

# List of Projects

## Robert Stehrer

### **Green technologies: How are they created and regulated? What impact do they have?**

*Anniversary Fund of the Oesterreichische Nationalbank*

*January 2024 - June 2026*

Climate change is a major concern in academia and policy arena. Whereas governments adopt various market regulations to reduce the GHGs and increase consumer awareness, businesses define new objectives aiming at reduction of pollution. Doing so, they innovate in green technologies to gain market shares by introducing new climate neutral products also impacting on their productivity, efficiency, and energy efficiency. The proposed research will comprehensively study determinants of such eco-innovations in Austria and the EU, and what impact they have on firm performance. The proposed research will first study how eco-innovations are undertaken at the firm-level by focusing on the role of firm-level characteristics such as productivity and quality of highly educated and skilled labour as well as financing and credits. Moreover, it will study how such eco-innovations and green technologies allow firms to become more energy efficient and more productive. Second, it will study how firms adjust their production with green regulations to supply and export products with better quality. Third, it will analyse how such novel green technologies are spurred in European regions by focusing on the role of Framework Programmes (FP) and public policies directed at the EU level. The role of joint research collaboration among inventors in different regions of the European Union, financing, funding, credits, and environmental regulations in the EU and abroad will be the key factors under these investigations.

Funded by the [Anniversary Fund of the Oesterreichische Nationalbank](#) (Project No. 18939).

### **Study on value-added exposure estimates to assess spillovers and competitiveness** (*wiiw Team Leader*)

*European Commission, DG Economic and Financial Affairs*

*August 2024 - November 2025*

Current models based on input-output tables are prone to various weaknesses and challenges. First, input-output tables are released with a considerable time lag (publication lag), which might lead to inaccurate estimates in the times of fast-changing economic conditions. Second, input-output tables are typically available in nominal terms only, as opposed to real terms (or more exactly, chain-linked volumes) as is the case with National Accounts data. The aim of this study is to advance DG ECFIN's input-output modelling framework in several respects. Specifically, this project will produce a tool enabling researchers to update and forecast input-output data to the extent possible. This will allow DG ECFIN to undertake spillover assessments (both for demand and price shocks) in a forward-looking manner within the economic surveillance framework.

### **Genetic innovation, intermediate goods and energy prices in an agent-based model**

*Anniversary Fund of the Oesterreichische Nationalbank*

*March 2023 - August 2025*

Agent-based models have been receiving ever more attention in recent years. Especially since the crisis of 2008, there have been calls for new research tools. Agent-based models are an interesting option: they allow study of the behaviour of heterogeneous agents and the effects of such heterogeneity on the total economy. We propose introducing three novel extensions to a state-of-the-art agent-based model: First, we allow for rich interactions between industries by incorporating intermediate goods into the production process. Secondly, the model is extended to enable a new way to model technological change ("genetic optimisation"). Thirdly, we propose to account for the biophysical dimension by including energy usage as a factor of production.

Funded by the [Anniversary Fund of the Oesterreichische Nationalbank](#) (Project No. 18830).

### **How can economic instruments of climate policy be directed through foreign direct investment?**

*Anniversary Fund of the Oesterreichische Nationalbank*

*October 2022 - March 2025*

The mechanism through which the policy maker can foster novel green and environmental technologies via FDI is the main focus of the project. It comprehensively studies this by analysing in three work packages how FDI is determined in the EU and how it can help to diffuse technology. The first work package analyses which factors at the three levels of region, industry and firm determine FDI in firms located in the EU. The second work package analyses how FDI affects productivity growth and employment growth at both the firm level and the regional sector level. In the third work package the diffusion of knowledge, technology and know-how of FDI is analysed, which could lead to green and environmental innovation and finally patenting of these technologies. In both the second and the third work package the indirect impact of FDI on domestically owned firms is analysed separately from the impact of FDI on the whole regional sector, including foreign-owned firms.

Funded by the [Anniversary Fund of the Oesterreichische Nationalbank](#) (Project No. 18800).

### **Research Centre International Economics (Forschungsschwerpunkt Internationale Wirtschaft, FIW) (wiiw Team Leader)**

*Austrian Federal Ministry of Education, Science and Research*

*October 2013 - February 2025*

wiiw is part of a consortium which is setting up a "Centre of Excellence on International Trade". It provides the appropriate infrastructure and assistance for a research community in international trade. Thus it can achieve a sustainable coordination among different research projects, research institutes and other activities in the broad field of economics of international trade (FIW German abbreviation). This project will also create a network of experts and assure the integration of international projects. The Centre of Excellence fulfils the following tasks: (1) to develop a research programme which assists external political decisions and activities concerning the European Union and other multinational organisations in a sustainable fashion, (2) to provides access to relevant databases in an easy and transparent way, and (3) to encourage and enhance the development of know-how with regard to foreign economic affairs in Austria. This Centre of Excellence will be an important source of information for the research community in Austria, the Austrian government with regard to foreign affairs as well as the social partnership. It collects and increases the knowledge of the given research institutes and provides it to the public in a user-friendly manner.

<http://www.fiw.ac.at/>

### **The spatial impact of EU policies**

*European Commission, DG Regional Policy*

*October 2023 - January 2025*

The objective of this study is to assess the impact of the EU initiatives and policies, such as the Common Agricultural Policy, the Common Fisheries Policy, the European Research and Innovation policy (Horizon 2020), the EU Emissions Trading System etc., on economic and social cohesion in the EU. The results of the study will contribute to the current discussion on the reform of EU Cohesion policy by providing insights into: • potential cohesion trade-offs, synergies and complementarities between EU Cohesion policy and other EU policies and initiatives • how to further develop the "do no harm to cohesion" principle and • how Territorial Impact Assessments can be further developed to improve policy coordination. These aspects will be explored not only through the lens of territories, but also that of social groups, thereby investigating whether the reduction of inter-regional disparities goes hand-in-hand with the reduction of intra-regional inequalities. The consortium under leadership of wiiw will also analyse funds disbursed under regional State aid, with a particular attention to the amounts of aid channelled to EU regions under this regime to enhance regional development.

### **Update of the EUKLEMS data (wiiw Team Leader)**

*Oesterreichische Nationalbank (OeNB)*

*June 2024 - October 2024*

Data on growth and productivity trends in the EU member states continue to be important indicators of the development of countries' competitiveness by sector and over time. As more detailed data for the economic slump in the COVID-19 pandemic (especially in 2020) and the subsequent recovery in 2021 and 2022 are becoming available

only now the existing data will be updated until at least 2022 (depending on data availability). The data will become available to the general public via <https://euklems.eu/>.

<https://www.euklems.eu>

### **Datenquellen für die Analyse von Berufen, Kompetenzen und Skills/Tasks**

*Austrian Federal Ministry of Labour and Economy*

*September 2024 - October 2024*

Die Studie soll einen Überblick und eine fundierte Analyse der verfügbaren Datenquellen bieten, die zur Untersuchung von Berufen, Kompetenzen, Skills und Tasks eingesetzt werden können. Dies umfasst eine Bewertung der verschiedenen Datenquellen nach Kriterien wie Relevanz, Datenqualität, Granularität, Konsistenz und Datenzugänglichkeit. Zudem wird ein strukturierter Vergleich der Datenquellen durchgeführt, um deren jeweilige Stärken und Schwächen zu identifizieren. Abschließend wird die Eignung der Datenquellen zur Darstellung der Schnittmenge an Berufen bewertet, die durch die grüne und digitale Transformation betroffen sind. Der Fokus liegt auf der Anwendbarkeit für Österreich.

### **Spend, transfer, or repay. What to do with all the money from the EU carbon border tax? (wiw Team Leader)**

*Anniversary Fund of the Oesterreichische Nationalbank*

*October 2022 - September 2024*

The project addresses the expenditure side of the European carbon border adjustment (CBA) mechanism. Currently, there are intensive discussions concerning the design of the CBA mechanism. The use of revenue is a sensitive issue that can have far-reaching implications on the effectiveness and legality of the CBA. While different expenditure options have been proposed, there is a lack of research contrasting the economic effects of the said revenue options. Therefore, the priority of the research project is to explore the economic implications of different spending options for the revenues generated by the CBA. It estimates the effects of a carbon border tax on trade, GDP, and welfare for alternative spending scenarios for the carbon border tax revenues. This is explored with two different carbon border adjustment designs. The research will strive to contribute to the policy debate on the design of the CBA, and on the future of the EU budget in the context of new own resources.

