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# COMPETITIVENESS, SMART SPECIALISATION AND INVESTMENT IN NEW EU MEMBER STATES AND CROATIA

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More information about the project available at: <http://polocro28.irmo.hr/>.

The publication reflects the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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## **LIST OF ACRONYMS**

GDP – Gross Domestic Product

COSME – Competitiveness of Enterprises and Small and Medium-sized Enterprises Programme

EFSI – European Fund for Strategic Investments

EIB – European Investment Bank

ESIF – European Structural & Investment Funds

Eye@RIS3 – Online Database of Innovation Priorities in Europe (S3P Tool)

HORIZON 2020 – The EU Framework Programme for Research and Innovation

ICT – Information and Communication Technologies

NN – Official Gazette (cro. Narodne Novine)

NRP – National Reform Programme

NVK – National Competitiveness Council

STPA – Sub-thematic Priority Area

SRSP – Structural Reform Support Programme

SRSS – Structural Reform Support Service

S2E – Stairway to Excellence pilot project

S3 – Smart Specialization Strategy

S3P – Smart Specialization Strategy Platform

TPA – Thematic Priority Area

WEF – World Economic Forum



# **COMPETITIVENESS, SMART SPECIALISATION AND INVESTMENT IN NEW EU MEMBER STATES AND CROATIA**

## **INTRODUCTION**

The focus of this Policy Paper are the main competitiveness factors in Croatia and in selected new member states of the European Union (EU) as well as their positions in global competitiveness rankings. The methodology of the POLO-Cro28 project was applied in this study, with Croatia being compared to the Czech Republic, Hungary, Slovakia and Slovenia, the so-called “new” EU member states. The study begins with an analysis of strategic approaches, policies, mechanisms and EU instruments which aim to encourage member states’ competitiveness and the competitiveness of the EU as a whole. It compares the most significant determinants in national strategies for smart specialisation and investment subsidies and explores barriers to investments. Furthermore, the study analyses the most important competitiveness factors in Croatia and in the selected member states (with emphasis on higher education, business sophistication and innovation) as well as on structural changes to their economies. Finally, based on the findings of the analysis, the study presents specific recommendations for Croatian policymakers.

The research conducted for this paper was done in the scope of the ERASMUS+ Jean Monnet Support to Institutions Action entitled POLO-Cro28 which acts as a policy observatory in Croatia. The research is based on a common methodology and multi-disciplinary approach used during the project’s three-year implementation period, during which time six policy areas were monitored.

The analysis was conducted using reports by the European Commission, national strategic documents, academic sources and official statistical indicators. The analysis draws from a number of data sources including relevant analytical and strategic EU documents (both from old and new member states as well as Croatia) and various academic sources. The analysis also draws upon conclusions from a round-table discussion held in Zagreb in April 2017 on the topic of competitiveness.<sup>1</sup>

## **THE EU’S STRATEGIC APPROACHES TO INCREASING COMPETITIVENESS – POLICIES, MECHANISMS AND INSTRUMENTS**

The European Union has slowly been recovering from the consequences of the recent economic and financial crisis. After five years of moderate recovery, European economic growth

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<sup>1</sup> The round-table discussion “Challenges of competitiveness for the new EU member states and Croatia” was organised during the POLO-Cro28 Jean Monnet Project. It was held at the EU Commission Office in Zagreb on 26 April 2017. More information is available here: <http://polocro28.irmo.hr/izvjestaj-s-okruglog-stola-izazovi-konkurentnosti-nove-clanice-eu-a-hrvatsku-okviru-jean-monnet-projekta-potporu-institucijama-polo-cro28-opervatorij-politika-hrvatsko/>

is increasing and new jobs are being created. Economic forecasts in the autumn of 2017 estimated growth of the EU 28's real GDP at 2.3%, which is slightly above the 2016 forecast estimated at 1.9% (European Commission, 2017a). However, positive economic trends are still weighed-down by insufficient productivity growth and continued inequalities between member states. Furthermore, the inflow of direct foreign investment, trade integration and diversification in individual EU economies are weak. In order to strengthen the positive trends and convergence among EU economies, member states must be more competitive and more resilient to crises and need to become more inclusive and innovative (European Commission 2017b).

The most important challenges the European Union is facing are encouraging innovation and technology development, creating conditions conducive to new and growing businesses, encouraging partnerships and synergies with the goal of creating value chains, ensuring continuing industrial modernisation as well as dealing with the social and regional dimension through investments in areas that need them the most, and finally, improvements in competitiveness rankings.<sup>2</sup>

During the post-crisis period, encouraging growth and competitiveness with the aim of increasing economic development and achieving goals of the Strategy Europe 2020 are among the European Commission and EU member states' most important priorities. The Europe 2020 Strategy aims to solve structural weaknesses in existing growth models through creating preconditions for smart, sustainable and inclusive growth. The EU is facing the fact that slowed productivity growth is a barrier to stronger total economic growth, and the fact that the single market is yet to fulfil its full potential. To this effect, the slow adoption of new technologies is especially an issue.

Investment in research and development at a rate of at least 3% of GDP as an average among member states is, according to European Commission estimates, the only goal of five Europe 2020 goals which will not be achieved in the required timeframe, as spending for 2015 had only reached 2.03% (European Commission, 2017b).

Faced with unfavourable external economic conditions, the European Commission initiated in 2013 the creation of a Smart Specialisation Strategy (S3) in its member states as a new approach to economic growth based on the support for research and development activities as well as innovations. The concept of smart specialisation in the EU was developed in the framework of the EU 2020 flagship initiative Innovation Union. According to this concept, every region builds on its own strengths, according to the priorities set in national and regional innovation strategies, and if possible, in the framework of cross-border cooperation (European Commission, 2012).

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<sup>2</sup> From the presentation by Manica Haputman at the POLO round-table on competitiveness, Zagreb, 26 April 2017

Although many European regions are well-positioned and make good use of the benefits of globalisation, less developed regions (especially those in southern and eastern Europe) have been facing the risk of severe job losses as a result of competition, specialisation and technological change (European Commission, 2017c). Numerous support measures have been developed. The European Structural and Investment Funds (ESIF) and national contributions have made 67.6 billion euros available. These funds are to be used by regions to support smart specialisation strategies based on their individual competitive advantages, to help them improve their value chains, encourage the private sector and selective investment in key priorities and challenges (European Commission, 2017c). Besides the use of high-tech, this is also meant to introduce innovation that will secure the future of traditional industries. The European Union aims to contribute to increasing the competitiveness of member states with integrated policies, mechanisms and instruments. The role of the EU in encouraging the competitiveness of member states is defined in the Treaty on the Functioning of the European Union<sup>3</sup> (TFEU, Official Journal of the European Union, 2016). Article 173 of the TFEU states that the EU and member states must ensure the conditions necessary for the Union's industries to be competitive. Their work has, among other things, been directed towards hastening industries' adaptation to structural changes, creating an environment favourable to development and collaboration among businesses (especially small and medium-sized enterprises, SMEs) and encouraging improved use of industrial potential of innovation, research and technology development policies.

The European Semester is a key instrument for the economic monitoring of EU member states and covers numerous aspects related to competitiveness. Every year, *ex ante* planning and coordination of member states' economic policies is implemented within the European Semester framework, including harmonising reporting, monitoring and evaluation procedures for these policies at the EU level. In addition to strengthening the fiscal framework and managing public finances, the European Semester is geared towards correcting a wide range of imbalances and implementing structural reforms; it also includes growth, employment and competitiveness reforms (Samardžija et. al., 2016). The European Semester is therefore, a mechanism that indirectly encourages competitiveness. The Commission's Structural Reform Support Service (SRSS)<sup>4</sup> was founded in 2015 with the aim of helping EU member states plan and implement structural reforms. The Service coordinates and offers technical assistance to EU countries to improve the management of reforms for encouraging cohesion, competitiveness, productivity and sustainable growth within the framework of the Structural Reforms Support Programme (SRSP). The areas of education, investment environment and sectoral policies are especially important in the framework of competitiveness issues. Using this mechanism can be of significant assistance to Croatia when designing strategic documents for the areas of competitiveness, smart specialisation and investments, and in achieving the

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<sup>3</sup> Treaty on Functioning of the European Union (TFEU).

<sup>4</sup> More information available at: [https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes/structural-reform-support-programme-srsp\\_en](https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes/structural-reform-support-programme-srsp_en)

specific recommendations made by the European Commission for implementing the National Reforms Programme.<sup>5</sup>

In accordance with the goals of the Strategy Europe 2020, industrial policies have a central place in the new growth model for the European economy, keeping in mind the significance that the competitiveness and sustainability of European industries holds for the development of the European economy.

Industrial policies are considered in their wider sense, together with other relevant policies that affect industry costs, prices and innovation competitiveness but also other sectors. Industrial policies are considered in a broader sense, together with other relevant policies that affect the costs, prices and innovative competitiveness not only of industry, but also of other individual sectors. Furthermore, industrial policies must consider the impacts of initiatives taken within the framework of other policies (e.g. transport, energy, environmental protection, single market policies, commerce etc.) in order to allow for coordinated strategic responses at the EU level (European Commission, 2010a). Strengthening the competitiveness of the processing sector and EU economy as a whole is the primary priority of the EU's industrial policies. Further policies include supporting innovation, encouraging business activities and a stimulating business environment, including the good functioning of the internal market (European Commission, 2014).

