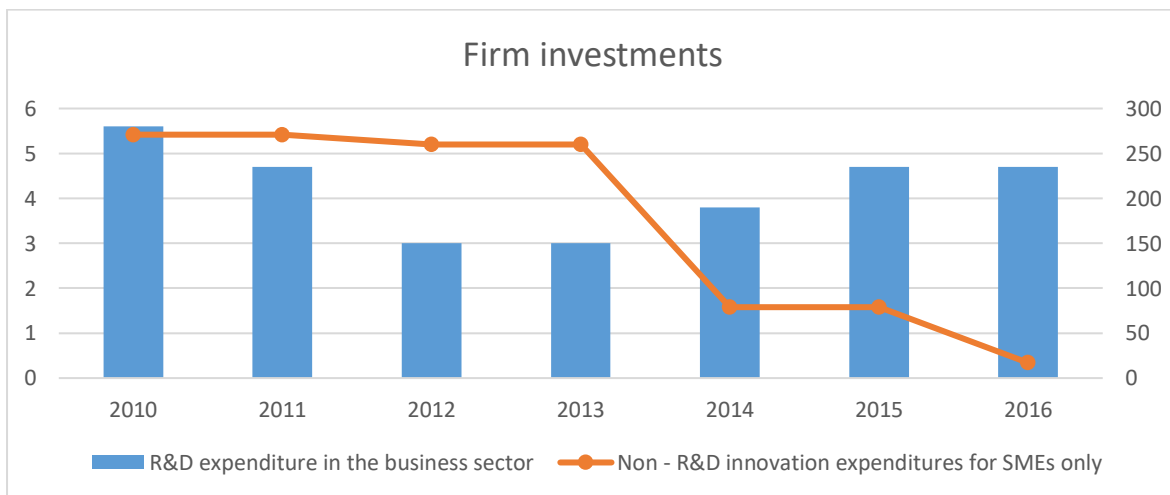


Figure 22 Firm investments

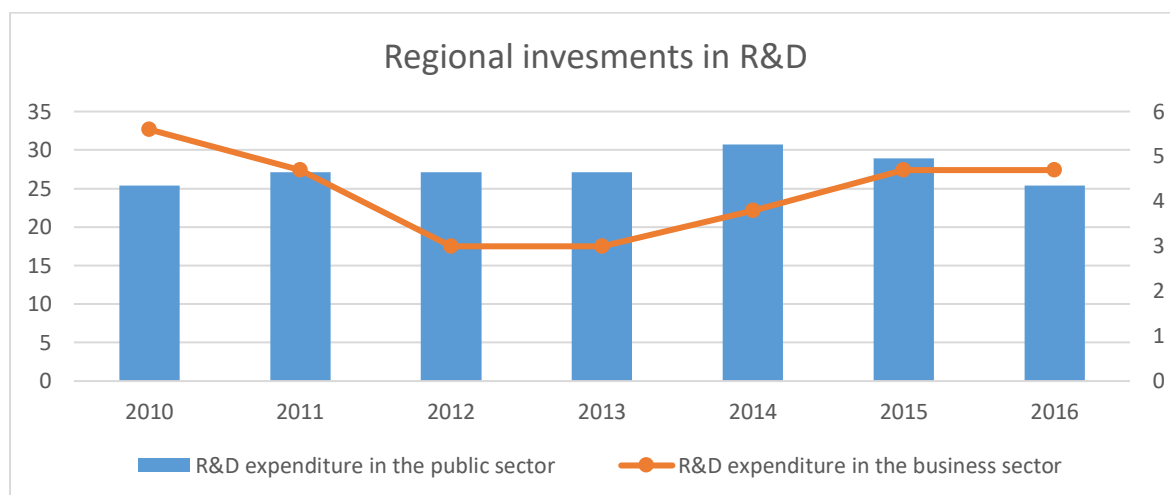


Figure 23 Regional investments in R&D

Regional Innovation activities

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.

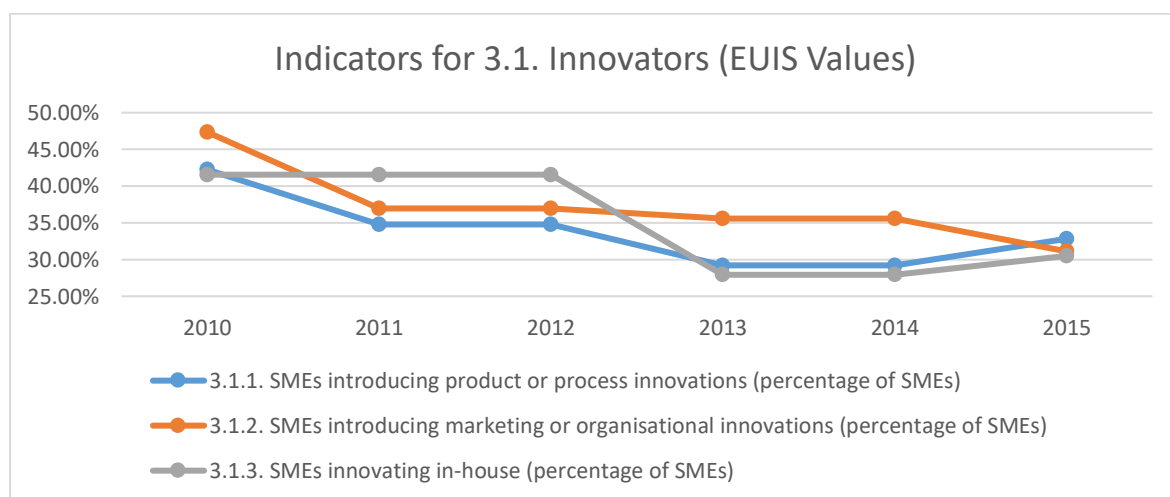


Figure 24 Indicators for 3.1. Innovators (EUIS Values)

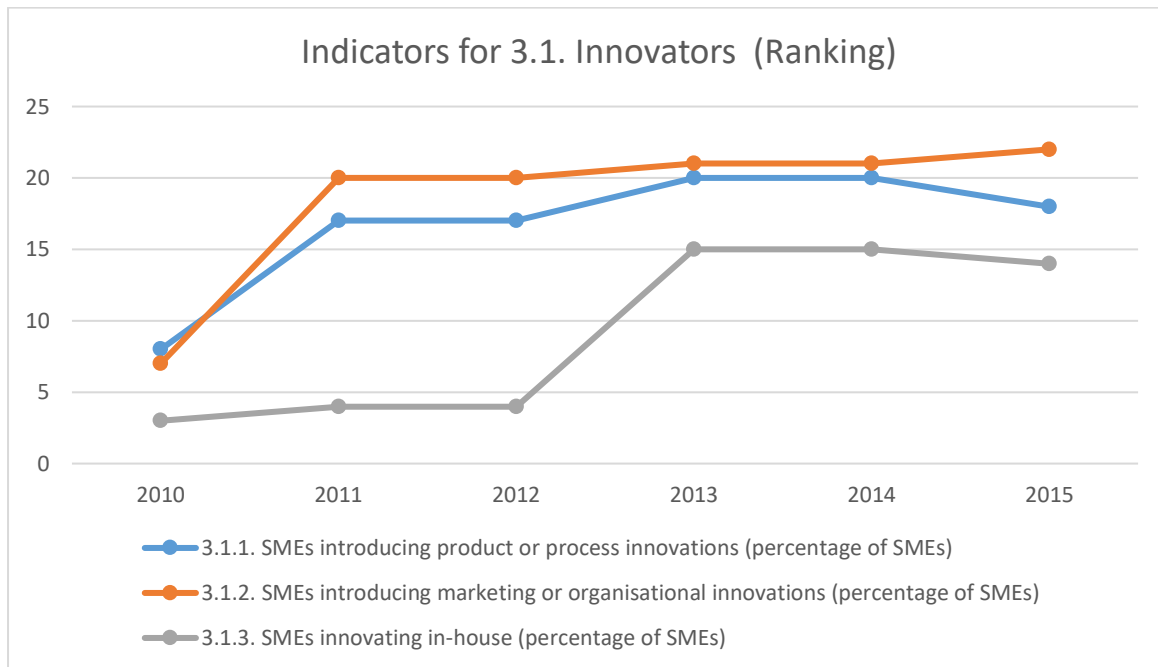


Figure 25 Indicators for 3.1. Innovators (Ranking)

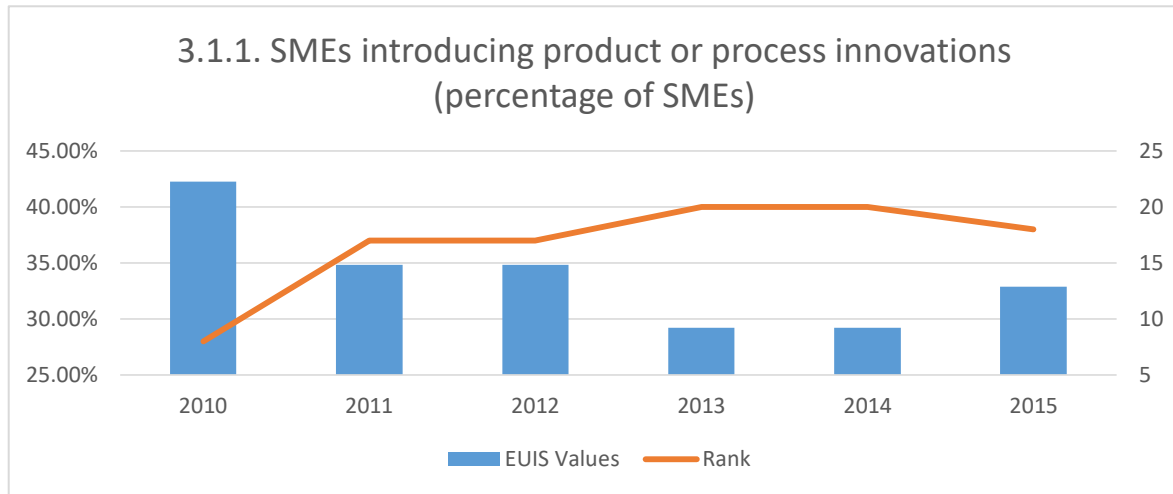


Figure 26 3.1.1. SMEs introducing product or process innovations (percentage of SMEs)