Funded by the [Anniversary Fund of the Oesterreichische Nationalbank](#) (Project No. 18815).

### **Labour market effects of Austrian foreign trade (wiw Team Leader)**

*Austrian Federal Ministry of Labour and Economy*

*November 2023 - September 2024*

Around a third of Austria's GDP can be attributed to export activities in value added terms and accordingly, around a quarter of employment is directly and indirectly linked to exports. Export markets might undergo a profound change over the next years. Further the labour market will be affected by major changes in the coming years due to demographic developments. This study is therefore dedicated to the interaction between the Austrian export economy and the labour market, whereby two central topics are addressed and linked: Firstly, the expected effects of structural change in foreign trade on the demand for labour in Austria are analysed and quantified. Secondly, the development of the labour supply is discussed and compared with the analyses of the development of labour demand. The aim is to quantitatively analyse the development of employment given the demographic developments on the one hand and the expected structural developments and effects on employment stemming from Austrian foreign trade on the other.

### **Beschäftigungs- und Lohnstrukturen, Verwendung von IKT in Haushalten und Erwerbsverläufe - Analysen basierend auf neuen österreichischen Mikrodaten (wiw Team Leader)**

*AK - Wien*

*March 2023 - September 2024*

Verwendung von IKT und Beschäftigungs- und Lohnstrukturen: Analysen basierend auf neuen österreichischen Mikrodaten Ziel der Studie ist es, wichtige Fragestellungen auf Basis von Mikrodaten für Österreich zu analysieren. Die Studie konzentriert sich auf zwei Themenbereiche: IKT-Nutzung und Beschäftigungsentwicklung in österreichischen Unternehmen und IKT-Nutzung und Lohnungleichheit in österreichischen Unternehmen

### **Employment and Labour Market Scenarios (wiw Team Leader)**

*European Trade Union Institute (ETUI)*

*July 2024 - August 2024*

The European economy is challenged by several ongoing transitions, such as the greening of the economy, the unfolding digital and technological transformations, including robots or artificial intelligence, as well as major demographic changes. In addition, there are further challenges which Europe will face over the short and medium run, ranging from increasing uncertainty with regards to political and financial priorities of the EU, macro-economic uncertainties (inflation, policy interest rates, productivity) to global political challenges and geopolitical risks and, not least, looming labour and skills shortages. Against this background, the study will develop various employment and labour market scenarios for the EU. These will specifically take account of employment changes in sectoral (NACE rev.2, level 1) employment and labour force groups, as well as the labour supply side (working-age population, participation rates and resulting labour supply) by age, gender and potentially other labour market categories and identify potentially arising imbalances and labour shortages by occupational categories. The authors will follow and extend the methodology developed by Jestl and Stehrer (2021) and calculate the scenarios for all EU27 member states for the short- and short-to-medium-term up to 2026.

### **Production and analysis of the Skills Forecast** (*wiiw Team Leader*)

*European Centre for the Development of Vocational Training (CEDEFOP)*

*July 2020 - July 2024*

Cedefop, since 2005, has developed a methodological framework to estimate projections for the skills demand and supply across EU Member States. The main objective of this contract is to produce regular Skills Forecasts, consistent in scope and level of detail with the previous releases, and analyse the results producing high quality outputs. A consortium led by Cambridge Econometrics (and with wiiw as a partner) is producing and further developing these forecasts from the beginning and has won all consecutive contracts so far.

### **Differences in real non-residential investment between the United States and EU countries** (*wiiw Team Leader*)

*European Investment Bank (EIB)*

*May 2023 - June 2024*

Gross fixed capital formation in machinery and equipment and intellectual property products as a percent of GDP in the United States have exceeded those in the European Union since 2010. This difference emerged in the wake of the global financial crisis and has persisted until now. The project documents and accounts for the differences in real non-residential investment between the United States and EU countries, especially since 2010. The analysis is based on GFCF data taken from Eurostat and the recent EU KLEMS releases. To the extent possible, the analysis should highlight the 'investment gap' when comparing the EU and the US and assess potential reasons for these differences in investment patterns.

### **Green Transition**

*Kontext Institut*

*April 2024 - May 2024*

Green technologies hold great potential for the European economy. Faced with the active use of green industrial policies in China and the US, Europe cannot sit back and observe the unfolding of this 'green race'. A deeper EU involvement in the production of green technologies could create new business opportunities and ignite a new wave of innovations and investment. Similarly, in the face of escalating environmental degradation and the imperative of mitigating climate change, nations grapple with the intricate interplay between economic growth and environmental sustainability. In such context, understanding the vulnerabilities and resilience of industries emerges as a pivotal consideration. This project analysed the impact on GDP and employment of reshoring to the EU the production of five major green technologies (photovoltaics, wind turbines, batteries, electric motors and electric vehicles) and the resilience of low carbon intensity (LCI) versus high carbon intensity (HCI) industries of the Austrian economy, examining the impact of energy price shocks on real gross value added (GVA) and employment within both LCI and HCI industries.

### **Supporting the compilation of consumption of fixed capital and stocks of fixed assets** (*wiiw Team Leader*)

*Eurostat*

*April 2022 - April 2024*

In this project, wiiw will support Eurostat in the compilation of consumption of fixed capital and stocks of fixed

assets in national accounts. This is done by comparative analyses of country data, comparisons of various methodologies and compilation practices, the elaboration of country specific guidance for possible improvement, reporting to National Accounts Working Groups, providing methodological support, developing metadata, and supporting the client in the organisation of a seminar.

### **Challenges for Cohesion: Looking ahead to 2035**

*European Commission, DG Regional Policy  
September 2022 - April 2024*

This European research project focusses on the challenges emerging from globalisation, demographic change, digital and green transitions and their impact on the economic cohesion of European regions until 2035. The research includes the development and analysis of vulnerability indices related to each challenge. One macroeconomic (CAM) and four well-established regional economic models (GEM-E3, E3ME, MASST-5, EU-EMS) are employed to assess how the three challenges might affect EU regions' potential future growth patterns and thus also regional cohesion until the year 2035. The study also includes detailed qualitative work on the regions' adaptive and mitigating capacities with respect to these challenges. The results of this research project are important contributions to the European debate on the future of EU Cohesion policy. The project is a collaborative venture of seven leading European research institutes and is coordinated by the Vienna Institute for International Economic Studies (wiiw).

### **Assessing inflation through input-output analysis Spillovers DG-Ecfin (wiiw Team Leader)**

*European Commission, DG Economic and Financial Affairs  
March 2024 - March 2024*

The strongly rising and rather persistent inflation rates over the last two years pose an important challenge to policy makers. To design appropriate policies to combat inflation requires a thorough understanding of the sources of inflation. The massive energy price shock which hit all Member States of the European Union to a different degree has led to unprecedented levels of inflation combined with or followed by an increase in value-added inflation in most EU Member States. Input-output tables and techniques allow to disentangle the direct impact of the shock from the impact of other factors, such as value-added inflation, on inflation.

### **Industry 4.0, migration and the labour market adjustment: an intra-European perspective**

*Anniversary Fund of the Oesterreichische Nationalbank  
October 2021 - March 2024*

The mechanism through which novel technologies including patents granted, robot adoption, and digitalization affect the labour market, skill composition and wage levels, and consequently the pull and push factors of migration, is the main focus of the study. The project will comprehensively study this phenomenon by analysing various interactions between innovation, adoption of robots, digitalization, and wages, and migration patterns in four work packages. First, the impact of novel technologies on wages by across countries and sectors will be studied. Second, the impact of novel technologies on migration flows by sectors and skills in selected EU countries will be analysed, also controlling for other factors. Third, the impact of the gap in technologies defined by the difference in robot intensity (i.e. robot stocks per employee) and the extent of digitalisation between the origin and destination countries on bilateral migration flows will be analysed. Fourth, push and pull factors affecting the intention to migrate will be studied at the individual level.