In the area of competitiveness, the European Commission must encourage initiatives which contribute to better coordination among member states; it must also develop indicators for regular monitoring, oversight and assessment of improvements made by member states as well as regular reporting on competitiveness at the EU and member state levels (European Commission, 2010b). With regard to industrial policies, the Commission's work is directed towards improving the general conditions for industries to do business, with an emphasis on the development of "smart" legislation and analyses of the impact of legislation on competitiveness (*impact assessment*). This also includes better access to sources of financing, strengthening the internal market by eliminating remaining barriers, improving the system of intellectual property rights, improving the rules on market competition, strengthening energy, transport and communications infrastructure and finally improving European standardisation. Special attention is being paid to strengthening industrial innovation policies, which is in accordance with the aims of the EU 2020 Strategy and in facing the challenges of globalisation (European Commission, 2010a). The implementation of these initiatives, policies and measures, which are in the jurisdiction of member states, are of immense importance, and it

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<sup>5</sup> The Institute for Development and International Relations implemented a project financed by the Structural Reforms Supporting Program in 2017, called "*Introducing an indicator-based method for planning, monitoring and assessing the implementation of structural reforms for the National Reform Program of Croatia*". More information available at:

<http://www.irmo.hr/hr/projekti/izrada-metodologije-za-planiranje-pracenje-i-ocjenjivanje-provedbe-nacionalnog-programa-reformi-temeljene-na-indikatorima/>

must be stressed that they are either key for development or, conversely, responsible for stagnation in competitiveness.

The Competitiveness Council was founded in 2002 with the goal of encouraging competitiveness at the EU level. It has a horizontal role in encouraging competitiveness and growth in member states and reviews decisions that significantly affect competitiveness. Since 2015 the Commission has implemented a new method, the so-called “competitiveness test” whereby they regularly review improvements in the functionality of various aspects of competitiveness policies in member states. The competitiveness test also allows member states’ policies related to competitiveness to be reviewed regarding whether they include all relevant issues (Council of the European Union, 2015). Furthermore, in 2016 the Council of the EU issued a Recommendation on the establishment of National Productivity Boards in the Euro Area (Council of the European Union, 2016), which would allow for the monitoring of results and policies in the fields of competitiveness as well as long-term drivers and enablers of productivity and competitiveness, including innovation, and the capacity to attract investment, businesses and human capital, and to address cost and non-cost factors that can affect prices and quality content of goods and services. The Council described the need for independent, high-quality analyses of challenges in implementing policies and emphasised the need for productivity boards to have functional autonomy vis-à-vis any public authority and ensure that the members of the board include not only specific groups of stakeholders, but unbiased experts in order to produce expert analyses formulated in the general interest of the society. Although this Recommendation explicitly pertains only to members of the Euro Area, the Council encourages other member states to form similar bodies.

The National Competitiveness Council (*Nacionalno vijeće za konkurentnost*, NVK) was founded in Croatia in 2002 by decree of the Government of Croatia, at the initiative of the Croatian Employers’ Association. This Council is an independent advisory body made up of 24 members from four key interest areas – the business sector, government, trade unions and the academic community – whose aim is to create dialogue, partnerships and consensus about programmes and policies that are key for sustainable growth and development in Croatia.

In its first ten years, the Council has conducted a number of activities and research on competitiveness in Croatia and its regional counties; it has also adopted a number of important analytical and strategic documents. The Council is active in monitoring Croatia’s position on global competitiveness rankings and could be used as a good foundation for strategically improving competitiveness in a new institutional framework that would recognise the importance of its work. Very concretely, the conditions and means must be ensured for the Council to be able to produce independent and high-quality economic analyses on challenges to implementing policies in the fields of competitiveness and productivity, innovation and investment and the development of manufacturing factors to improve price and non-price aspects of the quality of goods and services. In order to take on the role that was foreseen

for the national productivity board, the Council must be ensured full autonomy from the public administration and, alongside interest groups, must include representation which allows for the expert analyses and creating policy recommendations for policies in the general interest of the Croatian society.

Investment incentives became an especially important tool in the period after the crisis, when fixed capital formation was still subdued, in spite of the economic recovery (European Investment Bank, 2016). Among the financial instruments the European Union uses to encourage competitiveness, the most important is stimulating investments through the European Investment Plan, with the aim to encourage long-term economic growth and competitiveness in the EU. The Investment Plan for Europe, in value of 315 billion euros and developed in strategic partnership with the European Investment Bank (EIB), was presented by the President of the EU Commission Jean-Claude Juncker in 2014. A key element of the Plan is the new European Fund for Strategic Investments (EFSI) which should contribute to the use of public funding, including those from the EU budget, to encourage private investment in projects in member states. These projects are aimed towards infrastructure, research and innovation, education, healthcare and information and communications technology (Official Journal of the European Union, 2015).

The Plan mobilised investments valued at 225 billion euros in its first year. Positive evaluations and the successful implementation of the EFSI resulted in a recommendation to increase and extend funding of the Investment Plan for Europe. The Commission presented new draft legislation (EFSI 2.0) in which the lifespan of the Plan (originally determined for 2015-2018) be extended to 2020 in order to increase guarantees from the EU budget and the contribution from the EIB, and increased the funding available to 500 billion euros (European Commission, 2017d). Over the past few years the European Commission has also adopted numerous documents which regulate investment subsidies.<sup>6</sup>

Among the most significant instruments the EU has used to increase competitiveness is the Horizon 2020 programme, which will contribute to achieving the aims of key EU documents on research, technological development and innovation, Europe 2020 and the Innovation Union as well as the construction of the European Research Area<sup>7</sup> and the COSME programme<sup>8</sup>, whose funds are used to support initiatives that strengthen competitiveness.

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<sup>6</sup>The legislative framework of the European Union is made up of: EU Directive 651/2014 dated 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty; Guidelines for regional subsidies 2014-2020 (2013/C 209/01) and Mapping regional subsidies (2014-2020). In addition, member-states have also passed their own legislation which makes this legal.

<sup>7</sup> See more at <https://ec.europa.eu/programmes/horizon2020/what-horizon-2020>.

<sup>8</sup>COSME is a program open from 2014-2020, intended for small and medium-sized enterprises and designed to promote entrepreneurship. Its aim is to increase the competitiveness of EU companies, decrease unemployment, promote a positive business climate and develop entrepreneurship. More information is available at: [https://ec.europa.eu/growth/access-to-finance/cosme-financial-instruments\\_en](https://ec.europa.eu/growth/access-to-finance/cosme-financial-instruments_en).

# **PRIORITIES, SMART SPECIALISATIONS STRATEGIES AND INVESTMENT INCENTIVES IN CROATIA AND SELECTED EU MEMBER STATES**

## **Priorities of Sectoral Restructuring and Structural Reforms in the Selected Countries**

Through the European Semester, as a cycle of coordinating economic and fiscal policies, the European Commission requires member states to implement and report on the implementation of reforms, part of which are in the field of competitiveness. As an answer to structural challenges, countries covered by the European Semester must formulate their national reform programmes (NRPs), which define the measures and activities that they will conduct in the upcoming 12 to 18 months, as well as through their three-year Convergence Programme (for countries not part of the Euro Area) or the Stability Programme (for countries that are part of the Euro Area). The reform priorities of the member states selected in this study vary in their scope and measure, but most of these countries have some aspects of competitiveness in their priorities and reforms should contribute to increasing productivity and achieving sustainable growth, job creation and encouraging investments (Table 1, attached).

Croatia's 2017 National Reform Programme (NRP) brought together reforms and activities which should contribute to achieving long-term, sustainable economic growth, increasing employment rates and creating new jobs while decreasing macroeconomic imbalances (Government of Croatia, 2017b). In accordance with this, the NRP defines 53 measures for reforms in 12 areas to achieve three main aims. The first one is strengthening competitiveness, the second increasing employment and linking the educational system to the labour market, while the third goal is achieving sustainable public finances.

In its national reforms document, the Slovenian government emphasised three groups of measures: long-term structural measures for sustainable public finances, measures with a short-term structural effect and measures for increasing growth potential. The Hungarian government directed the implementation of reforms towards achieving mid-term budget goals, strengthening investments and employment through tax policies, establishing a competitive business environment, a competitive workforce, creating new possibilities through education and strengthening the healthcare system. The NRP in Slovakia describes structural measures which the government plans to implement over the next two years. This new, complex approach recognises priorities and takes into account GDP as well as other aspects of quality of life, identifies the labour market, healthcare system and basic education as the greatest challenges facing the Slovak economy. The Czech government intends to

conduct important structural reforms in the areas of tax system, budget policies and in the framework of fiscal and long-term sustainability, followed by the areas of the labour market, social policies and education, implementing procedures for supporting competitiveness and strengthening sectoral policies.