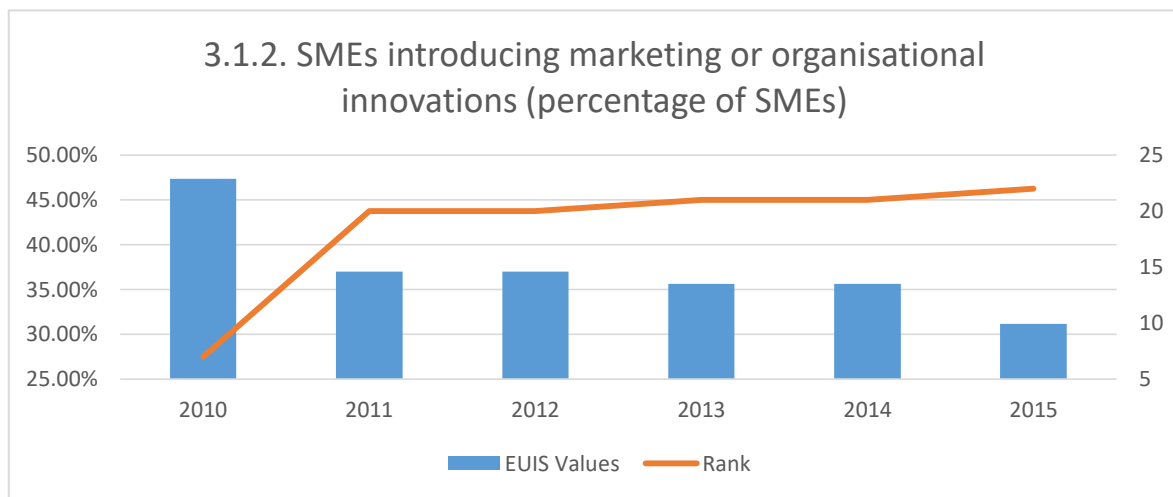


Figure 27 3.1.2. SMEs introducing marketing or organisational innovations (percentage of SMEs)

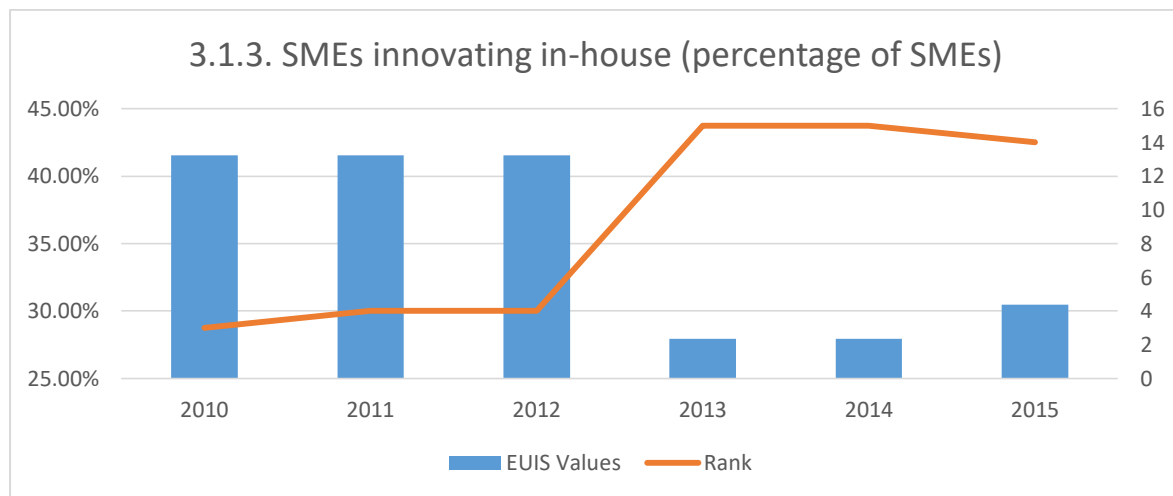


Figure 28 3.1.3. SMEs innovating in-house (percentage of SMEs)

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.

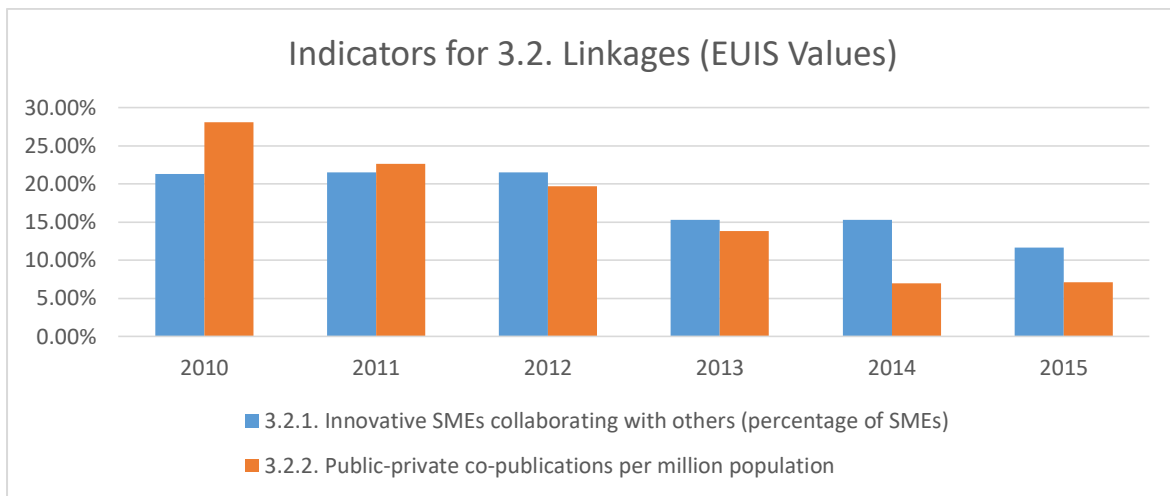


Figure 29 3.1.3. SMEs innovating in-house (percentage of SMEs)

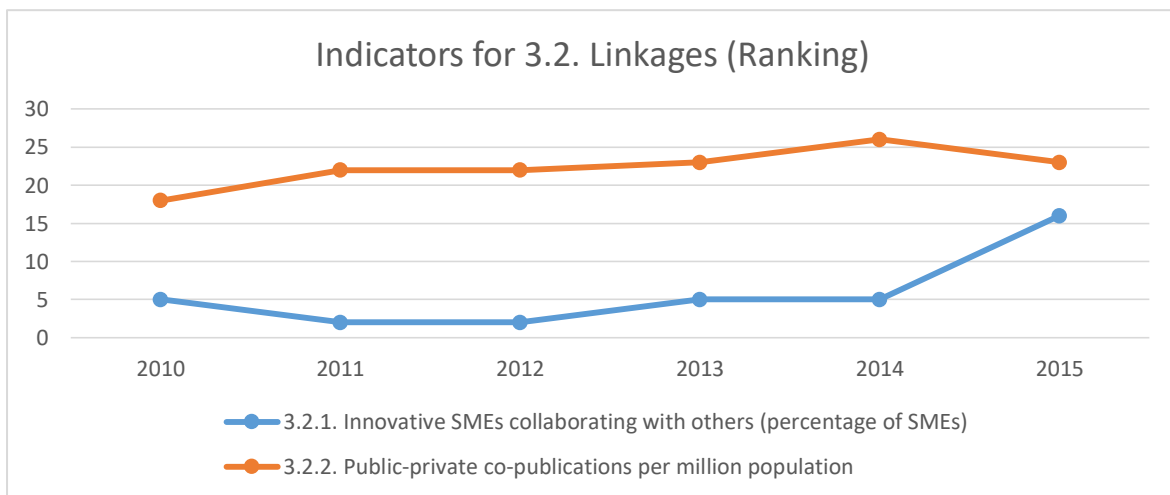


Figure 30 Indicators for 3.2. Linkages (Ranking)

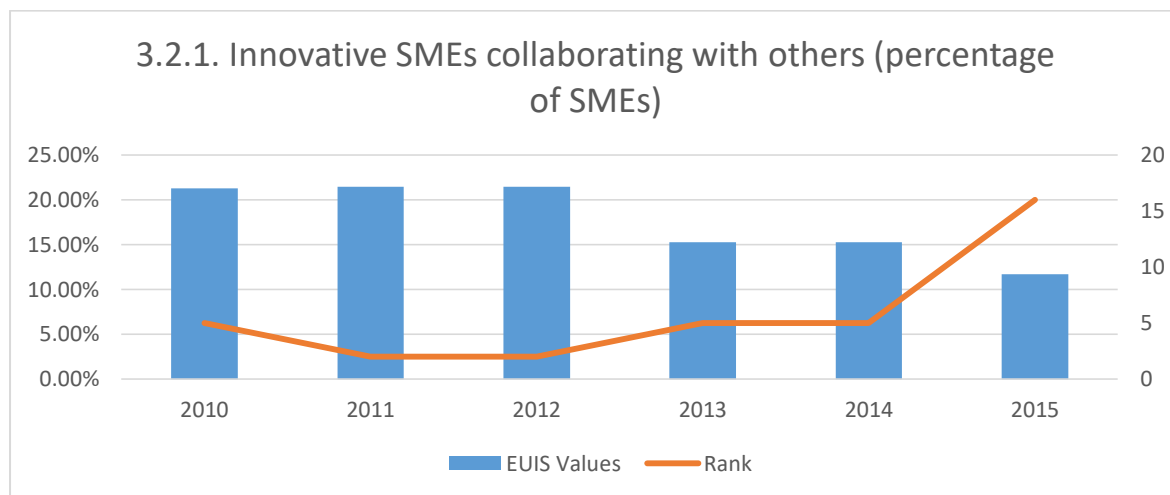


Figure 31 3.2.1. Innovative SMEs collaborating with others (percentage of SMEs)