Funded by the [Anniversary Fund of the Oesterreichische Nationalbank](#) (Project No. 18737).

### **Export diversification strategy for Venezuela**

*United Nations Conference on Trade and Development (UNCTAD)  
October 2023 - February 2024*

This project aims to design a sustainable diversification strategy for Venezuela and industrial policies to support the identified products and processes. In the framework of this project, wiiw will analyse the export structure of Venezuela using the product space methodology and identify new export opportunities through a thorough analysis that involves the product space metrics and additional indicators on linkages, employment, export markets, and foreign exchange.

### **Untangling the impacts of technological transformations, globalisation and demographic change to foster shared prosperity in Europe (UNTANGLED) (wiiw Team Leader)**

*European Commission, Horizon 2020  
February 2021 - January 2024*

Technological transformations, globalisation and demographic changes are the three key mega-trends posing socio-economic challenges and opportunities for the EU. UNTANGLED aims to fill knowledge gaps about these trends by pursuing three main goals: (1) to provide detailed analyses at the macro-, regional-, sectoral-, and micro-level concerning the effects of these trends on labour market outcomes and inequality, and their winners and losers; (2) to develop comprehensive, model-based scenarios of the impacts of these trends in the next decades, overall and for various subpopulations, sectors and regions; (3) to develop policy recommendations fostering shared prosperity. The project is commissioned to a consortium coordinated by the Catholic University of Leuven. wiiw is one of 14 partners and leads a workpackage on meso-level analysis.

### **GROW Fellowships 2023** (*wiiw Team Leader*)

*European Commission, DG Grow  
January 2023 - December 2023*

This fellowship programme aimed to support DG GROW in its analysis and policy making in the areas of industrial, trade and innovation policy, as well as policies related to market integration and, more generally, mission-oriented policy design.

### **Where are the growth potentials? The sectors that can boost convergence in CESEE**

*Oesterreichische Nationalbank (OeNB)  
June 2023 - November 2023*

Central Eastern European Countries (CEE, ie EU member countries of Central Eastern Europe) are in need of assessing their economic convergence process and identify their future drivers of growth, in terms of sectors, technologies and skills. It is key for CEE economies to upgrade their productions and remain competitive despite declining cost advantages. This analysis will be the result of a cooperation between the Austrian National Bank (OeNB), the European Investment Bank (EIB) and The Vienna Institute for International Economic Studies (wiiw). wiiw will contribute to the report with an analysis on "Export structures to identify promising sectors" and will also provide inputs, expertise and comments and actively participate in the exchange and discussions during the project.

### **Technology Sovereignty and the Role of Knowledge Diffusion in Global Value Chains** (*wiiw Team Leader*)

*Joint Research Centre (JRC)  
February 2023 - June 2023*

The project will study the relationship between the European Union on the one hand and the United States and China on the other hand in terms of global technology diffusion. In particular, the project will look at how R&D embodied in intermediate products diffuses in global value chains. The project will elaborate I) how the dependency of the EU27 on US and Chinese Business expenditures for R&D (BERD) developed over time II) how do sectors differ in terms of dependency on US and Chinese BERD, and in which sectors is this dependence highest and III) what is the role of the European Union as a supplier of BERD embodied in intermediate products to the world.

### **Demographics of the Austrian foreign trade structure** (*wiiw Team Leader*)

*Austrian Federal Ministry of Labour and Economy  
October 2022 - April 2023*

The aim of the study is to prepare detailed evidence on the demographics of Austrian firms engaged in foreign trade and to prepare them for economic policy makers. For this purpose, a dataset of the Austrian Micro Data Center (AMDC) is used. The project provides novel insights concerning the characteristics of Austrian companies which are active in foreign trade by destination markets and respective company-level indicators determining the international performance. At the same time, the study exemplifies and discusses the potential for further and more in-depth analyses using the available individual data.

### **Study: Design and prototype for the input-output based suite underpinning spillover under the MIP** (*wiiw Team Leader*)

*European Commission, DG Economic and Financial Affairs  
November 2022 - February 2023*

This study helped ECFIN B1 to prepare the ground for updating and improving the analytical framework for MIP

spillover assessment required by Regulation (EU) 1176/2011 Art 5(2). Ecfm sought to develop and implement a "future spillover tool" in 2023, a novel input-output tool capable of nowcasting value-added exposures in sync with Ecfm forecasts and allowing extensions to answer policy-driven research questions. Ecfm-B1 aimed to acquire the elements for such a tool through a competitive process.

### **Comparative Advantage in the Digital Era: New insights into trade in digital tasks and ICT capital**

*Anniversary Fund of the Oesterreichische Nationalbank*

*March 2021 - February 2023*

Comparative advantage remains one of the basic principles of international trade theory. This also holds true in times of globalisation and digitalisation. Taking into account the existence of international value chains and productivity differences across countries, this project identified comparative advantage of EU member states in the 'digital endowments', comprising 'digital tasks' and ICT capital. A major finding of the research is that the Heckscher-Ohlin-Vanek theorem is capable of predicting endowment-based comparative advantage in 'digital tasks' and ICT capital in the overwhelming majority of case. At the same time, the distribution of comparative advantage across EU member states does not seem to follow a clear pattern, in the sense, that EU innovation leaders necessarily have advantages in digital endowments as one might expect. Another hypothesis was conformed: in a comparison between the EU and the US, the latter emerged as holding comparative advantage in digital tasks, confirming the role of the US as a digital leader. Some of these results were also confirmed by additional competitiveness measures such as revealed comparative advantages (RCAs). Furthermore, econometric analysed showed that investment in R&D, in combination with industrial policies, are capable of shaping comparative advantage were investigated.

Funded by the [Anniversary Fund of the Oesterreichische Nationalbank](#) (Project No. 18641).

### **Wirtschaftliche Auswirkungen des Russisch-Ukrainischen Krieges auf Wien** (*wiiw Team Leader*)

*City of Vienna*

*March 2022 - December 2022*

Die Invasion Russlands in der Ukraine führt neben den geopolitischen auch zu einer Reihe von geoökonomischen Auswirkungen, deren Intensität sowohl in der kurzen als auch in der mittleren und längeren Frist sehr hoch sein wird. Die akuten Effekte betreffen die globalen und insbesondere europäischen Märkte für Energie, sowie für landwirtschaftliche Güter und Nahrungsmittel. Millionen von Flüchtenden haben sich auf den Weg gemacht. Grundzüge der Nachkriegsordnung, insbesondere in den Bereichen Sicherheitspolitik, Energiepolitik und das damit einhergehende Wachstumsmodell werden aktuell überdacht. Diese Kurzstudie gab einen ersten Überblick vor allem über die potentiellen kurzfristigen wirtschaftlichen Effekte des Krieges auf die Stadt Wien.

### **Sectoral employment forecast 2022** (*wiiw Team Leader*)

*European Trade Union Institute (ETUI)*

*June 2022 - December 2022*

The project provided forecasts of changes in sectoral (NACE rev.2, level 1) employment in Europe in the short- and medium-term up to 5 years onwards, produced under scenarios combining the possible evolution of structural changes and policies. These forecasts should provided likely development scenarios to support, reinforce and stimulate the European labour market policies.

### **Capacity building for Central, East and Southeast Europe: Joint Vienna Institute**

*Oesterreichische Nationalbank/Austrian Ministry of Finance*

*January 2014 - December 2022*

For more than two decades, wiiw has been organising courses within the framework of the Joint Vienna Institute (JVI). These courses are aimed at decision-makers in the public sector and policy-makers from transition countries in Southeastern Europe and the CIS. wiiw organised six courses in 2022 and was responsible for the entire conception and implementation of these seminars as well as for the selection of the participants.