## **Sectoral Priorities in National and Regional Smart Specialisation Strategies**

Strategies for smart specialisation are national or regional strategies for research and innovation (RIS3)<sup>9</sup> which define priorities with the goal of constructing competitive advantages through the development and harmonisation research and innovation with economic needs, in a coherent way, while avoiding duplication and fragmentation (European Commission, 2014a). They direct the focus of investment and support policies towards key national priorities and support innovation, with the goal of encouraging investment in the private sector (Basarac Sertić, 2016). In accordance with this, countries and regions must identify their competitive advantages and priorities, following successful national and international examples (European Commission, 2012). Every country or region must be capable of identifying relevant links and flows of goods, services and knowledge which uncover possible integration models with partner regions, which is especially important in the case of less developed countries and regions which often require a transfer of knowledge and technology (European Commission, 2017e).

Smart Specialisation Platforms (S3P) were created in 2012 as one of the measures to support countries and regions on developing and implementing smart specialisation strategies. At the time of writing, 18 member states were registered on the S3P platform, among them Croatia and the four countries analysed in this paper. In addition, 170 regions of the European Union have been registered on the platform.<sup>10</sup>

National and regional smart specialisation research and innovation strategies (RIS3) are being implemented at national and regional levels of the EU (Basarac Sertić, 2016). The preparation of these types of strategies is in accordance with the EU's new cohesion policy (for the 2014-2020 programming period) and require member states to identify areas of specialisation which best fit their innovation potential, based on their capacity for using EU funding in the fields of research, technological development and innovation.

The first country to publish its smart specialisation document was Slovakia (2013), followed by the Czech Republic and Hungary (2014) while Slovenia published its strategy in 2015. Slight

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<sup>9</sup> National/Regional Research and Innovation Strategies – RIS3

<sup>10</sup> The Stairway to Excellence (S2E) pilot program was initiated within the framework of these platforms. This program provides support for 13 new EU member states (including Croatia) and their regions in order to develop synergy between the Horizon 2020, European Structural and Investment Fund and other sources of EU financing. More information available at <http://s3platform.jrc.ec.europa.eu/s3-platform-registered-regions>; <http://s3platform.jrc.ec.europa.eu/stairway-to-excellence>.

differences are visible in the smart specialisation strategies' visions and strategic goals. Specifically, the Czech Republic emphasises the importance of the knowledge economy with emphasis on transforming the economy; its strategy is based on a longer period than was originally defined (until 2022). Slovakia emphasises the structural diversification of its economy, Hungary wants to become a knowledge economy by the end of the decade, and Slovenia is focused on priority niches where it wants to be a co-creator of global trends instead of a follower.

The Croatian government adopted the Strategy for Smart Specialisation for the Republic of Croatia in 2016, for the 2016-2020 period. It includes goals and priority activities linked to research, development and commercialisation of innovations and defines goal niches within priority sectors.

Table 2 (attached) shows the fields of specialisation which Croatia, and the analysed new EU member states (Czech Republic, Hungary, Slovakia and Slovenia) have chosen in designing their smart specialisation strategies. Based on the information submitted to the Eye@RIS3<sup>11</sup> database by the governments of the selected countries, the following data was studied: ability to achieve the priority; chosen target markets and the EU priorities which this area of specialisation is tied to.

This analysis is based on the NACE7 statistical classification of business activities, while the thematic priority areas (TPA) and horizontal themes are based on S3 platform criteria guidelines. As the final result of the selection process, five TPPs<sup>12</sup> were chosen as the main focus for S3 in Croatia, with the relevant technological and manufacturing fields (1) health and quality of life, (2) energy and sustainable environment, (3) transportation and mobility; (4) safety and (5) food and the eco-economy bioeconomy (National Gazette, 32/16). Croatia also defined two horizontal themes in its strategy (key development technologies and information and communications technology) which can contribute to an increased added-value of Croatian products and encourage the development of new economic activities, an increase in Croatian economic productivity and the creation of new and sustainable employment opportunities. The five TPP also include 13 sub-theme priority areas (STPA).

Table 3, which can be found in the attachment, groups the key areas according to the countries analysed. It shows that five selected countries chose 11 out of 14 main categories for research and development. Interestingly, none of the selected countries chose the categories *mining and extraction, tourism, restaurants and recreation or wholesale and retail*. Croatia chose six main / priority areas, the Czech Republic and Slovakia chose four each, Hungary chose eight and Slovenia chose nine. A more detailed analysis shows that the common chosen area was *manufacturing* - this was chosen as the main priority area by all

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<sup>11</sup><http://s3platform.jrc.ec.europa.eu/map>

<sup>12</sup>In the Strategy (National Gazette 32/16) the key area Eco-economy and food is grouped together, while the website of the S3 platform and the EU Commission document (2015c) note them as individual categories.

selected countries, and some chose a number of branches within the category itself (i.e. Slovakia, Hungary and Slovenia). The second most common category was *information and communications technologies (ICT)*, chosen by the Czech Republic, Slovakia and Hungary. Furthermore, the categories *energy production and distribution* as well as *human health and social activities* were in third place. It is interesting that Slovenia put strong emphasis on the area of *manufacturing* and chose as many as five niches (sustainable food production, development of energy efficient products, smart cities and towns, smart factories, health / medicine).

## **Investment Policies and Incentives in the Selected Countries**

Considering the smart specialisation strategy, it is evident that innovations and investments have become the central pillars of EU economic growth and new job creation programmes, and since the end of the economic and financial crisis, one of the EU's priorities has become returning investments to their pre-crisis level (European Commission, 2017e).

The above-mentioned Investment Plan for Europe also emphasises policies linked to creating a supportive investment climate for businesses and new entrepreneurs in addition to a positive climate for creating new industries and jobs. Activities approved in Croatia within the framework of the European Fund for Strategic Investment (EFSI) include financing in the amount of 184.86 million euros, which is expected to be able to initiate 709.75 million euros of investment (European Commission, 2017f).

At the country level, in Croatia the Investment Subsidy Act (National Gazette 102/15) passed by the Croatian Parliament in 2015 regulates the distribution of state subsidies in line with the single market (which is noted by the implementation of Commission Regulation 651/2014) and creates the legislative framework for the regulation of investment projects aiming to encourage economic growth, including the international trade flows. It also aims to strengthen the investment and competitive capacities of Croatian businesses. The subsidies regulated by this Act relate to investment projects in manufacturing-processing and development-innovation activities, as well as activities in business support and activities for high added-value services (Table 4, attached).

The legislative frameworks, supported areas and forms of subsidy measures in Croatia, the Czech Republic and Slovakia are shown in Table 4 (attached). The purpose, criteria and type of subsidy are not fully comparable between the selected countries because, according to knowledge gained by the authors, there is no publically available document or platform which compares the investment subsidies among member states which investors could use to choose the most favourable destination for their investment. As a result, information about investment subsidies are showed individually in a table, and are analysed as such. The presented data lead to the conclusion that every member state has chosen areas it will support based on its comparative advantages, potential and economic competitiveness, and has regulated the minimum requirements for each area for which it expects significant

investment. However, despite the individual approach taken by each country in creating the criteria, there are some similarities among the areas chosen for support. More specifically, all the selected countries have emphasised the processing industry, the Czech Republic and Slovakia support the development of technological centres, the Czech Republic adds to this the service sector, and only Slovakia directs investment into the tourism sector. Generally, the minimal amount of investment in long-term assets (acceptable costs) and the share of new technologies depend on the type of investment, the unemployment rate in a given area / region and the size of the company submitting the request. Additionally, when discussing forms of direct and indirect subsidy measures, there are considerable variations in the administrative, tax, financial and similar subsidies, reliefs and exceptions among the selected countries.

In conclusion, the selected countries have introduced measures for encouraging competitiveness in national reform programmes, strategic development plans and smart specialisation plans as well as in measures for subsidising investments in a way that aims to increase added-value, achieve restructuring based on the better use of knowledge and technology as well as increasing energy and environmental efficiency. It would therefore be useful to analyse the extent to which these efforts have borne fruit in the area of national competitiveness, structure of the manufacturing sector and exports.

## **MAIN COMPETITIVENESS FACTORS IN CROATIA AND SELECTED COUNTRIES**

The European Union as a whole is lagging behind on global competitiveness rankings when compared to its other key competitors. According to the 2017 Global Competitiveness Report (World Economic Forum, 2017) out of 137 countries, Croatia was in 74<sup>th</sup> place and has stagnated over the past five years, after a significant downturn between 2007 and 2012.<sup>13</sup> The selected countries have demonstrated similar developments, whereby the Czech Republic has remained in 31<sup>st</sup> place. Slovenia and Slovakia were falling significantly until 2014, after which they improved and in 2017 were 48<sup>th</sup> and 59<sup>th</sup> respectively. Hungary holds the 60<sup>th</sup> place, but had an atypical development, with improvement until 2011, a significant regression until 2016, and significant improvement in 2017 (Figure 1). In other words, during the period under review, Croatia was ranked lower than all the selected new EU member states.