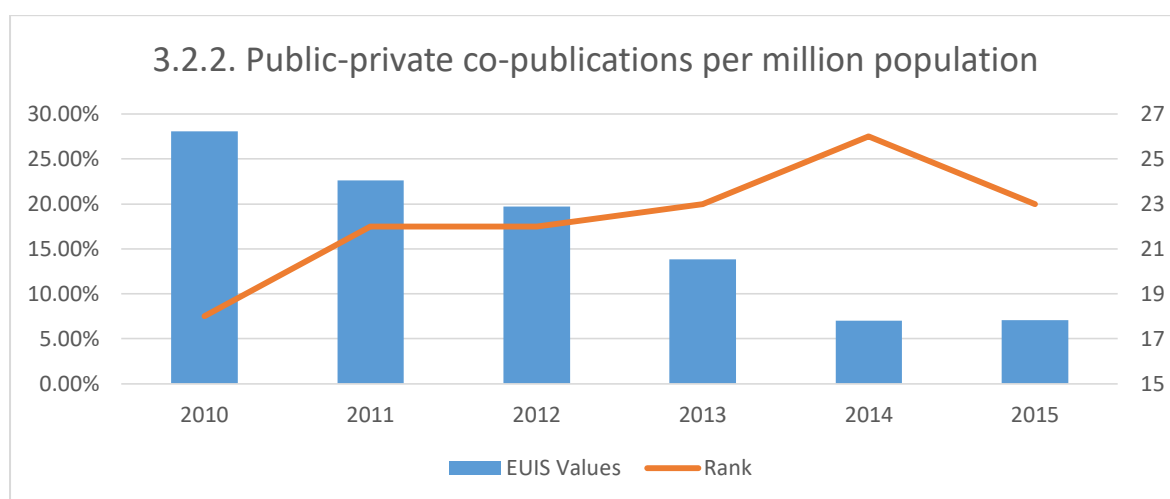


Figure 32 3.2.2. Public-private co-publications per million population

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.

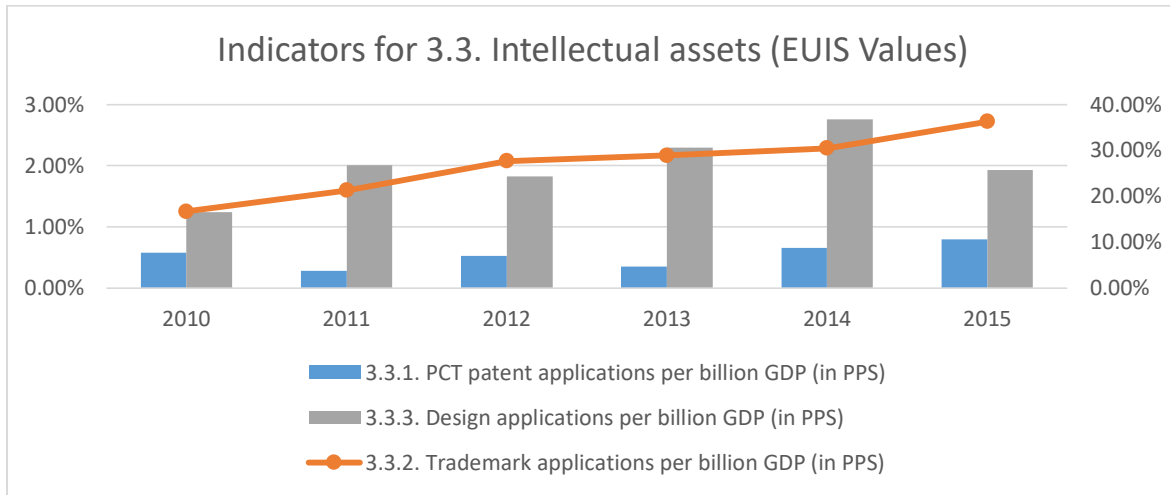


Figure 33 Indicators for 3.3. Intellectual assets (EUIS Values)

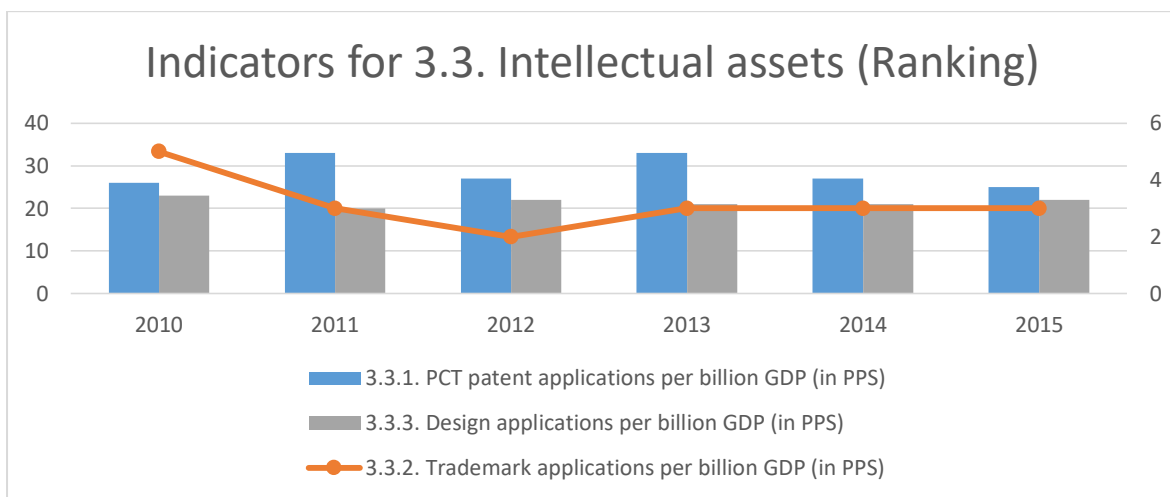


Figure 34 Indicators for 3.3. Intellectual assets (Ranking)

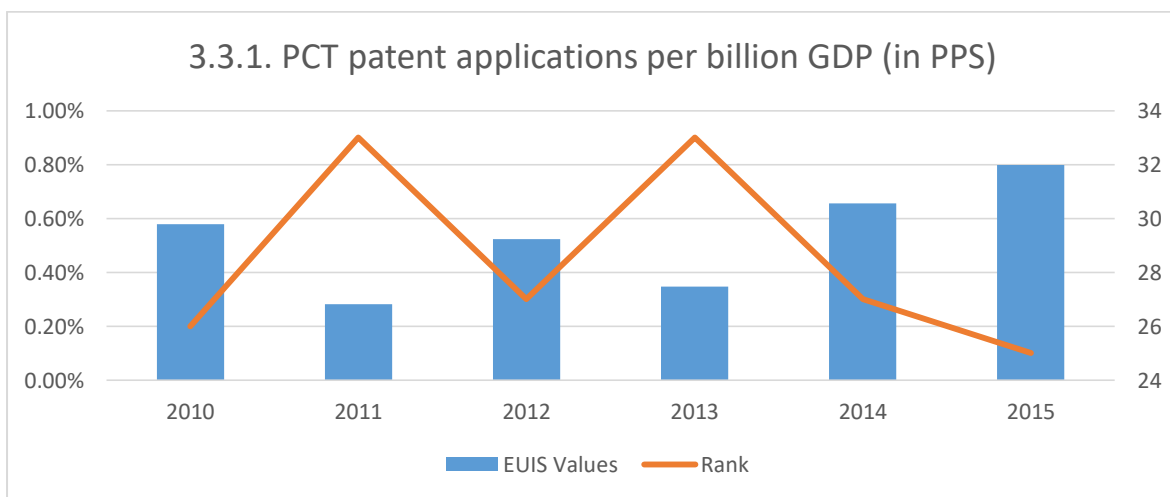


Figure 35 3.3.1. PCT patent applications per billion GDP (in PPS)

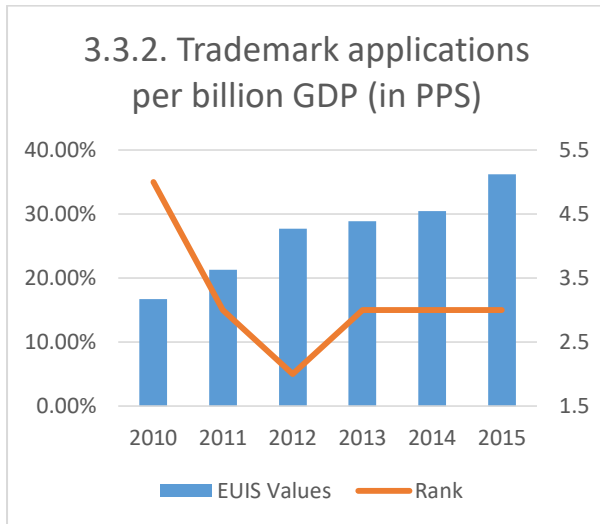


Figure 36 3.3.2. Trademark applications per billion GDP (in PPS)

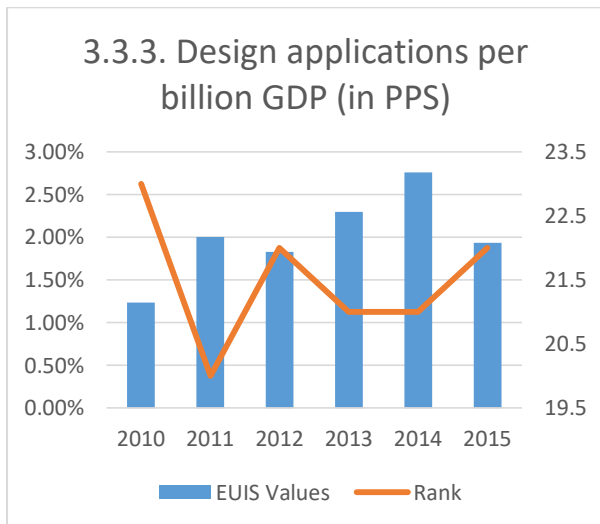


Figure 37 3.3.3. Design applications per billion GDP (in PPS)

Dominant Emerging Industries

Employment in MHT manufacturing and knowledge-intensive activities has shown a parallel path and both have experienced great variation over the examined period. Both have rapidly developed over the 2010-2013 period to first stabilize in 2014 and suffer a drop in 2015 to slightly increase in 2016. At the moment it is not clear how the trend following will develop over the next period, but since those two sectors showed a relative resistance during the period of economic crisis, it is not impossible that they will both continue this initial 2016 recovery.