### **Danube Region Monitor - People and Skills** (*wiiw Team Leader*)

*Austrian Agency for Education and Internationalisation (OeAD) and L&R Sozialforschung*

*April 2021 - November 2022*

The Danube Region Monitor was initiated in 2017 to highlight key developments in the areas of labour markets and

education systems in the fourteen countries participating in the European Union Strategy for the Danube Region (EUSDR). This annual flagship report serves as a basis for evidence-based policy decisions in these countries and within the framework of the EUSDR. wiiw's main task is to revise and update the report for the years 2021 and 2022 and to ensure that the underlying statistics are relevant, reliable and comparable across the countries concerned. <https://peopleandskills.danube-region.eu/>

### **The EU and Global Production Networks: The Length of Key Value Chains, Trends and Underlying Drivers**

*(wiiw Team Leader)*

*Joint Research Centre (JRC)*

*January 2021 - June 2022*

The world economy as we know it today is the result of developments that started in the 1970s. Growing trade volumes, increasingly sophisticated global value chains (GVCs), and rising levels of foreign direct investment characterize the evolution of the global economy over the last 50 years. Against this background, the proposed project studied the emergence of global value chains and their determinants over time. The project had three main objectives: First, to investigate if global value chains grow or decrease over time, and which GVCs show the strongest expansion or contractions, and measure the length of these value chains; Second, to identify strategic value chains and strategic sectors and trade partners of the European Union within these global value chains; Third, to explain the observed trends in global value chains in terms of the drivers of these changes. The analysis of the project was based on input-output data and indicators from social networks analysis.

### **Demographic and economic development in Central and East European countries (CEECs)**

*City of Vienna*

*September 2021 - June 2022*

The population of the city of Vienna has been rising continuously since the mid-2000s. Between 2005 and 2020, the population increased by 17%, mainly due to a positive migration balance. In addition to immigration from Germany and the Near and Middle East, immigration from the Central and Eastern European EU countries (EU CEEC), which has increased significantly since these countries joined the EU, but especially since the opening of the Austrian labour market (2011, 2013 and 2020), plays an important role. Since 2019, however, Vienna has seen a decline of immigration from Serbia, Montenegro and Kosovo, Slovakia and Poland and since 2020 also from Bulgaria, Hungary and Romania. The project aims to update the earlier wiiw study 'Population and Economic Development in Central and Eastern European Countries (CEEC)' by analysing the migration potential from the EU CEECs, as well as from Bosnia and Herzegovina and Serbia to Vienna. It thereby provides an empirical basis for the city's population forecasts and labour market analyses.

### **Export bonus: Significance and performance of Austrian exporters** *(wiiw Team Leader)*

*Austrian Ministry for Digital and Economic Affairs*

*October 2021 - April 2022*

In view of the importance of the export economy for Austria, in 2009 the Ministry of Economics commissioned that examined the characteristics (e.g. size distributions, productivity) of export enterprises. Due to the already long time horizon since the study has been undertaken - the data used in the study goes back to 2006 - the results are now outdated and it is no longer possible to use them without a certain degree of caution. However, the present study project will not only update these results, it is also intended to provide scope for expanding the factors considered (e.g. including R&D performance, ownership dimension). In addition, the methods used should also be brought up to date and additional data will be included.

### **Austria's Import Relations: Dependency Analysis** *(wiiw Team Leader)*

*Austrian Ministry for Digital and Economic Affairs*

*December 2021 - February 2022*

Austria's dependencies on imports were analysed at the detailed product level based on UN Comtrade and EU COMEXT data. The analysis of imports is carried out according to the number of partner countries, the respective shares of partner countries in the imports of individual products as well as according to turnover frequency. Products with high import dependency were identified.

### **Determinants and Effects of Foreign Direct Investments in Austria: New Insights from Microdata**

*Austrian Ministry for Digital and Economic Affairs*



*October 2021 - February 2022*

Foreign direct investment (FDI) will play an essential role in the recovery from the Corona crisis and the transformation towards a climate-neutral economy: Economists agree that global climate targets will not be achievable without a substantial increase in FDI flows. On the other hand, there is also growing concern about possible negative effects of FDI, especially in the case of takeovers of Austrian companies by foreign investors. Based on data at the transaction or company level, questions of the causes and effects of FDI in Austria are to be examined. To this end, the study will first estimate or describe the significance of the determinants of FDI commonly found in the literature for those in Austria. In a second part, the effects of these foreign investments for Austria as a business location will be quantitatively examined in terms of variables such as jobs, productivity, innovation, diversity or R&D activities.

### **Growth and productivity accounts - Capital productivity and multi-factor productivity** (*wiiw Team Leader*)

*Eurostat*

*July 2019 - December 2021*

Eurostat planned to publish for the first time capital productivity indicators (CAPI) and Multi-Factor Productivity to better meet the European policy needs. wiiw supported these activities with feasibility analyses, methodological developments, quality assessment of indicators and by raising awareness regarding capital productivity.

### **Automotive sector in Europe, particularly in CESEE** (*wiiw Team Leader*)

*Oesterreichische Nationalbank/Austrian Ministry of Finance*

*April 2021 - October 2021*

wiiw contributed to a report with an analysis for and section on part III "Automotive sector in Europe, particularly in CESEE" and the relevant parts for the intended outlets until the envisaged deadlines in Q3 and Q4 2021. wiiw also provided inputs, expertise, and comments on the other sections of the report, and actively participated in exchanges and discussions over the course of the project.

### **LA-KLEMS: Economic Growth and Productivity in Latin America** (*wiiw Team Leader*)

*Inter-American Development Bank (IDB)*

*May 2021 - October 2021*

Within the LA-KLEMS project, the Inter-American Development Bank (IDB) facilitated the sustainable production of high-quality statistics of economic growth, productivity, employment, and capital formation by other asset types at the sectoral level in eight Latin American countries. This database aims to provide important information for the evaluation of policies, in particular for the evaluation of the contribution of information and communication technologies and labour inputs for economic growth and productivity. In this endeavour, wiiw advised the project team led by University of Santiago de Chile and participating agencies in strengthening their capacity to produce statistics according to EU KLEMS standards. On this basis eight national and one regional database using the methodologies of national accounts and growth accounting methodologies have been constructed. It also provided a detailed methodological assessment of the countries' statistical practices in relation to the EU KLEMS standards.

### **The production side of 'digitalisation' and its impacts**

*Anniversary Fund of the Oesterreichische Nationalbank*

*September 2019 - October 2021*

The project comprised four main tasks linking the production and use side of the digital sector. In the first task the production and supply side of the ICT goods and services sectors was studied. An overview of the ICT industry across countries was provided based on various data sources at the industry and firm level. Determinants of ICT industries' performance and drivers of investment by ICT superstars across the European Union and the globe were analysed. The second task then focused on the patterns of trade of ICT goods and services linking the supply side of the digital sector to its demand. Furthermore, the impact of technical regulations and standards embedded within Technical Barriers to Trade (TBT) on patterns of trade flows of ICT goods were analysed. Task three focused on the investment in ICT capital assets and building up of an ICT capital stock across countries and industries. Gross capital formation and capital stocks in different asset types and their contribution to employment and value added growth were studied. The fourth task was devoted to the role of patenting in productivity and market share of firms active in the global ICT sectors. Finally, in the last part of task we studied whether and how ICT driven technical change impacts on structure of labour demand by various groupings.

**DG ECFIN Fellowship-Initiative 2020-2021 - Shifting paradigms: The quest for new modes of sustainable growth and convergence** (*wiiw Team Leader*)

*European Commission, DG Economic and Financial Affairs  
October 2020 - September 2021*

Descriptive assessment of labour trends over the past decades in terms of overall employment patterns in conjunction with the dynamics of gross fixed capital formation and capital stocks with a particular focus on ICT capital (IT, CT and software and databases), and the respective developments of capital-labour ratios. This will be based on the EU KLEMS Data Release 2019, with the capital stock data most likely to be updated, as benchmark revisions have already occurred since then. This will highlight important differences of capital stock dynamics and reallocation trends (in relative terms) across countries, industries and asset types. These data are then used to study the impact of ICT capital accumulation in an econometric framework.