Of the 12 pillars of competitiveness according to which the World Economic Forum assesses the improvements in countries, three pillars were chosen for further study that best reflect to what extent an economy is based on knowledge, innovation and technology. In the area of higher education and life-long learning (Figure 2) Slovenia and the Czech Republic stand out whose reforms have obviously resulted in more favourable indicators for education. Conversely, Hungary has experienced consistent and intensive downturn, while Croatia's ranking

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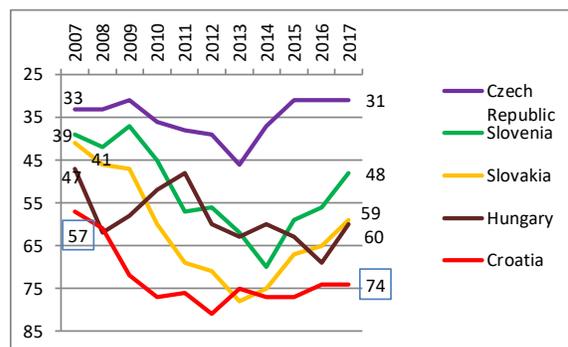
<sup>13</sup> However, compared to the past ten years (WEF 2007-8), when Croatia was in 57<sup>th</sup> place, Croatia is now ranked 17 places lower.

has moved similar to that of Slovakia, i.e. slow downward trend, although Croatia recorded some improvement in the 2012-2016 period.

Still, the position of Croatia in the education pillar (60<sup>th</sup>) is a significant 14 place-points more favourable than its overall competitiveness ranking, while its position for the pillar of business sophistication (82<sup>nd</sup>) is 8 positions below its overall ranking, despite the fact that Croatia has experienced certain improvements over the past five years (Figure 3). Recently, improvements have been noted also for Slovenia, the Czech Republic and Slovakia, who have retained a significant advantage over Croatia. On the other hand, Hungary has profound problems and over the past five years fell close to the 100<sup>th</sup> position for the business sophistication pillar.

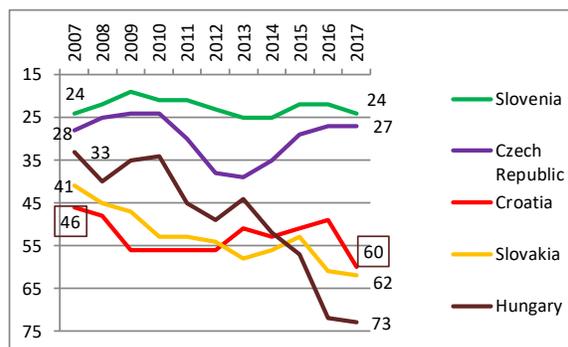
For the innovation pillar (Figure 4) Croatia has a very low position (106<sup>th</sup>), which represents a constant fall in its position as compared to the year 2007 (when it was ranked 51<sup>st</sup>). Slovakia has been performing even worse than Croatia until 2012, but has since significantly improved and was ranked 39 positions above Croatia in 2017. Slovenia and the Czech Republic have been successful reformers in the area of innovation, where their rankings are quite favourable, some 30 positions ahead of Hungary, which has regressed over the past four years.

Figure 1: Rankings on the World Economic Forum's Global Competitiveness Report



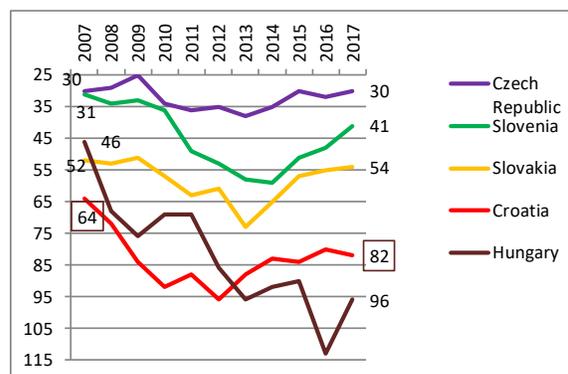
Source: WEF

Figure 2: Higher education and life-long learning (ranking)



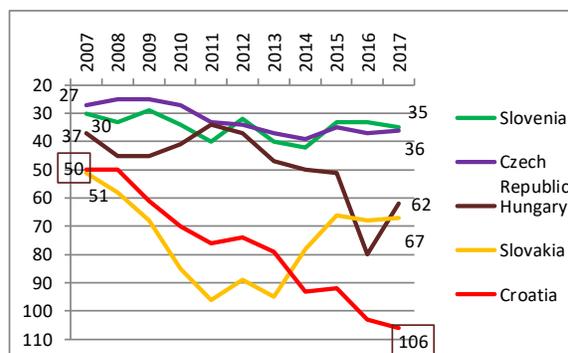
Source: WEF

Figure 3: Business sophistication



Source: WEF

Figure 4: Innovation (ranking)



Source: WEF

The challenges Croatia is facing can also be seen in the results of the 2017 European Innovation Scoreboard. Croatia is very poorly ranked according to measurements on innovation capacity within this annual study. According to the majority of the components studied, it is below the EU average (save for the indicator for innovation of fast-growing companies, for which it is near the EU average), is stagnating and is still building its research and development system (European Commission, 2014b). Croatia is ranked as the last member of the EU in the group of moderate innovators, which includes the largest number of EU members which are all below the EU average. The last-ranked group of low-rated innovators includes only two other countries: Bulgaria and Romania.

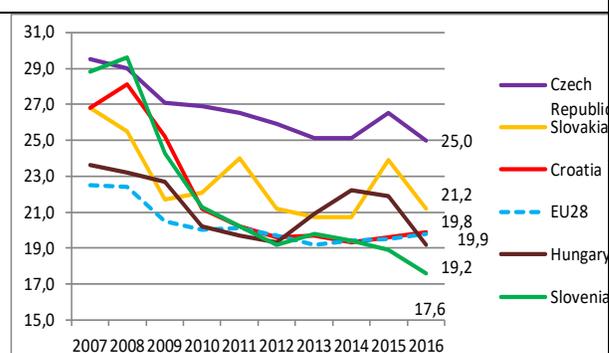
## STRUCTURAL ECONOMIC CHANGES

The economic and financial crisis was significantly reflected in economic and investment activities in the European Union and member states. The portion of gross investments in fixed capital in GDP in the selected countries (Figure 5) has significantly decreased over the past 10 years. Of these, the Czech Republic was the least affected and in 2016 had an investment percentage at 25% of GDP, while Slovenia had a lowered rate of 17.6% of GDP – in 2007 both countries had a similar level of investment in fixed capital, around 30% of GDP. Croatia had a

similar starting position, which has shown a dynamic decrease up until 2013, with a slight recovery to the level which is almost identical to the EU average.

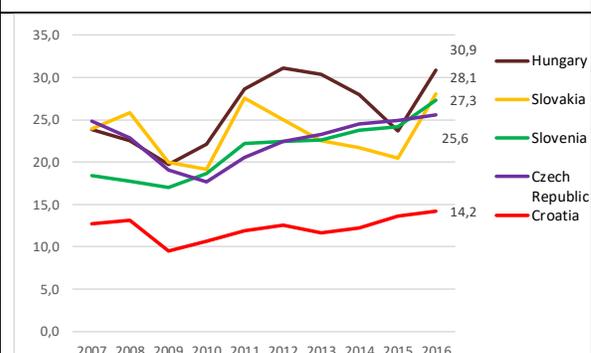
Croatia is specific because of its very low share of manufacturing in investments (Figure 6), with a noticeable growth trend, from below 10% in 2009 to 14.2% in 2016. However, this is significantly lower than in other, comparable countries, where the percentage of manufacturing ranged from 25.6% (Czech Republic) to 30.9% (Hungary). Data also indicate increased investment in export-competitive manufacturing activities in Croatia, after the earlier period showed a significantly higher proportion of investment in construction and retail (European Commission, 2017).

Figure 5: Share of gross fixed capital formation in GDP in EU28 countries, Croatia and the selected countries 2007-2016, (%)



Source: Eurostat

Figure 6: Share of Manufacturing in gross fixed capital formation in EU28 countries, Croatia and the selected countries, 2007-2016, (%)

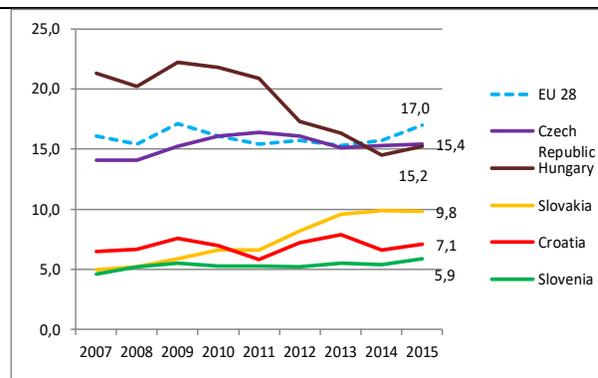


Source: Eurostat, Central Bureau of Statistics

Following the crisis, export competitiveness in Hungary and the Czech Republic stagnated in high-technology sectors. The share of these sectors in Hungarian exports fell from a very high level, above 20%, to 15.2%. The Czech Republic has reached this level as well, despite stagnation in that country from 2011 onwards. Slovakia made significant improvements, and in only 8 years has doubled the share of high-technology products in its exports and caught up with Slovenia and Croatia, which had stagnated at a level much lower than that of comparable countries (Image 7).