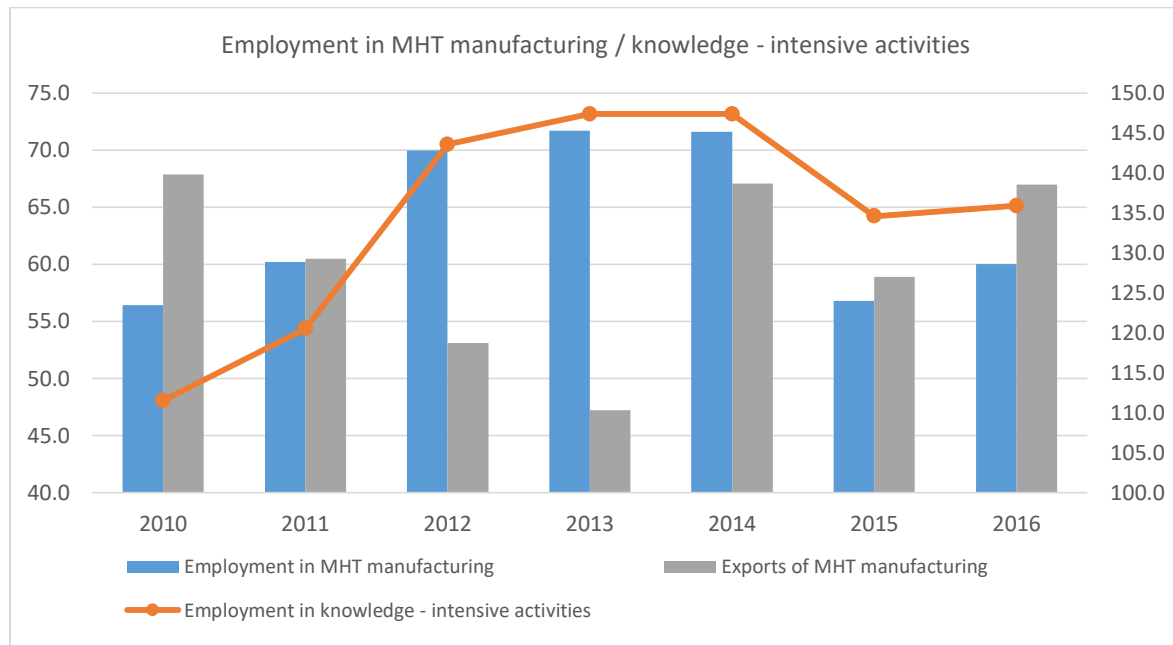


Figure 38 Employment in MHT manufacturing/knowledge-intensive activities

Creative Industries

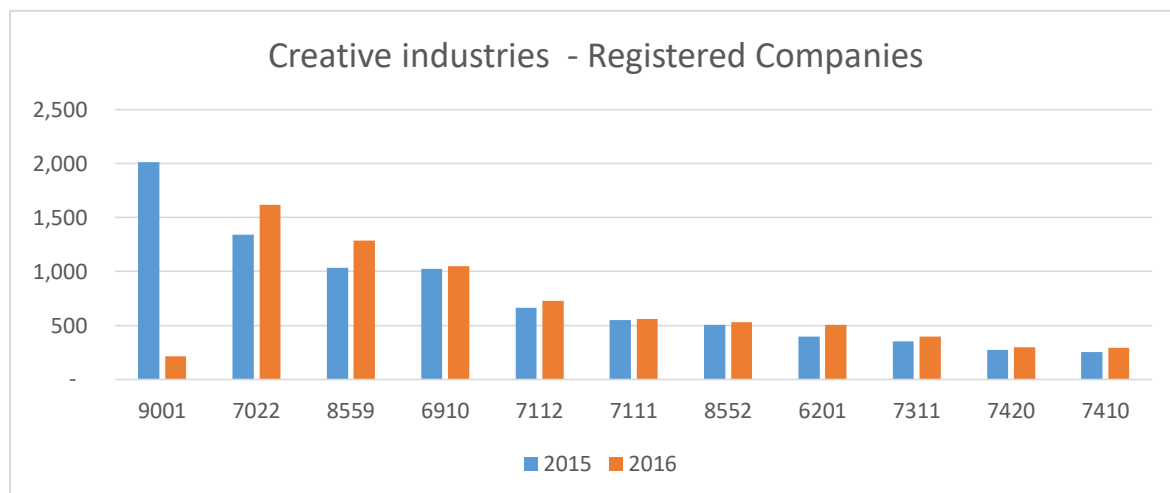


Figure 39 Creative industries - Registered Companies

Creative Industries have changed dramatically between 2015 and 2016, as the number of registered companies of the leading sector of Performance and Art has collapsed. Other activities present small increase in registered companies numbers

9001	Performing artists and producers of artistic and literary work
7022	Business and other management consultancy activities
8559	Other education n.e.c.
6910	Legal activities
7112	Engineering activities and related technical consultancy
7111	Architect's office
8552	Cultural education
6201	Computer programming activities
7311	Advertising agencies
7420	Photographic activities
7410	Specialised design activities

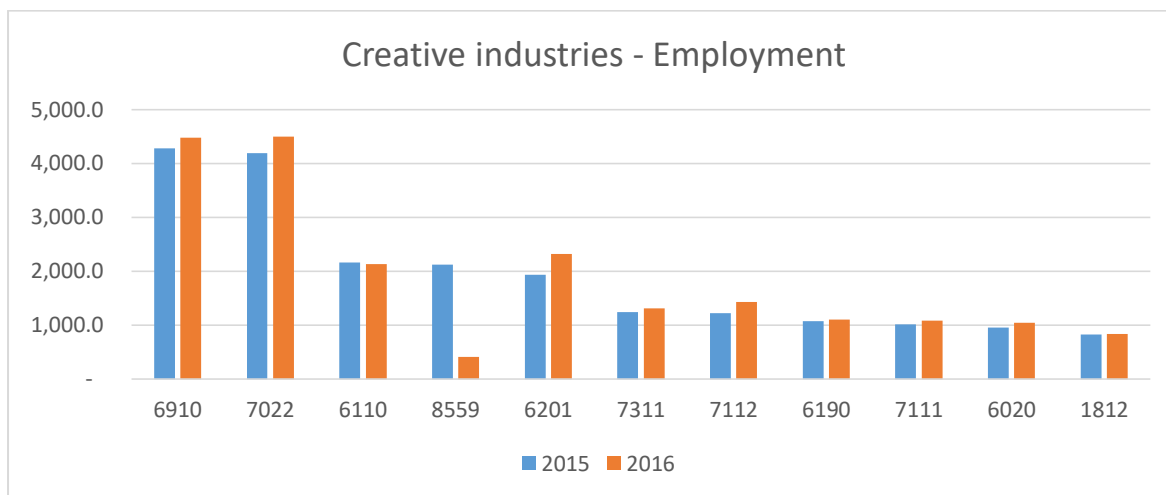


Figure 40 Creative industries - Employment

Employment in Creating Industries has largely retained its characteristics with the one major difference marked in Education sector which saw significant fall.

6910	Legal activities
7022	Business and other management consultancy activities
6110	Wired telecommunications activities
8559	Other education n.e.c.
6201	Computer programming activities
7311	Advertising agencies
7112	Engineering activities and related technical consultancy
6190	Other telecommunications activities
7111	Architect's office
6020	Television programming and broadcasting activities
1812	Other printing

Eco Industries

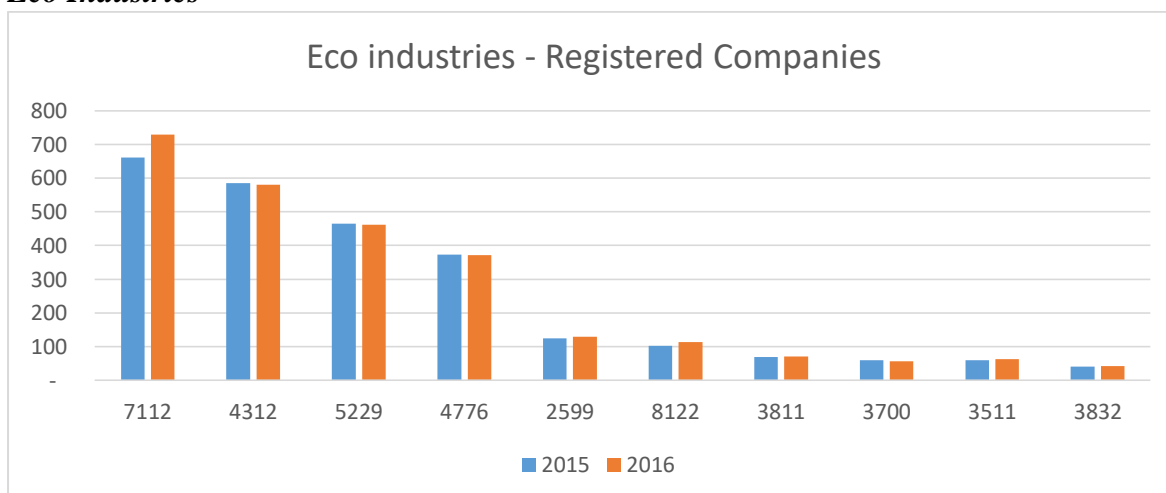


Figure 41 Eco industries - Registered Companies

The Eco Industries sector identity remained stable between 2015 and 2016. Engineering and construction-related and support activities lead the sector in the number of registered

companies with retail following. Other sectors appear much smaller in registered company numbers.