**Short- and medium-term sectoral employment forecasts in the aftermath of the COVID-19 pandemic** (*wiiw Team Leader*)

*European Trade Union Institute (ETUI)  
April 2021 - September 2021*

The economic shock induced by the pandemic has plunged the European economies into a recession. Lockdowns and social distancing measures have affected economic life in a substantial way where industries have faced varying economic difficulties. This study explores potential employment dynamics across European industries and employment groups for the period up to 2026 by drawing on past sectoral trends and the latest macro-economic forecast results from IMF and the European Commission. A scenario analysis also takes into account the large uncertainty and risks that are related to the baseline forecasts. The baseline results indicate that in most countries employment is expected to reach its pre-pandemic level already in 2021 or 2022 based on high projected GDP growth rates up to 4% in 2021 and 2022, while hours worked will lag behind with a full catching up only in 2022 and 2023. Even though these predictions suggest a relatively quick recovery from the economic disturbance caused by the pandemic, high uncertainty is related to these numbers. As indicated by the scenario analysis, the recovery of employment could turn out to be rather sluggish. More negative scenarios predict only a limited recovery for persons employed and an incomplete recovery for hours worked even in 2026. The results further suggest that younger and low-skilled workers have been the hardest hit population subgroups. For these groups also the recovery is expected to take longer as compared to other age and education groups. A more negative economic development, as it is assumed in the negative scenarios, would put even more pressure on these most affected employment groups.

**Impact Assessments - Analysis of the SME's Participation in Public Procurement and the Measures to support it"** (*wiiw Team Leader*)

*European Commission, DG Grow  
July 2018 - July 2021*

The study shall provide an overall analysis and description of SMEs presence in public procurement markets and an in-depth overview of the SME-friendly measures based on the various tool and techniques introduced by the 2014 procurement Directives. The geographic coverage of the study shall include all Member States and the EEA countries and will provide estimates for at least 2011-2017. wiiw is acting as Quality Manager in this tender.

**Connectivity and interactions between global value chains and foreign direct investment networks**

*Anniversary Fund of the Oesterreichische Nationalbank  
May 2020 - July 2021*

The research project used a mix of panel data econometric modelling and innovative complex network analysis techniques to study the topological properties, dynamics and interactions between the global value chain and the global foreign direct investment networks at aggregate and sectoral levels. The project analysed the mutual impacts between FDI and GVC participation, analysed the relative importance of countries and sectors from the perspective of multilateral connectivity and relatedness between sectors in general, as well as zoomed in on the digital cluster and economic integration and connectivity dynamics involving the EU and the CESEE countries in policy-oriented case studies. Inter alia the project expanded the country and time coverage of the world input-output database.

## **Towards a risk-adjusted trade policy**

*Austrian Ministry for Digital and Economic Affairs*

*November 2020 - July 2021*

This research project tackled the question of how vulnerable our economies are to demand and supply shocks - both apply in the case of the COVID-19 health crisis from within and outside the EU - and what role GVCs play in the transmission of these shocks. The analysis focused on the vulnerabilities from an Austrian perspective and identified the sectors that are more prone to shocks due to dependence of imported products, low substitutability of imported products, high concentration on single supplying countries/firms and complex value chains.

## **Analysis of value chains in the Western Balkans economies - Enriching potential for regional cooperation in priority areas** *(wiiw Team Leader)*

*Joint Research Centre (JRC)*

*January 2021 - May 2021*

The overall objective of this project was to provide guidance, methodological support and capacity building in smart specialisation processes in the Western Balkans economies. One goal of the support to smart specialisation in the region was to identify promising industrial areas (domains) for the Western Balkan economies with higher value-added as well as to analyse and identify possibilities for wider cooperation in the South-East Europe in these identified areas. The analysis of value chains in the Western Balkans (WB) was expected to deliver an advanced contextual overview of the competitive position of the present and potential smart specialisation priority domains, and to identify opportunities for upgrading the position of the whole region and individual economies in European and global value chains; finding new market niches and areas of economic cooperation.

## **A new growth model in EU-CEE**

*Friedrich Ebert Stiftung*

*August 2020 - May 2021*

The eleven EU member states from Central, East, and Southeast Europe (EU-CEE) have undergone three decades of transition to market capitalism and convergence with Western Europe. There have been many successes and challenges, and the level of economic and social development varies widely across the region. The study finds that the convergence process, especially for the more advanced countries, has slowed since 2007 and that the current growth model may well be reaching its limit. The authors find that it will take decades for EU-CEE's more developed countries to halve the remaining gap to Germany and other rich countries in Western Europe. This implies that it is high time to think about a new growth model for the region. The study outlines the main priorities for a strategic transition to a new growth model of EU-CEE and shows substantial opportunities in a greener, digitised, automated world.

## **Wirtschaftsbeziehungen Österreich - China: Künftige Kooperationspotenziale** *(wiiw Team Leader)*

*Federal Ministry of Labour, Social Affairs and Consumer Protection (BMASGK)*

*August 2020 - January 2021*

Wirtschaftsbeziehungen Österreich - China: Künftige Kooperationspotenziale Am 28. Mai 1971 wurden die diplomatischen Beziehungen zwischen der Republik Österreich und der Volksrepublik China aufgenommen. Dieser Schritt der bilateralen Annäherung jährt sich somit im Jahr 2021 zum 50. Mal. Mit dieser Studie sollte eine Bestandsaufnahme der bilateralen wirtschaftlichen und wirtschaftspolitischen Beziehungen und ein Ausblick über künftige Chancen für den internationalen Handel und Kooperationsmöglichkeiten, insbesondere auch für die Schwerpunkte Forschung, Technologie und Innovation, erhoben werden. Darauf aufbauend wurden Empfehlungen als Input für die nationale und interministeriell abzustimmende China-Strategie aufgezeigt.

## **Quality of goods imports: Which role for non-tariff measures?**

*Anniversary Fund of the Oesterreichische Nationalbank*

*January 2019 - December 2020*

One major feature of non-tariff measures (NTMs) is their opacity and complexity of their effects. Regulatory standards embedded within NTMs might cause significant trade frictions, while some could stimulate trade due to positive externalities. When NTMs become very trade restrictive and discriminatory, trade disputes may arise. Specifically, when technical NTMs are not improving the quality of the imported product but mostly act as an unnecessary obstacle to trade, the implications of those NTMs might be regarded as protectionism. The study will provide information for trade policy makers to have a better understanding of the current stocks of technical

barriers to trade (TBT) and Sanitary and Phytosanitary (SPS) measures and their effects with a focus on quality. In fact, by knowing how these trade policy measures affect quality differently from price and quantity of trade, the study will provide insights on motives behind their implementation.

### **Importance of Services Trade for the EU Economy and the Impact of Brexit**

*Anniversary Fund of the Oesterreichische Nationalbank*

*January 2019 - September 2020*

Services are a key sector of the global economy, accounting for the bulk of GDP in most countries and for a significant share of global trade. The long history of economic integration created close ties between the UK and rest of the EU that are not so easy to disentangle. In order to estimate the potential costs of Brexit it is important to better understand the interdependency of the EU members' economies with respect to services trade as a rise in services trade cost post-Brexit would impact not only the UK services firms, but also services suppliers and manufacturing producers in the EU. It is likely that some trade diversion will take place both in the UK and the EU, resulting in reallocation of resources to less efficient firms and negative welfare effects. In our study we explored in detail the linkages between the UK and EU-27 economies with respect to services sectors and estimate possible effects of Brexit for both the UK and the remaining EU members.

### **Evaluation services in the field of trade (Framework Contract) (wiiv Team Leader)**

*European Commission, DG Trade*

*July 2018 - July 2020*

The objective of this contract is to carry out sustainability impact assessments and background studies which could feed into an impact assessment or an ex post or interim evaluation of trade or investment agreements. The framework contract is also intended to provide supporting studies for impact assessments or ex post or interim evaluations of the EU's unilateral preferential trade arrangements.

### **Production of skills supply and demand forecasts (wiiv Team Leader)**

*European Centre for the Development of Vocational Training (CEDEFOP)*

*July 2016 - June 2020*

Within this framework contract, a consortium led by Cambridge Economics produces regular updates of the skills supply and demand forecasts for CEDEFOP, further develops the forecasting methodology, and proposes additional models. wiiv is collaborating with the other project partners on all of these issues.