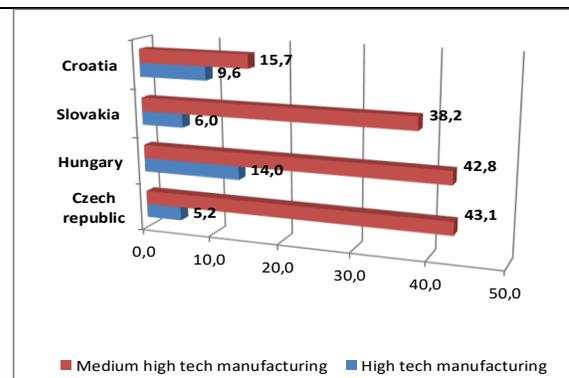
As a share in total added value, Croatia does not lag behind significantly in high-technology sectors. However, it has an extremely low share of medium high-technologies (15.7% in 2014), which stood at 38.2% in Slovakia and even 43.1% in the Czech Republic (Figure 8).

Figure 7: Share of high-technology products in total goods exports of the EU28, Croatia and the selected countries, 2007-2015 (%)



Source: Eurostat

Figure 8: Share of medium high-technology and high-technology products in manufacturing value added in Croatia and the selected countries, 2014 (%)



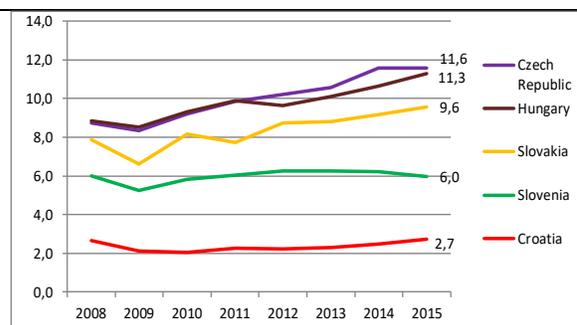
Source: Eurostat

During the 2008-2015 period manufacturing in Croatia and Slovenia did not undergo restructuring and the share of medium high-technology sectors<sup>14</sup> stagnated at a very low level, barely above 2.5% of added value of manufacturing in Croatia and 6% in Slovenia. The other three selected countries showed dynamic restructuring and the share of medium high-technology increased by 2.5 percentage points, which is a level about four times higher than that of Croatia (Figure 9).

Having in mind favourable indicators of knowledge and technology intensity, it seems like a paradox that companies in Hungary and Slovakia were comparatively less innovative because only 25.7% or 32.9% of the companies in these two countries produce innovative goods and services, as compared to 58.6% in the European Union as a whole. This is a result of restructuring based on licensing with only a small proportion of owned innovations. On the other hand, Slovenian companies are very innovative, but this does not result in an increased proportion of manufacturing based on medium-high and high-technology. The same holds true for Croatia, which is evident in a low proportion of manufacturing and/or processing innovation activities (Figure 10).

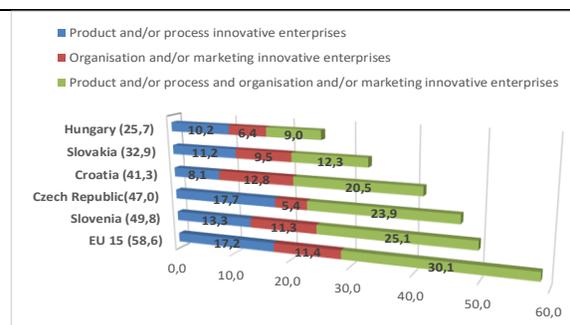
<sup>14</sup> Chosen sectors – Manufacturing computers, electronic and optic products; the Electro-industry; the Machine industry; Manufacturing automobiles, trailers and semi-trailers; Manufacturing other transport equipment.

Figure 9: Share of knowledge and technology intensive activities in the added value of manufacturing in Croatia and the selected countries, 2008-2015 (%)



Source: Eurostat

Figure 10: Share of enterprises who implement innovations in the total number of enterprises in the processing industry of the selected countries, 2014 (%)

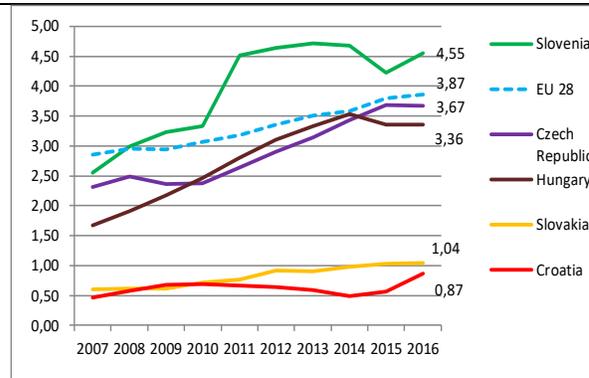


Source: Eurostat

The above-described situation is also reflected, to some extent, in data on employment in the field of research and development. According to the share of researchers employed in the business sector in the labour force (Figure 11), the Czech Republic and Hungary have reached the EU average (3.87%) thanks to dynamic growth; Slovenia has even surpassed the EU average. Slovakia on the other hand, is behind with a share of researchers in the business sector in labour force just above 1%, while in 2016 Croatia moved from a level of 0.5% and reached the still low share of 0.87% of the labour force. This indicates that in Croatia, activities of research and development and innovation are not in correlation. The small increase seen in 2016 should be further encouraged by measures for stimulating research and development activities in the business sector.

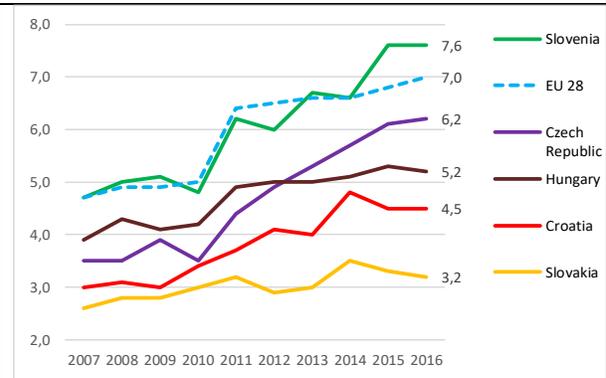
However, Croatia has slowly been following the trend of comparable countries with a dynamic increase in the proportion of scientists and engineers in its labour force, increasing from 3 to 4.5% over the study period. However, it is worrisome that the proportion of scientists and engineers with higher education in the active working population decreased after 2014, likely as a result of an increasing trend of highly-educated people emigrating to other EU member states. According to this indicator, the Czech Republic and Slovenia are significantly more successful than Hungary, while Slovakia is far behind and reached the level of 3.2% in 2016 (Figure 12).

Figure 11: Share of researchers employed in the business sector in the total labour force force (full-time equivalent) in Croatia and the selected countries, 2007-2016 (%)



Source: Eurostat

Figure 12: Share of of scientists and engineers with higher education in the labour force in Croatia and the selected countries, 2007-2016 (%)



Source: Eurostat

In conclusion, the Czech Republic has successfully restructured towards manufacturing based on knowledge and technology, while Hungary is losing its position in high technologies, and Slovakia is improving in sectors of medium high-technology. On the other hand, Slovenia and Croatia have not implemented strategies for increasing the proportion of knowledge and technology-based products in their manufacturing and exports. Hungary's main problem is weak innovation, which is quite good in Slovenia, and with its high proportion of employment for scientists and engineers we can forecast an improvement in data on manufacturing and exports. In the case of Croatia, data on employment of experts and a sound level of innovation are promising, but the key problem remains of the extremely low share of manufacturing in investments in fixed capital, at a level half of the average of the four selected countries.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

Although the European Union has slowly recovered from the economic and financial crisis, it still continues to face numerous challenges which affect the competitiveness of member states. Positive economic trends are weighed down by inadequate growth in productivity, which is a barrier to stronger total growth in the EU. Furthermore, economic and social inequalities are permanently present, and the common market has still not reached its full potential. Stagnation in adopting new technologies and innovation as compared to global competitors is present in numerous manufacturing and service sectors.

The European Union as a whole is behind leading competitors on global competitiveness rankings. When it comes to the position of Croatia and the other countries, the WEF's Global Competitiveness Report, which ranks 137 countries, ranked Croatia 74<sup>th</sup> and the country has stagnated over the past five years, after a significant decline between 2007-2012. The selected countries analysed in this paper (the Czech Republic, Hungary, Slovakia and Slovenia) have shown a similar dynamic in rankings, with only the Czech Republic showing improvements, now ranked 31<sup>st</sup>. It must be emphasised too that all the selected countries, as well as the other new EU member states, are ranked above Croatia.

It can be concluded that the selected countries have built measures to encourage competitiveness into their national reforms programmes. In addition to measures for investment incentives, all these measures intend to increase the added value, achieve restructuring based on increased use of knowledge and technology and improve energy and environmental efficiency. One of the most important priorities of the European Commission and EU member states in the post-crisis period is encouraging growth and competitiveness in order to strengthen and maintain economic recovery and achieve the goals of the Europe 2020 Strategy. The EU contributes to strengthening the competitiveness of member states and the EU as a whole by developing a strategic framework (Europe 2020 Strategy, smart specialisation strategies, the European Semester, etc.), integrated policies (industrial, cohesion etc.) as well as through mechanisms, financing and other instruments (the European Fund for Strategic Investments, Horizon 2020, COSME and others).