7112	Engineering activities and related technical consultancy
4312	Site preparation
5229	Other transportation support activities
4776	Retail sale of flowers, plants, seeds, fertilizers, pet animals and pet food in specialized stores
2599	Manufacture of other fabricated metal products
8122	Other building and industrial cleaning activities
3811	Collection of non-hazardous waste
3700	Sewerage
3511	Production of electricity
3832	Recovery of sorted materials

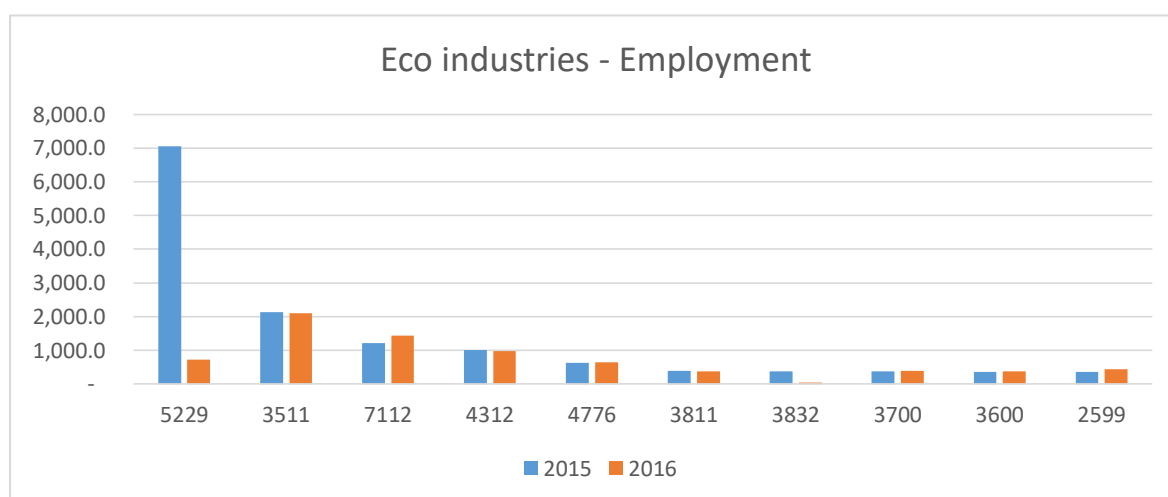


Figure 42 Eco industries - Employment

Employment in Eco Industries saw a significant fall in the lead sector of Other transportation support activities but has otherwise largely retained its characteristics.

5229	Other transportation support activities
3511	Production of electricity
7112	Engineering activities and related technical consultancy
4312	Site preparation
4776	Retail sale of flowers, plants, seeds, fertilizers, pet animals and pet food in specialized stores
3811	Collection of non-hazardous waste
3832	Recovery of sorted materials
3700	Sewerage
3600	Water collection, treatment, and supply
2599	Manufacture of other fabricated metal products

Experience Industries

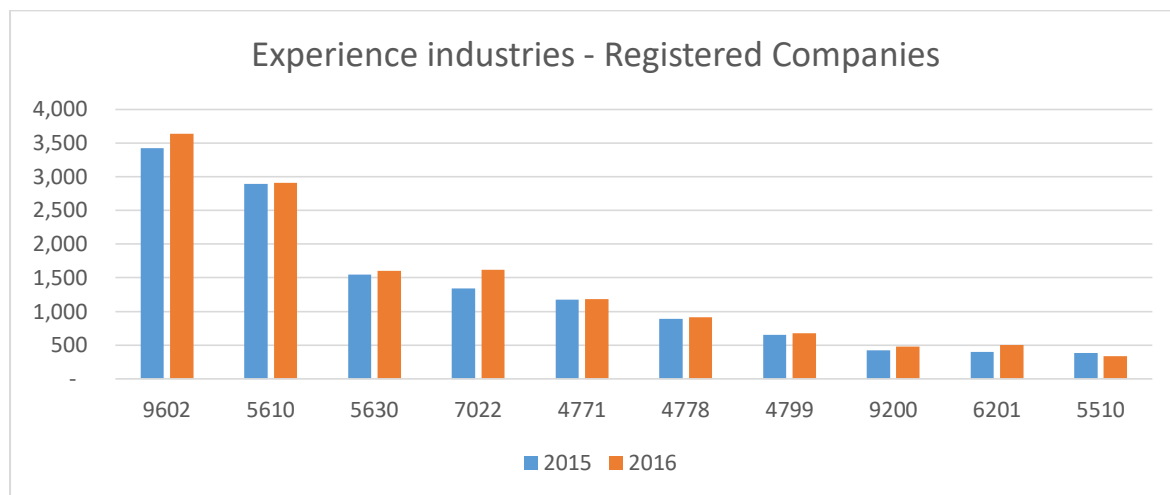


Figure 43 Experience industries - Registered Companies

The Experience Industries identity remained stable between 2015 and 2016, while the number of registered companies increased in its leading sectors. Hairdressing and beauty treatment and Restaurant and Mobile Food services are the definite leaders

9602	Hairdressing and other beauty treatment
5610	Restaurants and mobile food service activities
5630	Beverage serving activities
7022	Business and other management consultancy activities
4771	Retail sale of clothing in specialized stores
4778	Other retail sale of new goods in specialized stores
4799	Other retail sale not in stores, stalls or markets
9200	Gambling and betting activities
6201	Computer programming activities
5510	Hotels and similar accommodation

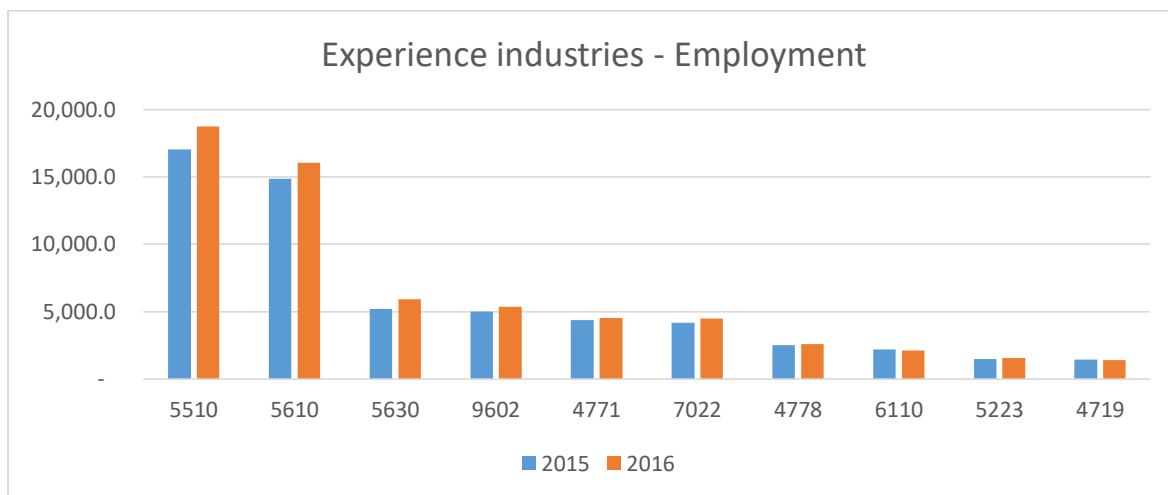


Figure 44 Experience industries - Employment

Employment in Experience Industries has largely retained its characteristics with the two major sectors being Hotels and Restaurants and Mobile Food Services.

5510	Hotels and similar accommodation
5610	Restaurants and mobile food service activities
5630	Beverage serving activities
9602	Hairdressing and other beauty treatment
4771	Retail sale of clothing in specialized stores
7022	Business and other management consultancy activities
4778	Other retail sale of new goods in specialized stores
6110	Wired telecommunications activities
5223	Service activities incidental to air transportation
4719	Other retail sale in non-specialised stores

Maritime Industries

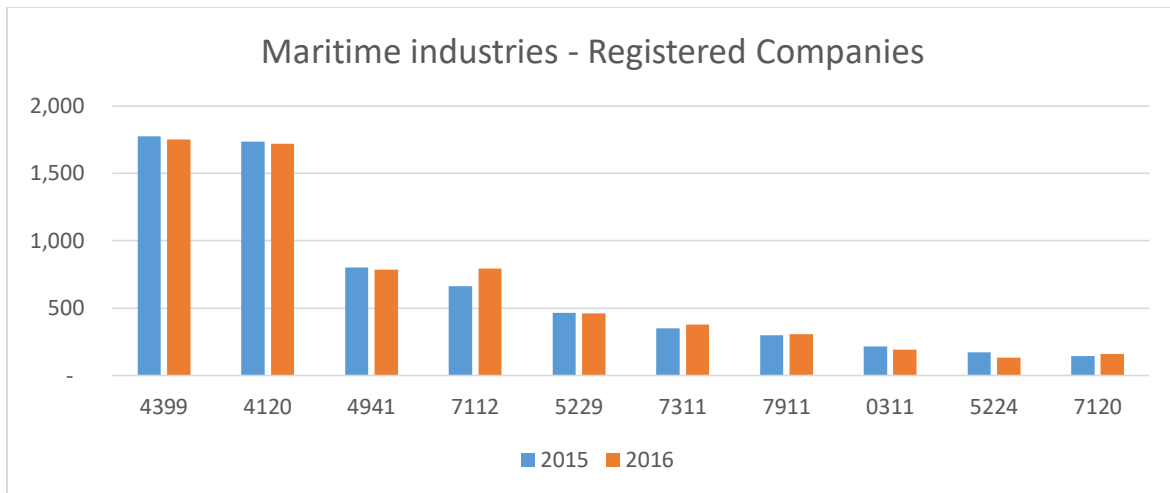


Figure 45 Maritime industries - Registered Companies

The Maritime Industries identity remained stable between 2015 and 2016, while the number of registered companies slightly decreased in its leading sectors. These remain Specialized Construction Services and Construction of Building as the definite leading sectors.