### **ArBeEi International - Grundlagen- und angewandte Arbeitsmarktanalysen (wiiv Team Leader)**

*Federal Ministry of Labour, Social Affairs and Consumer Protection (BMASGK)*

*July 2017 - June 2020*

Der Prozess der Globalisierung sowie die zunehmende Integration Europas stellen den Arbeitsmarkt in Österreich vor große Herausforderungen. Zunehmende wirtschaftliche Verflechtungen (v.a. über Handel, Direktinvestitionen, Offshoring, Migration) haben erhebliche Auswirkungen auf die Bedingungen am Arbeitsmarkt, auf Lohn- und Einkommensentwicklungen und Beschäftigungsstrukturen. Evidenzbasierte Handlungsempfehlungen für die Wirtschaftspolitik im Allgemeinen und die Arbeitsmarktpolitik im Besonderen erfordern daher eine Analyse mit einer internationalen und vergleichenden Perspektive. Für Österreich bedeutet das, die arbeitsmarktrelevanten Entwicklungen seiner Nachbarländer, v.a. der mittel- und osteuropäischen Nachbarn, der Beitrittskandidaten und der EU Nachbarregionen genau zu analysieren, und natürlich auch eine globale Perspektive zu entwickeln. Dieses vom österreichischen Sozialministerium beauftragte Forschungsprojekt beschäftigt sich mit diesen Themen. Es ist auf drei Jahre angelegt und in vier Teilbereiche gegliedert: (1) Technologie, Globalisierung und Konvergenz in der EU, (2) Mobilität von Arbeitskräften und Migrationstrends, (3) Konjunktur, Beschäftigung und Arbeitslosigkeit und (4) institutionelle Rahmenbedingungen und deren Effekte auf Wachstum, Beschäftigung und Ungleichheit.

### **Innovative modeling of non-tariff measures in trade**

*Anniversary Fund of the Oesterreichische Nationalbank*

*September 2018 - June 2020*

Starting in the 1960s, non-tariff measures (NTM) have been continuously replacing tariffs as the core element of trade negotiations. The number of types of non-tariff measures and the number of countries making use of these instruments increases continuously. Therefore, many different approaches have developed recently for the evaluation of NTM and free trade agreements (FTA). Starting from models using simple dummy variables for the

indication of NTM or FTA, today there is a wide range of databases available varying in content (i.e. capturing different aspects of NTM and FTA) and in applied methodologies (e.g. extracting information from legal texts, survey data, notifications to the WTO). Our contribution to the existing literature was at least threefold: First, it aimed at modelling non-tariff measures in a Structural Gravity framework. Second, it assessed the value added of different data on the structure of FTA and NTM by means of evaluating their ability to predict the trade effects of the EU-South Korea Free Trade Agreement. The third contribution laid in the estimation of effects of the EU-Japan Economic Partnership Agreement.

### **Effects, opportunity costs and spillovers of EU Cohesion Policy**

*Anniversary Fund of the Oesterreichische Nationalbank*

*September 2018 - June 2020*

This project aimed at contributing to the discussion on the future, post-2020 EU Cohesion Policy (CP). In the past, CP has been the main tool to promote growth and convergence across the EU, thus having positive direct effects on the net recipient countries and also indirect ones on the net payer countries. Still, there is a never-ending debate on the rationale of CP, partly in favour of it, partly doubting its usefulness. The 2021-2027 EU budget funds to be expected will likely become scarcer, not only because of the Brexit but also because of the emergence of new priorities such as migration and security. In respect of these forthcoming challenges the debate on the effects, opportunity costs and spillovers of CP becomes fundamental. A quantitative estimation permits a more balanced assessment of the costs and benefits of CP for net paying Member States (MS) and a broader view of CP support to EU growth in general. Against this background the project aimed to: a) estimate the effects of CP on regional GDP growth; b) analyse the opportunity costs of CP investments (by investment priorities and geographical distribution); c) analyse the macroeconomic spillovers of CP investments in one country on the development in other EU MS; and d) analyse these spillovers at the regional level.

### **Capital dynamics, global value chains and competitiveness (CaDoVaC) (wiiw Team Leader)**

*Joint Research Centre (JRC)*

*October 2018 - April 2020*

The research project analyses the interaction between capital accumulation and FDI on the one hand, and global value chains, trade and productivity patterns - on the other. The analysis is carried out at the international level comparing the EU with the US, China and Japan, as well as at the national and industry levels focusing on the developments within the EU. The project aims to cast light on important dimensions of EU competitiveness concerning the implications of capital formation and allocation as a driver of global value chains, the role of capital composition in productivity dynamics, as well as obstacles for efficient capital allocation.

### **Impact Assessment study on the Revision of Machinery Directive (wiiw Team Leader)**

*European Commission, DG Grow*

*January 2019 - April 2020*

The Machinery Directive is the core European legislation for placing on the market products of the mechanical engineering industries. Products covered range from lawn movers to 3D printers, from electrically powered hand-tools to construction machinery, from commercial service robots to complete automated production lines. The study looks whether there is need for specific improvements and specifications of the Directive and whether the Directive is conducive to innovation in digitalisation, Internet of Things, Artificial Intelligence, the new generation of autonomous robots and cybersecurity. The role of wiiw is to provide an economic and market analysis of the machinery sector in Europe and to compare it to that of its major competitor countries.

### **Analysis of the SME's Participation in Public Procurement and the Measures to support it (wiiw Team Leader)**

*European Commission, DG Grow*

*June 2018 - November 2019*

The study provided an overall analysis and description of SMEs presence in public procurement markets and an in-depth overview of the SME-friendly measures based on the various tool and techniques introduced by the 2014 procurement Directives. The geographic coverage of the study included all Member States and the EEA countries and will provide estimates for at least 2011-2017. wiiw is acted as Quality Manager in this tender.

### **Industry level growth and productivity data with special focus on intangible assets (EUKLEMS update)**

*(wiiw Team Leader)*

*European Commission, DG Economic and Financial Affairs*

*July 2018 - October 2019*

Within this project, wiiw created a comprehensive set of reliable data for productivity measures and growth accounting. The work went in various aspects beyond the data that were officially available at this time, notably regarding the length of time series, the consistent application of industry and asset breakdowns, the quality adjustment of labour input measures and the respective attribution of wage shares, estimations of investments, consumption of fixed capital and capital stock. The strong need for such a database has long been recognised and underlies the development of the EU KLEMS project, which was successfully concluded in 2009 as an FP6-funded research project. Within this service contract, wiiw updated the existing EU KLEMS database, extended it by an additional set of information on intangible assets, explored ways to integrate these measures into the growth accounting framework and provided results of such an exercise, distinguishing a statistical from an analytical module. Moreover, wiiw provided an analytical paper identifying the most important recent trends of the productivity dynamics in Europe and its determinants, with a particular focus on the role of intangible assets. The dataset has been published on a dedicated website ([www.euklems.eu](http://www.euklems.eu)) in October 2019.

<https://www.euklems.eu>

### **DG ECFIN Fellowship-Initiative 2018-2019 - The productivity challenge: jobs and incomes in the dawning era of intelligent robots** *(wiiw Team Leader)*

*European Commission, DG Economic and Financial Affairs*

*October 2018 - June 2019*

Two important but conflicting longer-term trends can currently be observed: On the one hand - at least in some publications - the emergence of new technologies is expected to have a strong negative impact on employment in individual countries. On the other hand, there is a demographic development in the European countries (especially in Eastern Europe), which in the medium to long term indicates a decline in the total population and an even stronger decline in the working age population and thus a sharp decline in the labour supply. Against this background, the potential employment effects of new technologies are examined, particularly with regard to their labour-saving effects, and confronted with current demographic trends. As a further step, it is analysed to what extent the new technologies have the potential to increase labour productivity so that the potential labour shortage can be compensated.

### **Macroeconomic Forecast**

*Sberbank*

*January 2018 - May 2019*

Countries Macroeconomic Forecast The wiiw statistics and country monitoring team provided macro-economic indicators as well as forecasts for seven countries in Central, East and Southeast Europe to Sberbank Europe AG.

### **Study supporting the Evaluation of the Council Recommendation of 15 Feb 2016 on the integration of the long-term unemployed into the labour market**

*European Commission, DG Employment, Social Affairs and Inclusion*

*February 2018 - April 2019*

The purpose of this project was to carry out an external and independent study to support the evaluation of the actions taken in response to the Council Recommendation on the integration of the long-term unemployed (LTU) into the labour market. It covered actions undertaken in Member States and by the European Commission in response to the LTU Recommendation. The evaluation assessed to which extent the general and specific objectives have been achieved, i.e. to which extent the transitions from unemployment to employment improved, how the support for the long-term unemployed has evolved and to which extent transitions to employment are sustainable. wiiw carried out this study together with Ramboll and SEOR as part of a framework contract with DG Employment. wiiw was responsible for a mapping of changes in legislation, active measures and service delivery in all EU Member States between 2015 and 2018, and was also involved in the preparation of several case studies.