Through the European Semester, an instrument for coordinating economic and fiscal policies, the European Commission requires member states to implement and report on reform implementation, which are partially linked to areas that deal with competitiveness. As an answer to structural challenges, countries included in the European Semester are required to prepare their own national reform programmes (NRP), which define measures and activities that will be implemented in the upcoming 12-18 month period. Comparing NRP for the selected countries shows that the reform aims vary in coverage and type of measures. However, the majority of the selected countries include some aspects of competitiveness among their priorities. These reforms should contribute to strengthening competitiveness, increasing productivity and sustainable growth, creating jobs and encouraging investments. For example, Croatia's NRP for 2017 defines 53 reforms in 12 areas in order to achieve three main goals, of which increasing competitiveness is in first place, increasing employment and linking the educational system to the labour market are second, while the third aim is the sustainability of public finances.

Smart specialisation strategies are national or regional strategies for research and innovation (RIS3) which define priorities whose aim it is to build competitive advantages by following successful models from other countries. In this way subsidy and investment policies are di-

rected to key national priorities and supporting development based on knowledge, technology and innovation. Preparing these strategies is in accordance with the requirements of the EU's new cohesion policy (2014-2020), which requires member states to identify areas of specialisation which best fit their innovation potential, with the support of financing from EU funds in the field of research, technological development and innovation. Innovation and investment have therefore become the central pillars of EU programmes for economic development and new job creation. One of the measures provided to support member states and regions to develop and implement smart specialisation strategies are smart specialisation platforms (S3P) which should, among other things, contribute to the development synergy between the HORIZON 2020 programme, ESIF and other sources of financing.

Among the selected countries discussed in this analysis, the Czech Republic and Hungary emphasise the importance of the knowledge economy, together with transforming their economic systems, Slovakia emphasises the structural diversification of its economy, while Slovenia is focused on priority niches where they aim to grow and transform from being followers to becoming global trendsetters. Croatia's smart specialisation strategy has goals and priority activities in the fields of research, development and commercialisation of innovations and defines target niches within the priority sectors. Croatia has chosen five thematic priority areas as its main focus for S3: Health and quality of life, Energy and sustainable environment, Transport and mobility, Safety and finally, Food and the bioeconomy. In addition, it has chosen two horizontal themes (key development technologies; information and communications technologies) which can contribute to increased added-value to Croatian manufacturing and foster new economic activities, productivity and employment growth.

All the selected countries chose the processing industry among their main thematic priority areas. Slovenia, for example, puts great emphasis on the area of processing industries, with as many as five selected niches (food, energy-efficient products, smart cities and towns, smart factories, health). The second most common category are information and communications technologies (ICT), which were chosen by the Czech Republic, Slovakia and Hungary, while Croatia chose ICT as a horizontal theme of special interest. Finally, the categories of manufacturing and distributing energy, human health and social businesses were in third place.

Data on investment incentives lead us to conclude that each selected country in this analysis has defined an area which it supports depending on its comparative advantages, potentials and competitiveness of its own economy, and has set its criteria for funnelling investments to regions and sectors where it wishes to achieve increased investment. However, despite this individual approach in creating the criteria, similarities in the choices of supported areas are evident. All the selected countries emphasise the processing industry, the Czech Republic and Slovakia subsidise the development of technology centres, the Czech Republic also includes the service sector, while only Slovakia directs investment into the tourism sector.

There are considerable variations among the selected countries in terms of administrative, tax, financial and other subsidies, tax deferrals and exceptions.

Among the WEF pillars of competitiveness that best describe a knowledge based economy, innovation and technology, in the field of higher education and life-long learning Croatia's positioning in rankings was very similar to that of Slovakia, with downturn up to 2010, stagnation up until 2015 and significant further fall over the past two years. Slovenia and the Czech Republic have set themselves apart with positive achievements in the field of education, while Hungary has marked constant and intense declines. Croatia's rank is very low in the field of innovation (ranked 106<sup>th</sup>) because of a constant negative trend since 2007. Conversely, Slovenia and the Czech Republic have ranked about 30 places above the other selected countries, mostly above Hungary but also Slovakia, which is currently undergoing a growth trend. Croatia continues to be poorly ranked according to the results of the 2017 European Innovation Scoreboard; for the majority of components it is below the EU average. The country was placed last in the group of moderate innovators, which includes the greatest proportion of EU members who are below the Union average.

The economic and financial crisis left a lasting mark on economic and investment activity in the EU and selected member states after 2007. The share of gross investment in fixed capital in GDP in the selected countries has decreased significantly over the past ten years. Of the selected countries, the Czech Republic has been least affected, while Slovenia has been most affected. After a significant fall, Croatia has had a moderate recovery from 2013 onwards, similar to that at the EU-28 average.

The European Commission's indicators show an increase in investment in export-competitive manufacturing sectors, while Croatia is specific in that it has a very low proportion of manufacturing in investments, despite the fact that the trend increased during 2009-2016. However, this is still almost two times lower than the rate in the other selected countries. Croatia is also stagnating in its export competitiveness in high-technology sectors at a level that is significantly lower than can be found in similar countries (with the exception of Slovenia).

Manufacturing in Croatia did not restructure from the beginning of the crisis onwards, and the share of medium high-technology has stagnated at the very low level of barely 2.5% of added value to the processing industry. The situation in Slovenia is similar, while the other three selected countries have conducted dynamic restructuring and the percentage of medium high-technology activities has increased to a level four times higher than it is in Croatia. Considered from the level of their innovation (41.3%) Croatian companies are positioned between comparatively low-ranked Hungarian and Slovak companies and the comparatively more innovative Slovenian and Czech companies, but are characterised by a low proportion of manufacturing, more specifically processing innovation activities. This has a great effect on the employment of scientists and engineers as well as of researchers employed in the business sector as compared to the labour force, by which Croatia is below the level of all

comparable countries (only 0.87% in 2016, while the EU average was close to 4%). The Czech Republic and Hungary achieved this average, while Slovenia surpassed it.

We can conclude that the Czech Republic successfully restructured towards knowledge and technology-based manufacturing, while Hungary is losing its ranking in high technologies, and Slovakia is progressing in medium high-technology sectors. On the other hand, Slovenia and Croatia have not implemented strategies to increase the proportion of products based on knowledge and technology in manufacturing and exports. In the case of Croatia, the improvement in employment of experts and solid level of innovation is promising, but the key problem of a very low proportion of processing industries among fixed capital investments, which is half of the average of the four selected countries, remains.

## **Recommendations for Croatia**

- Although Croatia has adopted key strategic documents as required by its EU membership, the WEF Global Competitiveness Report and other similar reports as well as the European Commission recommendations have highlighted areas in which Croatia needs to implement more intensive reforms, having in mind stagnation of the total national competitiveness. This particularly relates to weaknesses in the fields of innovation, education and business sophistication. A positive growth trend in competitiveness rankings would attract investment, encourage exports and thus help strengthen economic growth which would then be based on increased productivity. More specifically, productivity growth has not been sufficiently dynamic due to an ineffective allocation of resources.
- Croatia must improve its effectiveness in implementing a number of set strategies and action plans focusing on a small number of priority goals. The strategy for smart specialisation must be based on strengths, competitive abilities and potentials for excellence. To achieve this effectively, sectoral restructuring must be implemented in areas where Croatia has the greatest potential for smart, inclusive and sustainable growth. Effective implementation of strategies should help Croatia to achieve a positive shift in the global value chain.
- Special attention must be paid to the implementation of specific recommendations which the European Commission has issued to Croatia in the European Semester framework, as guidelines for reforms which include the competitiveness dimension. One of the recommendations issued in 2017 involved hastening educational reforms, with emphasis on the need to improve life-long learning and increasing the quality of the educational system, especially involving its adaptation to the requirements of the labour market and the development of knowledge and skills needed for the future. Croatia must move towards building skills they need to deal with rapid technological

changes in Europe and the world. Furthermore, it must use the funding and technical assistance provided in the framework of Structural Reform Support Programmes more effectively.

- Key reform priorities should include strengthening capacities for research and innovation as well as encouraging synergies between research / development activities and innovations. The current, inadequate capacity for innovation is one of the most significant barriers to increasing competitiveness. In order to stop the decreasing trend in innovation, the country should implement an innovation policy that can encourage collaboration between the business and academic sectors and increase investment in research, technological development and innovation in manufacturing processes. This should be aimed at developing new products and services with high added-value. In this process, investments in innovative, export competitive small and medium-sized enterprises are crucial.
- Restructuring towards exporting products and services based on medium-high and high-technologies must be strategically and operatively encouraged. Croatia is especially lagging behind in this field as compared to the other comparable countries. Although the necessary strategic documents have already been adopted, effective implementation mechanisms are needed in the field of investment subsidies as well through smart specialisation, regional policy measures and using structural funds.
- Sustainable strategies for stimulating investments must be developed and implemented while activities for attracting foreign investment must be intensified, all with the aim of strengthening investments. Investments in manufacturing and sectors based on knowledge, medium and high technology must be especially encouraged. A system of subsidising investments in research and development in the business sector must be constructed, and the absorption capacity of the economy to employ highly-educated experts and engineers must be increased.
- Furthermore, additional efforts must be made in developing innovative projects which can attract EU funding from the main instruments geared towards increasing productivity and competitiveness. This is first and foremost the European Fund for Strategic Investments (EFSI) whose goal is to attract as much private capital in combination with public capital. Better preparations must be made to attract funding from other EU instruments for increasing competitiveness, such as Horizon 2020, COSME for small and middle-sized enterprises, EU funds and the Union stock market.
- In accordance with the EU Council's recommendation for the foundation of national productivity boards, it is necessary to secure the conditions and means for independent and high-quality economic analyses on implementing policies in the field of competitiveness and productivity. Croatia's National Competitiveness Council could take

on this role, if it is ensured full autonomy from the public administration and the inclusion of members that would ensure expert analyses and creating recommendations for policies that are in the general interest of the society.