4399	Other specialized construction activities n.e.c.
4120	Construction of residential and non-residential buildings
4941	Freight transport by road
7112	Engineering activities and related technical consultancy
5229	Other transportation support activities
7311	Advertising agencies
7911	Travel agency activities
0311	Marine fishing
5224	Cargo handling
7120	Technical testing and analysis

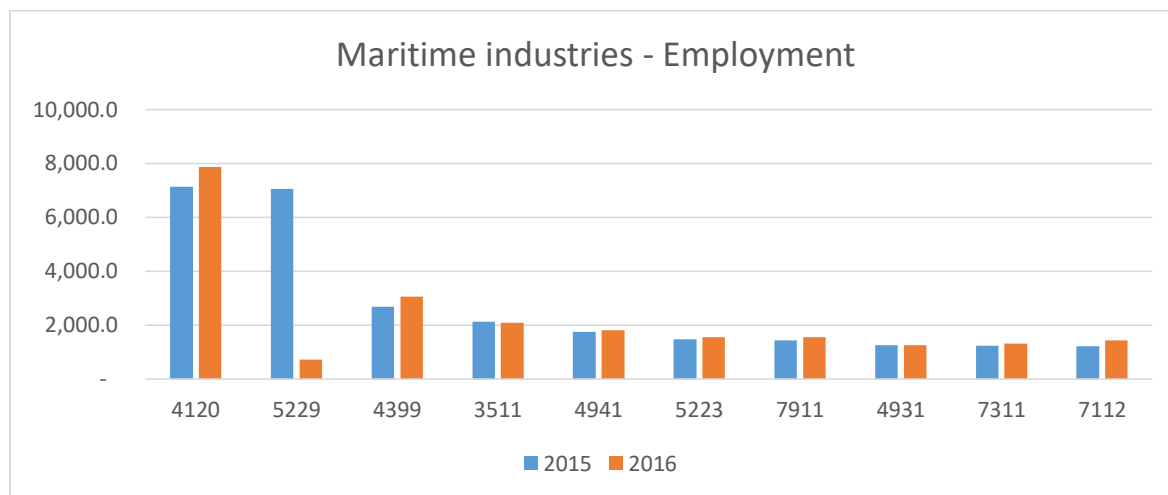


Figure 46 Maritime industries - Employment

Employment in Maritime Industries saw the leading sector of Construction increasing its employment numbers while the second place sector of 2015, Transportation and other Services saw an important collapse in numbers being out of the ten major sectors for 2016. The remaining leading sectors saw minor changes.

4120	Construction of residential and non-residential buildings
5229	Other transportation support activities
4399	Other specialized construction activities n.e.c.
3511	Production of electricity
4941	Freight transport by road
5223	Service activities incidental to air transportation
7911	Travel agency activities
4931	Urban and suburban passenger land transport
7311	Advertising agencies
7112	Engineering activities and related technical consultancy

Mobile Services Industries

The Mobile Services Industries identity remained stable between 2015 and 2016, while the number of registered companies slightly decreased for its leading sector (Specialized Construction Services) and increased for the second (Business and other management

consultancy activities).

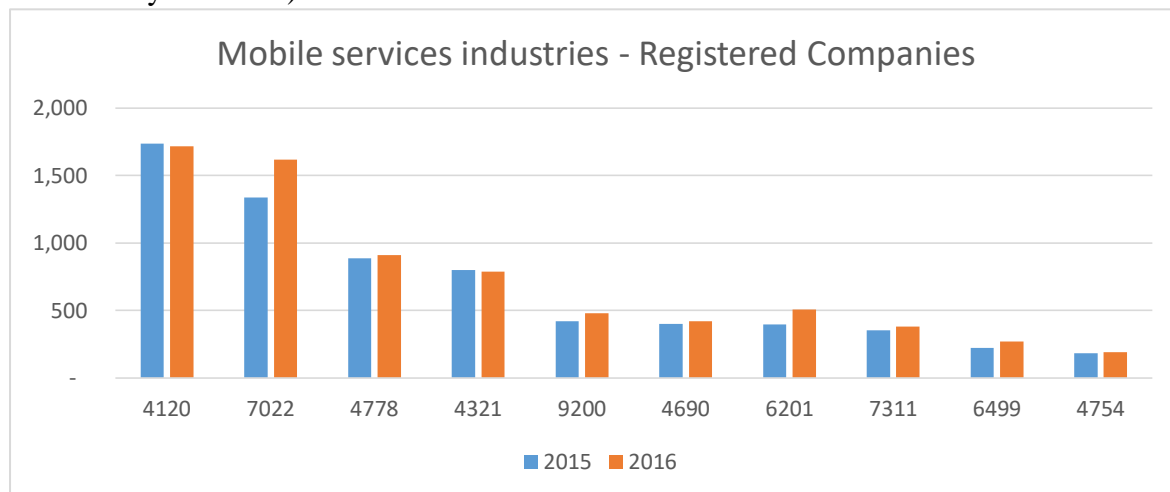


Figure 47 Mobile services industries - Registered Companies

Most of the rest of the major sectors remained largely stable in the number of registered companies.

4120	Construction of residential and non-residential buildings
7022	Business and other management consultancy activities
4778	Other retail sale of new goods in specialized stores
4321	Electrical installation
9200	Gambling and betting activities
4690	Non-specialised wholesale trade
6201	Computer programming activities
7311	Advertising agencies
6499	Other financial service activities, except insurance and pension funding
4754	Retail sale of electrical household appliances in specialized stores

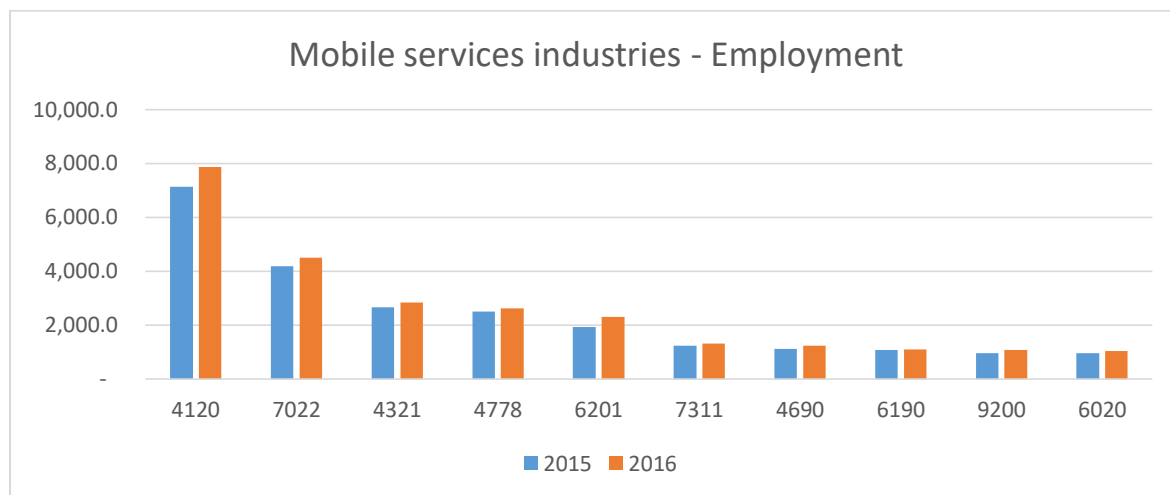


Figure 48 Mobile services industries - Employment

The Mobile Services Industries increased its employment between 2015 and 2016, in all major sectors. The leading employers remained Specialized Construction Services and Business and other management consultancy activities. All of the rest of the major sectors remained increased their employment numbers.

4120	Construction of residential and non-residential buildings
7022	Business and other management consultancy activities
4321	Electrical installation
4778	Other retail sale of new goods in specialized stores
6201	Computer programming activities
7311	Advertising agencies
4690	Non-specialised wholesale trade
6190	Other telecommunications activities
9200	Gambling and betting activities
6020	Television programming and broadcasting activities

Mobility Industries

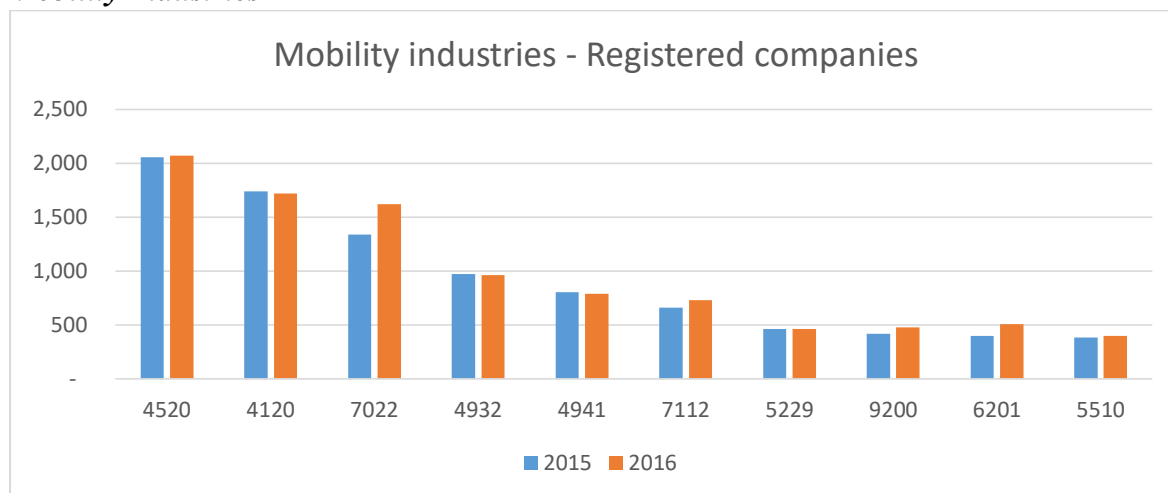


Figure 49 Mobility industries - Registered companies

The Mobility Industries identity remained stable between 2015 and 2016, while the number of registered companies slightly increased for its leading sector (Maintenance and repair of motor vehicles) and decreased for the second (Construction of residential and non-residential buildings). Most of the rest of the major sectors remained largely stable in the number of registered companies, with the sector of Business and other management consultancy activities increasing its size.