### **Study on logistics and wholesale trade in EU27**

*European Commission, DG Enterprise and Industry*

*September 2018 - March 2019*

Logistics providers and wholesaler perform indispensable functions in the economy by linking manufacturers with

each other and with retailers. Without the services they provide, supply chains would break down and products would not reach their intended markets. The aim of this study is thus to provide robust and reliable in-depth analyses of logistics and wholesale trade in EU27 (without the United Kingdom), including their structural and performance attributes. wiiw is responsible for identifying and analysing global value chains as well as European, North American and Asian value chains. Based on the World Input Output Database (WIOD) the analysis will focus on the characteristics of the most important sectors upstream and downstream from logistics and wholesale trade.

### **Background paper contribution for the Industrial Development Report 2020 'The Future of Industrialization'**

*UNIDO*

*November 2018 - March 2019*

There is a general expectation that the global economy is currently facing a new wave of technological change - Industry 4.0 - that is based on digitalisation and information and communication technologies (ICT) such as artificial intelligence, additive manufacturing and blockchain. As a background paper to UNIDO Industrial Development Report 2020, this project initially analyses the impact of total factor productivity (TFP) growth (i.e. a measure on technological progress) on employment, labour share, and value added growth of industries in emerging and transition countries. The analysis will take in to account the direct industry-own effects in addition to indirect impact across both national and international backward and forward linkages. Furthermore, wiiw analyses the corresponding impacts on employment, the labour share, and value added that arise from introduction of industrial robots, a prominent phenomenon in Industry 4.0.

### **Demographic and economic development in Central and East European countries (CEECs)**

*City of Vienna*

*December 2017 - December 2018*

The influx from Central and East European countries (CEECs) played an important role in the population development of Austria and Vienna between 2000 and 2016. This has also led to a significant change in the employment structure in Vienna, which has partly resulted in the displacement of both domestic and other foreign workers. In this context the study assesses the current and future migration potential to Austria and Vienna from the Central and Eastern European countries and the two Western Balkan countries Bosnia and Herzegovina and Serbia. Economic development in the CEECs has been very positive for some years now and forecasts also point to steady economic growth with significantly higher growth rates than the EU average. In line with this, the labour market situation in these countries generally improved. This and the general demographic developments in the region lead to a general slowdown in mobility flows from CEECs. Nonetheless, demographic developments in the region and the Western Balkans remain worrying as population is shrinking and the working-age population even more so. Demographic long-term scenarios even suggest that the population in the region will continue to shrink sharply in the coming decades. Summarising, these developments point towards a flattening of trends, if not a weakening of existing mobility flows to Austria and Vienna in the medium term. Finally, there are no indications that the patterns of mobility flows to Austrian regions (i.e. with respect to individual provinces) will shift significantly.

### **Supply-use based econometric Input-Output multipliers of output, income, employment and CO2 emissions (SUBE) (wiiw Team Leader)**

*Joint Research Centre (JRC)*

*December 2017 - October 2018*

The CEIL Unit of the JRC is currently expanding its capacity to conduct studies in the domain of Input-Output analysis (data and modelling) in support of policies focusing on industrial competitiveness, growth and jobs, internal market, trade and globalisation (e.g. global supply chains) and EU environment and sustainability policies. Furthermore, Input- Output data enable more precise and comprehensive empirical applications on global supply chains, labour productivity and value added decomposition of gross exports by the use of additional socio- economic layers. The objective of this contract is threefold: (1) Provide the JRC with econometric estimations of output, value added, employment and CO2 emission impact effects per one-unit change (multipliers) in final demand of products; (2) Provide the JRC with econometric estimations of output, value added, employment and CO2 emission impact effects per one-percent change (elasticities) in final demand of products; and (3) Analyse the inter-temporal stability of the multipliers and elasticities calculated above as well as their potential use in input-output analysis and input-output modelling.

### **Studies in the Areas of European Competitiveness (wiiw Team Leader)**

*European Commission, DG Grow  
August 2014 - July 2018*

The purpose of this framework contract is to provide the European Commission, DG Enterprise and Industry, with background studies concerning the competitiveness of European industries. These background studies are mainly used for the preparation of the Commission's European Competitiveness Report which is published annually in order to provide analytical input to the policy debate on issues related to competitiveness and to underpin proposals and recommendations regarding the Europe 2020 strategy and future enterprise policy.

### **The relevance of the EU-Japan FTA for the Austrian economy**

*Federal Ministry of Science, Research and Economy  
December 2017 - June 2018*

Since the beginning of 2017, a paradigm change in international trade policy is observed. While the protectionist rhetoric of the administration of the US - the largest economy in the world - is threatening international trade, trade and investment initiatives of China - the world's second largest economy - are gaining in significance and attracting global attention. The EU and Japan are aware of these developments and look for ways of cooperation. The aim of the study is to estimate the effect of the envisaged EU-Japan FTA for Austria based on qualitative and quantitative analysis and to derive recommendations for Austrian foreign economic policy.

### **Economic policy implications of the Belt and Road Initiative for CESEE and Austria**

*Embassy of the Peoples Republic of China  
October 2017 - March 2018*

The Belt and Road Initiative (BRI), a vision to revive the ancient 'Silk Road', was first presented by the Chinese President Xi Jinping in 2013. This initiative will affect more than forty countries throughout Eurasia and Africa. For Austria, it is particularly interesting, due to the country's strong economic relations with Eastern Europe and the Western Balkans. China has identified this region as the gateway to Western European markets, and emphasised its strategic importance with the initiation of a diplomatic initiative titled '16+1'. Furthermore, this region has a particularly high need for infrastructure investment, which form the core of the BRI. An analysis of developments in trade and investment, accompanied by the evaluation of the need for infrastructure investment in sixteen countries in Central, East, and Southeast Europe (CESEE), should allow for the identification of potential fields of cooperation between China and Austria in the context of the 'new Silk Road'.

### **Investigating the Impact of the Innovation Union (IU)**

*European Commission, Horizon 2020  
March 2015 - February 2018*

Innovation has been placed at the heart of the Europe 2020 strategy aimed at coping with major structural changes, the increase of global competition and the current crisis, and at tackling major societal challenges such as climate change, energy and resource scarcity, health and ageing. The Innovation Union has the main objective to strengthen the European innovative potential; it sets 13 general objectives and 34 specific (policy) commitments associated with the objectives, aimed at stimulating innovation. The objective of this project is to deliver a system of assessment for the commitments. The approach starts from the evaluation of the state of achievement of the individual commitments, but puts crucial emphasis on their effects on the innovation system as a whole, as well as on the economy-wide effects of innovation. The basic idea is to retrace the entire chain of effects of the commitments, from their implementation to their final impact in terms of competitiveness, growth and employment. wiiw is responsible for the evaluation of seven IU commitments having been agreed in the areas of EU patents, eco-innovation, social and territorial cohesion, social innovation, innovation partnerships and international talents.  
<http://www.i3u-innovationunion.eu>

### **Productivity, Non-Tariff Measures and Openness (PRONTO) (wiiw Team Leader)**

*European Commission, 7th Framework Programme  
February 2014 - January 2018*

Over the past fifty years, there has been significant progress in lowering tariff barriers to international trade. With the rising importance of global sourcing, multinational enterprises and increased tradability of non-tangible products, Non-Tariff Measures (NTMs) have attracted growing attention from policy makers and academic scholars alike. Against this background, PRONTO aims to compile new data, develop better methodologies and increase our understanding of the impact of NTMs on international investment and trade. The proposed research project is



divided into seven Work Packages (WPs). The first three provide the foundation for work in the project by consolidating existing and developing new NTM measures. The fourth WP acts as a bridge by establishing a methodological framework for using these measures in estimations and policy analysis. The fifth and sixth WPs use this framework and the new NTM indicators to consider the effect of NTMs on a variety of social and economic outcomes, providing both useful estimations for policy and a framework for future academic exploration of NTMs. The final WP focuses on dissemination of the data, methodologies, and results of the other six WPs. The project was funded by European Commission, 7th Framework Programme and received additional funding by the Austrian Federal Ministry of Education, Science and Research within the research program TOP.EU.  
<http://prontonetwork.org/>