- In conclusion, it should be emphasised that Croatia must encourage growth that is more based on productivity, innovation and exporting products with increased added-value. In order to improve competitiveness, structural reforms with the goal of improving the investment climate, educational system and innovation are the key preconditions.

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## ANNEX

Table 1: Overview of the main National Reform Programmes' (NRP) goals of selected EU member states

	<b>Main NRP goals / measures of the selected EU member states</b>
<b>Croatia</b>	<p>The 3 main goals within 12 areas of reform:</p> <ul style="list-style-type: none"> <li>- <b>Strengthening the Competitiveness of the Economy</b></li> <li>- Increasing Employment and Linking the Educational Sector to the Labour Market</li> <li>- The Sustainability of Public Finances</li> </ul>
<b>Slovenia</b>	<ul style="list-style-type: none"> <li>- Structural Measures for the Long-term Stability of Public Finance <ul style="list-style-type: none"> <li>• Health Reform</li> <li>• Long-term Care</li> <li>• Changes in the Pension System</li> <li>• Enhanced Fiscal Planning and Surveillance</li> </ul> </li> <li>- Measures with a Short-term and Medium-term Effect <ul style="list-style-type: none"> <li>• Reducing Costs of Debt Management</li> <li>• Amended Financing of Municipalities</li> <li>• Wage and Employee System in the Public Sector</li> <li>• Measures in the Field of Transfers to Individuals and Households and Improving the Efficiency of Use of Public Funds</li> </ul> </li> <li>- Measures to Enhance Growth Potential, such as: <ul style="list-style-type: none"> <li>• <b>Tax Measures to Stimulate the Business Environment and Strengthen its Competitiveness</b></li> <li>• Measures in the Labour Market</li> <li>• Promoting Investments</li> <li>• The Centralisation of the Government IT System and Real Estate Owned by the State</li> <li>• Public Procurement</li> <li>• Reorganisation of the Judiciary</li> <li>• Management and Governance in the Public Sector</li> </ul> </li> </ul>
<b>Hungary</b>	<ul style="list-style-type: none"> <li>- Achieving the Medium-term Budgetary Objective,</li> <li>- Tax Policy Strengthening Investments and Employment,</li> <li>- <b>Establishing a Competitive Business Environment,</b></li> <li>- <b>Decreasing Public Work, Competitive Workforce,</b></li> <li>- Education Creating Opportunities,</li> <li>- Strengthening the Healthcare System</li> </ul>
<b>Slovakia</b>	<ul style="list-style-type: none"> <li>- Labour Market Measures</li> <li>- Healthcare System Measures</li> <li>- Primary Education Measures</li> </ul>

<b>Czech Republic</b>	<ul style="list-style-type: none"> <li>- Tax System and Tax Burden Structural Reforms</li> <li>- Budgetary Policy, Fiscal Framework and Long-term Fiscal Sustainability</li> <li>- Labour Market, Social Policy and Education</li> <li>- <b>Measures to Promote Competitiveness</b></li> <li>- Strengthening of Sectoral Policies</li> </ul>
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Source: 2017 National Reform Programmes for the following member states: Croatia, Slovenia, Hungary, Slovakia, Czech Republic, found at: [https://ec.europa.eu/info/2017-european-semester-national-reform-programmes-and-stability-convergence-programmes\\_en](https://ec.europa.eu/info/2017-european-semester-national-reform-programmes-and-stability-convergence-programmes_en)

*Table 2: Key Areas of Specialisation based on Smart Specialisation Strategies of Croatia, the Czech Republic, Hungary, Slovakia and Slovenia*

Key Areas	EU Member States
Agriculture, Forestry and Fishing	HR, HU
Construction	SI
Arts, Entertainment and Recreation	SI
Electricity, Gas, Steam and Air Conditioning Supply	HR, HU, SI
Human Health and Social Work Activities	HR, CZ, HU
Information and Communication Technologies	CZ (2), SK, HU
Manufacturing	HR, CZ, SK (3), HU (2), SI (5)
Mining and Quarrying	-
Public Administration and Defence, Compulsory Social Security	HR
Administrative and Support Service Activities	HU
Accommodation and Food Service Activities	-
Transportation and Storage	HR
Water Supply, Sewerage, Waste Management and Remediation Activities	HU, SI
Wholesale and Retail Trade	-

Source: [EYE@RIS3](http://s3platform.jrc.ec.europa.eu/map) <http://s3platform.jrc.ec.europa.eu/map>

Table 3: Chosen Areas of Specialisation in the Smart Specialisation Strategies of Croatia, the Czech Republic, Hungary, Slovakia and Slovenia

Key Areas	Identified Capabilities	Identified Target Market	EU PrioritAreas
<b>Croatia</b>			
<b>Transport and Mobility</b>	1. Transportation and storage 2. Water transport and related services	1. Transport and storage	1. Sustainable innovation 2. Smart green and integrated transport systems
<b>Energy and Sustainable Environment</b>	1. Energy production and distribution 2. Power generation / renewable energy sources	1. Energy production and distribution 2. Energy distribution	1. Sustainable Innovation 2. Sustainable energy and renewable energy sources
<b>Security</b>	1. Public administration, security and defence	1. Public administration, security and defence	1. Public health and security
<b>Bio-economy</b>	1. Manufacturing and industry 2. Bio-technology	1. Manufacturing and industry 2. Bio-technology	1. Key Enabling Technologies (Key Enabling Technologies (KETs)) 2. Industrial bio-technologies
<b>Health and Quality of Life</b>	1. Human health and social work activities	1. Human health and social work activities	1. Public health and security
<b>Food</b>	1. Agriculture, forestry and fishing	1. Manufacturing and Industry 2. Food, beverages and tobacco products	1. Sustainable innovation 2. Sustainable agriculture
<b>Czech Republic</b>			
<b>Means of transportation</b>	1. Manufacturing and industry	1. Transport and storage	1. Sustainable innovation 2. Eco-innovation

	2. Machines and equipment	2. Road haulage and related services	
<b>Engineering and electronics industry</b>	1. Information and communication technologies (ICT) 2. Telecommunication	1. Manufacturing and industry 2. Electronics	1. Key Enabling Technologies (Key Enabling Technologies (KETs)) 2. Micro- and Nano-electronics
<b>Information and communication technologies (ICT), automation and electronics</b>	1. Information and communication technologies (ICT) 2. Telecommunication	1. Manufacturing and industry 2. Computer, electronic and optical products	1. Key Enabling Technologies (KETs) 2. Advanced production systems
<b>Health, medical technologies and devices</b>	1. Human health and social work activities	1. Information and communication technologies 2. Computer programming, consultancy and related activities	1. Public health and security 2. Public health and wellbeing
<b>Slovakia</b>			
<b>Automotive industry and machine building</b>	1. Manufacturing and industry 2. Machines and equipment	1. Manufacturing and industry 2. Motor vehicles and other means of transportation	1. Key Enabling Technologies (KETs) 2. Advanced production systems
<b>Iron and steel production and processing</b>	1. Manufacturing and industry 2. Other manufacturing	1. Construction 2. Specialized construction activities	1. Sustainable innovation 2. Resource efficiency
<b>Information and communication technologies and services</b>	1. Information and communication technologies 2. Computer programming, consultancy and related activities	1. ICT 2. Computer programming, consultancy and related activities	1. Digital Agenda 2. E-commerce and small and medium enterprises (SME)
<b>Consumer devices and electric devices</b>	1. Manufacturing and industry 2. Computer, electronic and optical products	1. Manufacturing and industry 2. Electric equipment	1. Digital Agenda 2. Intelligent intermodal and sustainable urban areas (e.g. smart cities)

<b>Hungary</b>			
<b>Advanced technologies in the automotive and other machine building industries</b>	1. Manufacturing and industry 2. Machines and equipment	1. Manufacturing and industry 2. Motor vehicles and other means of transportation	1. Key Enabling Technologies (KETs) 2. Advanced production systems
<b>Information and communication technologies and services</b>	1. Information and communication technologies (ICT) 2. Computer programming, consultancy and related activities	1. Information and communication technologies (ICT) 2. Information service activities	1. Digital Agenda
<b>Sustainable environment</b>	1. Water Supply, Sewerage, Waste Management and Remediation Activities 2. Waste collection, treatment and disposal activities, material recoveries	1. Water Supply, Sewerage, Waste Management and Remediation Activities 2. Waste collection, treatment and disposal activities, material recoveries	1. Sustainable innovation 2. Sustainable land and water use
<b>Agricultural innovation</b>	1. Agriculture, forestry and fishing 2. Crop and animal production, hunting and related service activities	1. Agriculture, forestry and fishing 2. Crop and animal production, hunting and related service activities	1. Sustainable innovation 2. Sustainable agriculture
<b>Clean and renewable energy</b>	1. Energy production and distribution 2. Power generation / renewable energy sources	1. Energy production and distribution 2. Energy distribution	1. Sustainable innovation 2. Sustainable energy and renewable energy sources
<b>Healthy society and wellbeing</b>	1. Human health and social work activities 2. Healthcare activities (medical services)	1. Manufacturing and industry 2. Basic pharmaceutical products and pharmaceutical preparations	1. Public health and security 2. Public health and wellbeing