4520	Maintenance and repair of motor vehicles
4120	Construction of residential and non-residential buildings
7022	Business and other management consultancy activities
4932	Taxi operation
4941	Freight transport by road
7112	Engineering activities and related technical consultancy
5229	Other transportation support activities
9200	Gambling and betting activities
6201	Computer programming activities
5510	Hotels and similar accommodation

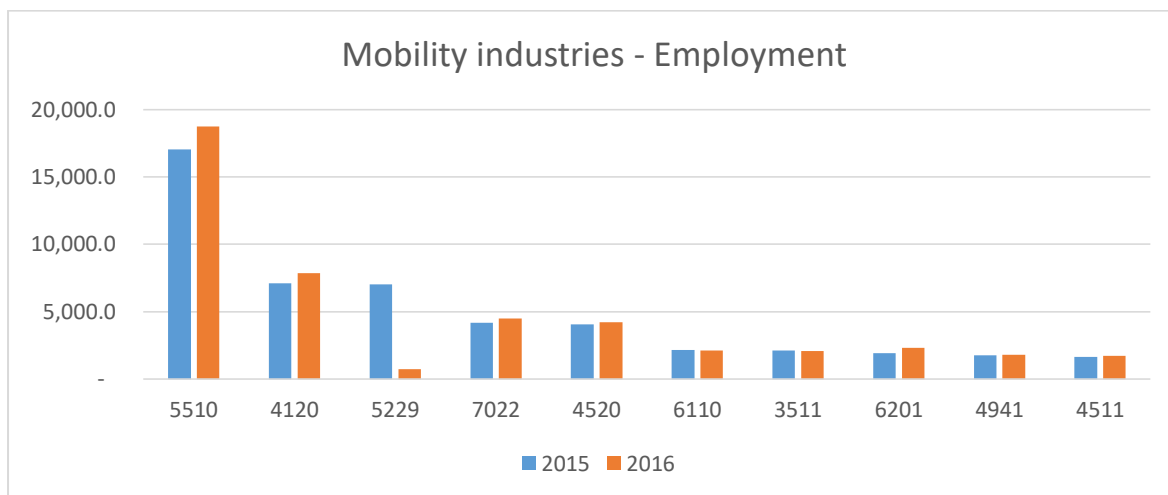


Figure 50 Mobility industries - Employment

Employment in Mobility Industries saw the leading sectors of Hotels and similar accommodation and Construction of residential and non-residential buildings increasing their employment numbers while the third place sector of 2015, Transportation and other Services saw a collapse in numbers being out of the ten major sectors for 2016. The remaining leading sectors saw minor changes.

5510	Hotels and similar accommodation
4120	Construction of residential and non-residential buildings
5229	Other transportation support activities
7022	Business and other management consultancy activities
4520	Maintenance and repair of motor vehicles
6110	Wired telecommunications activities
3511	Production of electricity
6201	Computer programming activities
4941	Freight transport by road
4511	Sale of cars and light motor vehicles

Personalised Medicine Industries

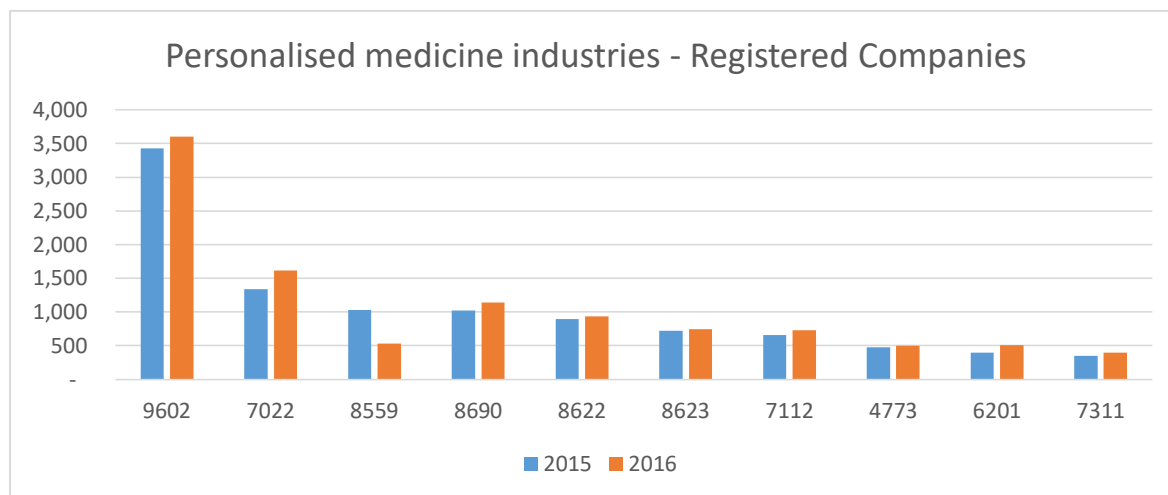


Figure 51 Personalised medicine industries - Registered Companies

The Personalised Medicine Industries identity remained stable between 2015 and 2016, with Hairdressing and other beauty

treatment being the leading sector while the number of registered companies slightly increased for the second leading sector (Business and other management consultancy activities) and decreased for the third (Other education). Most of the rest of the major sectors remained largely stable in the number of registered companies, with small increases.

9602	Hairdressing and other beauty treatment
7022	Business and other management consultancy activities
8559	Other education n.e.c.
8690	Other human health activities
8622	Specialist medical practice activities
8623	Dental practice activities
7112	Engineering activities and related technical consultancy
4773	Dispensing chemist in specialized stores
6201	Computer programming activities
7311	Advertising agencies

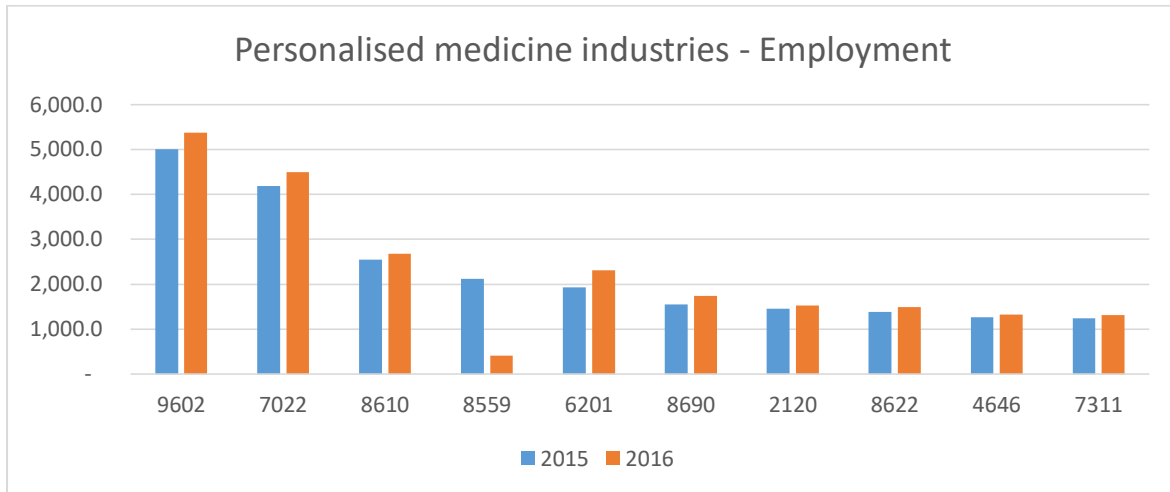


Figure 52 Personalised medicine industries - Employment

Employment in Mobility Industries saw the leading sectors of Hairdressing and other beauty treatment and Business and other management consultancy activities increasing their employment numbers while the fourth place sector of 2015, Transportation and other Services collapsed in numbers being out of the ten major sectors for 2016. The remaining leading sectors saw minor changes, with the most notable in Computer programming activities

9602	Hairdressing and other beauty treatment
7022	Business and other management consultancy activities
8610	Hospital activities
8559	Other education n.e.c.
6201	Computer programming activities
8690	Other human health activities
2120	Manufacture of pharmaceutical preparations
8622	Specialist medical practice activities
4646	Wholesale of pharmaceutical goods
7311	Advertising agencies

To sum up the general picture given by the comparable data for the major emerging sectors, these show that the total number of regional Registered Companies increased in all major industries in 2016, with the exception of Creative Industries that saw the collapse of its major sector, leading to the decrease of its total numbers.

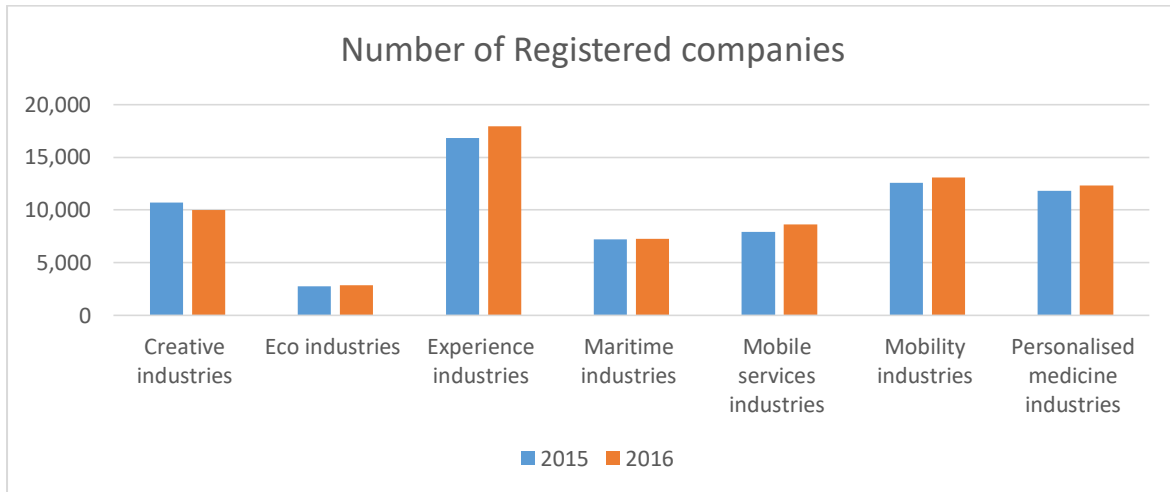


Figure 53 Number of Registered companies

However, the Employment Graph shows that the Eco, Maritime and Mobility Industries actually reduced their Employment number, despite their Registered Companies growth.

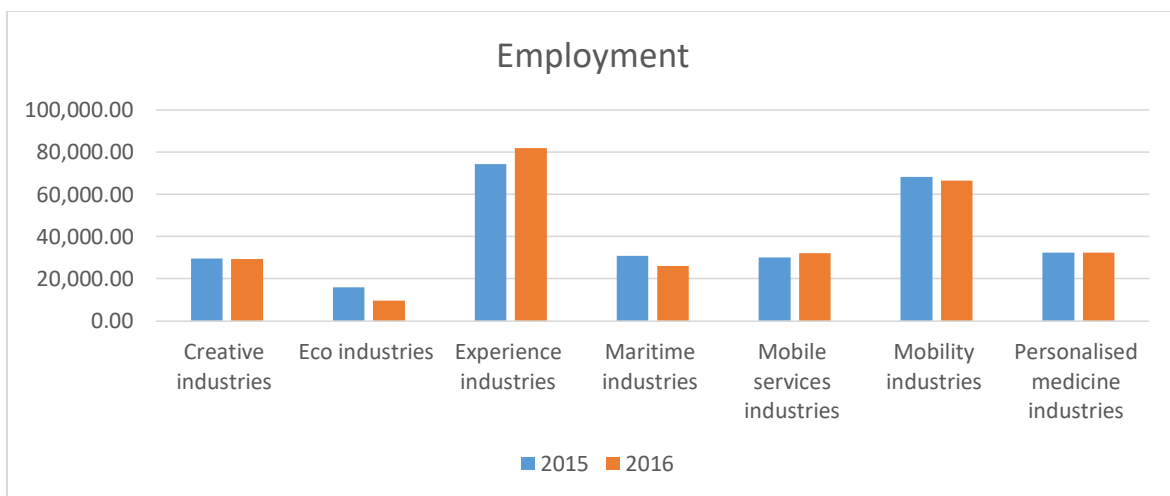


Figure 54 Employment

Especially in the case of Eco, this reduction was nearly 40%, with Maritime Industries at about 15% and marginal reduction for Mobility and Creative Industries. Creative industries did not suffer an analogous reduction in employment terms as in registered company numbers.

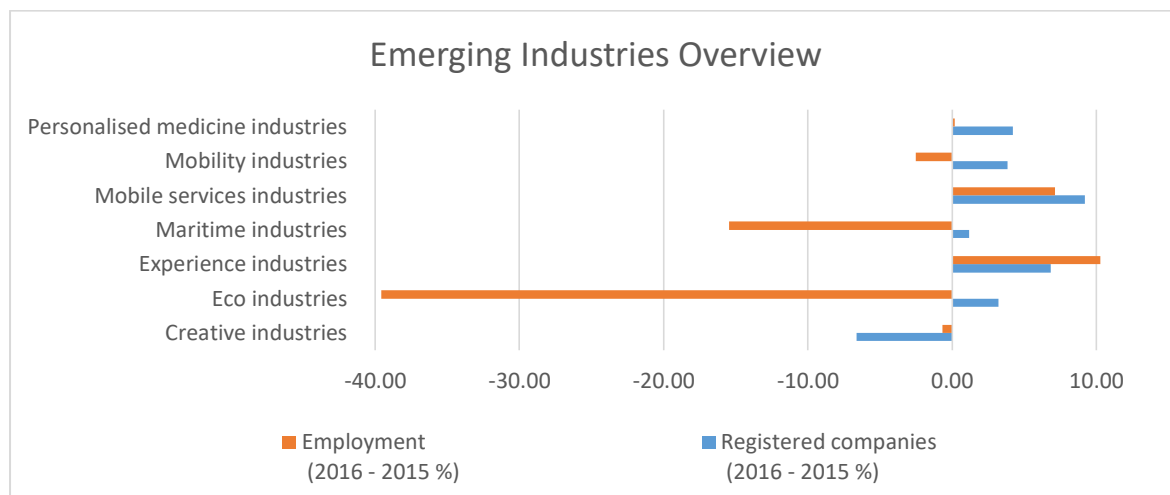


Figure 55 Emerging Industries Overview

Strengths and Weaknesses

The desktop research showed that, according to official data available both by CYPSTAT and EUROSTAT and their interpretation, Cyprus ranks as a Moderate Innovator and its performance shows a relative decline of 12,7% to that of the EU in 2010 (Set baseline - European Innovation Scoreboard 2017). According to the same sources, for the time being, the strongest elements of its Innovation system are Attractive research systems, Human resources, and Intellectual assets. This is represented in the respective indicator values of Publications, non-R&D innovation expenditures and the EU Community trademarks.

At the same time, considerable difficulties are present as to Research / Economy and Sectoral Linkages, Finance and support, and Firm investments. This is quantifiable in the indicator values of the lagging R&D expenditure in public and private sector, relatively low number of PCT patents and applications, and the low Licence and patent revenues.

The abovementioned have to be taken into account when trying to define the occurring opportunities and threats, together with the composition of the business sector in Cyprus, in traditional and emerging sectors. It is a prerequisite that any initiatives and incentives must be applicable to very small and SMEs and are required to focus primarily at attractive policy measures, appropriate legislation, provision of adequate funding opportunities and be transpired by investment motivation on innovation. This is depicted in Figure 53.

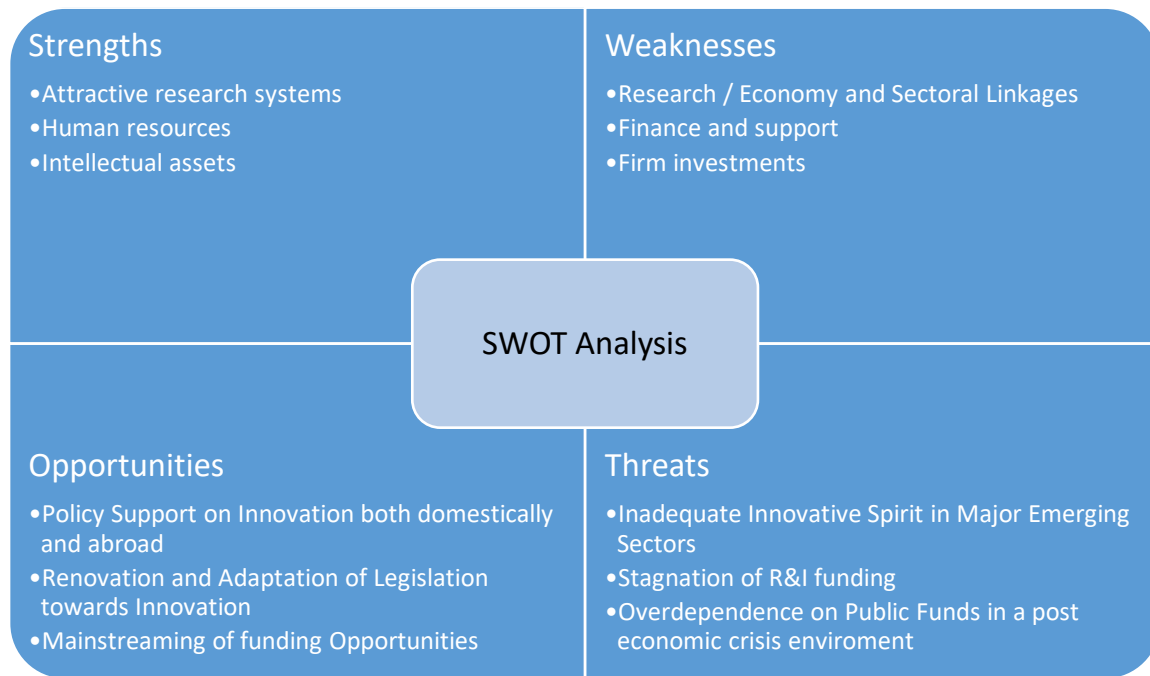


Figure 56 SWOT Analysis

It is rather clear from the previous data presentation that Cyprus in general and the specific emerging sectors are generally lacking in innovation promotion and foremost implementation. However, if the various innovation promotion strategies and initiatives take root together with strong policy incentives, this could change. The study does not show a general aversion towards innovation. This is supported by the private sector's innovative expenditure that is on the rise in recent years. A potential threat identified is the lack of clear targeting and linkage of sectors and their potential innovation strongpoints. In that sense, fewer but targeted initiatives may appear more appealing to a business crowd that has not yet embraced the need for cooperation and intersectoral linkages. These could help counter the threat of funding stagnation on R&I and eventually overcome the overdependence on Public funding.

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

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 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.

The new Entrepreneurial wealth

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)

Open and Closed Economies

Economic theory and intuition suggest that competitive markets promote higher productivity and efficiency. After forty years of structural reform experience around the globe, there is now ample evidence on what type of reform works and under what conditions. Many sectors

of the Cypriot economy have been sheltered from competition. The country needs to slim 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)

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

Required Endorsements

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

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.

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.

INNOPLATFORM

Innovations Platform and Tools for increasing the innovation capacity of SMEs in the Balkan Mediterranean Area

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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

Center for Knowledge Management	LP (PP1)	FYR of Macedonia	Skopje Planning Region
Computer Technology Institute and Press "Diophantus"	PP2	Greece	South-West Region
UET Centre	PP3	Albania	Tirana region
Burgas Free University	PP4	Bulgaria	Ist region of Bulgaria
Limassol Chamber of Commerce and Industry	PP5	Cyprus	Limassol Region
Association of Information Technology Companies of Northern Greece (SEPVE)	PP6	Greece	Thessaloniki

Regional Report on Innovation Potential and Dominant Emerging Industries



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