<b>Inclusive and sustainable society</b>	1. Services 2. Education	1. Services 2. Travel agency, tour operator and other reservation services and related activities	1. Service innovation
<b>Healthy local food</b>	1. Manufacturing and industry 2. Biotechnology	1. Manufacturing and industry 2. Food, beverages and tobacco products	1. Public health and security 2. Food Security and Safety
<b>Slovenia</b>			
<b>Networks for the Transition to Circular Economy</b>	1. Energy production and distribution 2. Power generation / renewable energy sources	1. Energy production and distribution 2. Power generation / renewable energy sources	1. Sustainable innovation 2. Sustainable production and consumption
<b>Sustainable food production</b>	1. Manufacturing and industry 2. Food, beverage and tobacco production	1. Agriculture, forestry and fishing 2. Crop and animal production, hunting and related service activities	1. Public health and security 2. Food security and safety
<b>Energy-efficient product development</b>	1. Manufacturing and industry 2. Computer, electronic and optical products	1. Transportation and storage 2. Road haulage and related services	1. Sustainable innovation 2. Smart green and integrated transport systems
<b>Sustainable tourism and creative cultural and heritage based services</b>	1. Creative cultural art and entertainment 2. Creative, artistic and entertainment activities	1. Services	1. Cultural and creative industries 2. Support to link cultural & creative industries with traditional industries
<b>Smart use of resources</b>	1. Water Supply, Sewerage, Waste Management and Remediation Activities 2. Waste collection, treatment and disposal activities, material recoveries	1. Water Supply, Sewerage, Waste Management and Remediation Activities 2. Waste collection, treatment and disposal	1. Sustainable innovation 2. Waste management

		activities, material recoveries	
<b>Smart cities and communities</b>	1. Manufacturing and industry 2. Electrical equipment	1. Energy 2. Education	1. Sustainable innovation 2. Resource efficiency
<b>Smart buildings and homes</b>	1. Construction 2. Specialised construction activities	1. Construction 2. Specialised construction activities	1. Sustainable innovation 2. Sustainable energy and renewable energy sources
<b>Smart factories</b>	1. Manufacturing and industry 2. Machines and equipment	1. Information and communication technologies (ICT)	1. Key Enabling Technologies (KETs) 2. Advanced production systems
<b>Health / Medicine</b>	1. Manufacturing and industry 2. Biotechnology	1. Manufacturing and industry 2. Basic pharmaceutical products and pharmaceutical preparations	1. Social Innovation 2. Social innovation with regard to health, well-being & elder care

Source: S3 web platform, <http://s3platform.jrc.ec.europa.eu/>

*Table 4: Incentive measures for investment projects in Croatia, the Czech Republic and Slovakia*

<b>Croatia</b>	
<b>Supported areas</b>	<ul style="list-style-type: none"> <li>• Manufacturing and processing activities,</li> <li>• Development and innovation activities,</li> <li>• Business support activities,</li> <li>• High added value services</li> </ul>
<b>Minimum requirements / Specific conditions</b>	<p>Incentive measures can be used by enterprises registered in the Republic of Croatia investing in fixed assets the minimum amount of:</p> <ul style="list-style-type: none"> <li>• € 50,000 together with creating at least 3 new jobs for microenterprises</li> <li>• € 150,000 together with creating at least 5 new jobs for small, medium and large enterprises</li> <li>• € 50,000 together with creating at least 10 new jobs for ICT system and software development centres</li> </ul>
<b>Forms of investment incentives</b>	<ol style="list-style-type: none"> <li>1. Tax incentives for micro enterprises</li> <li>2. Tax incentives for small, medium and large enterprises</li> <li>3. Employment incentives</li> </ol>

	<ol style="list-style-type: none"> <li>a. Incentive measures for investment in development and innovation activities</li> <li>b. Incentive measures for investment in business support activities</li> <li>c. Incentive measures for investment in high value-added services</li> </ol> <ol style="list-style-type: none"> <li>4. Incentives for education and training</li> <li>5. Incentive measures for the capital costs of the investment project</li> <li>6. Incentive measures for labour-intensive investment projects</li> <li>7. Incentive measures for investment projects in the minimum amount of €13.000.000,00, provided that 10 new jobs requiring university degrees are created in connection with the investment project: <ol style="list-style-type: none"> <li>a. Incentives ensuring unchanging business conditions</li> <li>b. Investment aid</li> <li>c. 50-50 incentives</li> <li>d. Grace period for tax payments.</li> </ol> </li> </ol>
<b>Czech Republic</b>	
<b>Supported areas</b>	<ul style="list-style-type: none"> <li>• Manufacturing industry</li> <li>• Technology Centres</li> <li>• Business Support Services Centres</li> </ul>
<b>Minimum requirements / Specific conditions</b>	<p>Manufacturing industry:</p> <ul style="list-style-type: none"> <li>- Minimum investment of CZK 50–100 million in assets depending on the region, of which at least 50% must be invested in new machinery</li> <li>- Creation of at least 20 new jobs</li> <li>- Specific conditions for strategic investments: <ul style="list-style-type: none"> <li>○ Minimum investment of CZK 500 million in assets of which at least 50% must be invested in new machinery</li> <li>○ Creation of at least 500 new jobs</li> </ul> </li> </ul> <p>Technology centres</p> <ul style="list-style-type: none"> <li>- Minimum investment of CZK 10 million in assets of which at least 50% must be invested in new machinery</li> <li>- Creation of at least 20 new jobs</li> <li>- Specific conditions for strategic investments: <ul style="list-style-type: none"> <li>○ Minimum investment of CZK 200 million in assets of which at least 50% must be invested in new machinery</li> <li>○ Creation of at least 100 new jobs</li> </ul> </li> </ul> <p>Business Support Services Centres</p> <ul style="list-style-type: none"> <li>- Creation of a minimum number of new jobs, ranging from 20 to 500, depending on the type of individual centres</li> <li>- International reach: services provided by a BSS centre must reach two other countries besides the Czech Republic</li> </ul>
<b>Forms of investment incentives</b>	<ul style="list-style-type: none"> <li>- Corporate income-tax relief for a period of ten years;</li> <li>- Cash grants for job creation up to the amount of CZK 300,000, depending on the unemployment rate in a given region;</li> </ul>

	<ul style="list-style-type: none"> <li>- Cash grants for retraining and training new employees up to the amount of 50% of training costs, depending on the unemployment rate in a given region;</li> <li>- Property-tax exemption for a period of five years – only in special industrial zones;</li> <li>- Cash grants for acquisition of assets – only for strategic investments in manufacturing industries or technology centres</li> </ul>
<b>Slovakia</b>	
<b>Supported areas</b>	Industry, technology centres, shared service centres, tourism
<b>Minimum requirements / Specific conditions</b>	<p>Industry (depending on the unemployment rate):</p> <ul style="list-style-type: none"> <li>- Minimum investment in the amount of 0.2/3/5/10 mil. EUR, with a 30/40/50/60 % share of new machinery and equipment (for large enterprises), and 50% must be covered by own equity</li> <li>- Minimum investment in the amount of 0.1/1,5/2,5/5 mil. EUR , with a 30/40/50/60 % share of new machinery and equipment (for SMEs), and 50% must be covered by own equity</li> </ul> <p>Technology centres:</p> <ul style="list-style-type: none"> <li>- Minimum investment of 500,000 EUR in fixed assets</li> <li>- At least 250,000 EUR must be covered by own equity</li> <li>- The company must employ at least 70% of employees with a university degree</li> <li>- Minimum of 30 newly created jobs</li> </ul> <p>Shared service centres:</p> <ul style="list-style-type: none"> <li>- Minimum investment of 400,000 EUR in fixed assets</li> <li>- At least 200,000 EUR must be covered by own equity</li> <li>- The company must employ at least 60% of employees with a university degree</li> <li>- Minimum of 40 newly created jobs</li> </ul> <p>Tourism:</p> <ul style="list-style-type: none"> <li>- Minimum investment in the amount of 3/5/10 mil. EUR, with a 20//40 % share of new technology</li> </ul>
<b>Forms of investment incentives</b>	<ul style="list-style-type: none"> <li>- A subsidy for the acquisition of material assets and immaterial assets ;</li> <li>- An income tax relief ;</li> <li>- A contribution for created new jobs ;</li> <li>- Transfer of immovable property or exchange of immovable property</li> <li>- at a price lower than a general asset value</li> </ul>

Source: Agency for investments and competitiveness of the Republic of Croatia, <http://www.aik-invest.hr/>; Investment Incentives: Your Gateway to Prosperity (2015), CzechInvest, Investment and Business Development Agency, Ministry of Industry and Trade, Czech Republic; Slovak Investment and Trade Development Agency (SARIO), <http://www.sario.sk/en/invest-slovakia/investment-incentives/faqs>