### **Competitiveness drivers and obstacles, intra-EU linkages and European value chains in GVCs**

*European Commission, DG Grow*

*January 2017 - January 2018*

The emergence of international value chains (VCs) and the implied cross-border production sharing between countries has dramatically altered the international trading system. In view of the joint cross-border production processes numerous products would deserve the designation of origin 'Made in the World', as suggested by the WTO initiative of the same name - although in general there is the perception that international value chains are predominantly regional in scope. Since the Great Recession, however, there are concerns that the trend towards geographically-dispersed production has come to a halt with, among other factors, re-shoring initiatives and protectionist tendencies. Against this background this report analyses some of the key issues related to international VCs with data from the World Input-Output Database (Release 2016) which covers the period 2010-2014. Based to a large extent on a measure of international value chain (VC) trade termed re-exported domestic value added, which comprises exports of intermediates that cross international borders at least twice, the question whether the world has reached 'peak value chain trade' and to what extent VCs have contributed to the decline in the income elasticity of trade is addressed. The research also re-examines whether value chains are predominantly global or regional in scope both worldwide and at the EU level. Furthermore, the extent of regional VC integration across the major regional trading blocs is compared. Finally, some of the implications of value chain trade for structural change and competitiveness are investigated.

### **Über die Wirkungen von Freihandel - Eine Bestandsaufnahme der ökonomischen Literatur** (*wiiw Team Leader*)

*Federation of Austrian Industries*

*June 2017 - November 2017*

The discussions about globalisation, and free trade in particular, have gained momentum in recent years. For a comprehensive and rational debate about the mechanisms and effects of free trade, an analysis based on theoretical arguments and empirical facts is needed. The related topics encompass the effects of trade on real income, inequality, employment, macroeconomic outcomes and the way free trade is governed. This contribution summarises the most important theoretical arguments concerning these topics and confronts them with recent empirical research results.

### **Framework Contract: Assessment of EU policy impacts on industrial products and services sectors** (*wiiw Team Leader*)

*European Commission, DG Grow*

*October 2013 - July 2017*

The full title of this multiple framework contract is: Procurement of studies and other supporting services on impact assessments and evaluations, Lot 1: Assessment of EU policy impacts on industrial products and services sectors. The purpose is to be able to have at its disposal an external pool of expertise that can be used whenever the need arises. This external pool of expertise is destined to support the DG's own activities by providing input to research on the likely impacts and/or effectiveness of a specific policy or regulatory proposal. LOT 1 deals mainly with the potential impact of EU measures on economic activity at the sectoral or aggregate level. The objective will specifically be to analyse how the structure, the competitiveness and the growth potential of affected sector(s) are affected by EU measures. This could include the impact on innovation, looking at determinants such as the cost of innovation and the availability of financing and market factors (uncertainty of demand for new goods and services).

### **Falling Behind and Catching Up in Southeast Europe (GDN)** (*wiiw Team Leader*)

*Oesterreichische Nationalbank/Austrian Ministry of Finance*

*January 2014 - May 2017*

Southeast Europe holds a long record of being one of Europe's least developed regions. Sporadic growth spurts are regularly followed by strong fall-backs. Neither firms, nor banks or states were able to make broad industrialization happen in a sustainable way. The proposed research analysed the determinants and effects of backwardness in Southeast Europe. The analysis included inter alia issues of long-run development, industrialization, infrastructure, the role of cities, migration, state building and financial crisis. The results yielded important policy recommendations.

**Background paper contributions for the Industrial Development Report 2018, 'The Demand for Manufacturing. Inclusive and Sustainable Industrial Consumption, in a Globalized Economy'** (*wiiw Team Leader*)

*UNIDO*

*October 2016 - February 2017*

The UNIDO Industrial Development Report (IDR) series is a unique UN publication monitoring and analysing industrial developments in industrialised and industrialising economies across the world. It covers 85 countries in Europe, North America, Asia and the Pacific and serves as an established source of reference for policymakers, as well as public and private stakeholders. wiiw will support UNIDO in producing the next IDR and draft two background papers for chapter 4 of the report. The first background paper will analyse unit prices in manufacturing exports from advanced and developing countries, and explore whether there are significant difference in unit values of similar goods exported from developing and advanced economies to the same markets. The second background paper will discuss whether some segments of manufacturing production are becoming 'commodified' and what are the implications for developing countries and trade.

**Production linkages, value added trade and employment in the wider Europe** (*wiiw Team Leader*)

*Anniversary Fund of the Oesterreichische Nationalbank*

*January 2015 - December 2016*

The establishment of supply and production links has been a major driving force of the integration of the new EU Member States. Countries strongly integrated in production networks benefited in terms of productivity, value added and export growth. An important question on the further widening of Europe therefore is the integration of today's accession countries and possibly the EU neighbourhood countries in that respect. For a detailed study of actual patterns of production integration, a European multi-country input-output table is constructed allowing for an analysis of patterns of integration and value added trade in the wider European context. The potential impacts are further investigated by using a gravity modelling approach accounting for the importance of trade in intermediates and value added trade. Finally, various scenarios will be calculated providing evidence of potential impacts of further integration or disintegration on income and employment.

**Study on investment needs and obstacles along industrial value chains**

*European Commission, DG Enterprise and Industry*

*April 2016 - December 2016*

The aim of this study was to identify special investment needs, funding gaps and obstacles for investments along industrial value chains as well as to propose actions for overcoming obstacles especially for the coordination of investments within this value chains. First of all industrial value chains with high potential for growth within the European Union were identified. Afterwards five case studies have been conducted that illustrated funding gaps and needs as well as obstacles in these selected value chains. These five case studies examined: (1) the sector of engine construction - additive manufacturing, (2) rubber and plastic products - production of rubber, (3) food sector - retraceability of food, (4) automobile industry - batteries for electric vehicles as well as (5) metal production and processing - recycling. At the end for each of these value chains an investment package was developed.

**Labour market development of Austria and East Europe in Comparison**

*Federal Ministry of Labour, Social Affairs and Consumer Protection (BMASGK)*

*November 2016 - December 2016*

The aim of the project is to find an answer to the question why Austria has fallen back within the European unemployment ranking lately and how the comparable development was in the MOEL. Thereby macroeconomic (change of the situation of the labour market because of different growth rates in the countries and the role of the wage policy in the MOEL, approach of the wage level as implication of the catching-up process) and demographic

aspects (demographic aspects and changes of the participation on the labour market and the role of emigration respectively immigration for the development of the labour force at the age from 14-64) are considered in a more precise way as well as institutional factors (proficiency level of the unemployment insurance respectively the social welfare and its impact on the unemployment rate, activity in the informal sector, role of the mostly liberal labour markets in the MOEL and role of other institutional factors).

### **Smart Public Intangibles (SPINTAN) (wiiw Team Leader)**

*European Commission, 7th Framework Programme*

*December 2013 - November 2016*

The SPINTAN project extends both the theoretical and the empirical approach introduced by Corrado, Hulten and Sichel (2005, 2009) including the Public Sector intangibles in their analytical framework in different complementary directions. The main outcomes were: (1) A Public Sector Intangibles Database for a wide set of European Union (EU) countries, supplemented by some large non EU countries complementing the harmonised intangible measures developed by INTAN Invest. (2) Analysis of the key issues with regard to the boundaries of public intangibles between various public and private categories, such as R&D, skill formation and IT investment. New ways to measure Public Sector intangible capital services, and especially the rate of return on public intangibles, were developed. (3) Analysis of the impact of Public Sector intangibles on innovation, well being and "smart" growth. The project paid special attention to the consequences of austerity policies, i.e. the project measures the impact on intangible assets investment of the austerity policies after the crisis and quantifies its impact on growth and well being. The SPINTAN Project was carried out by 12 European partners and two non European Associated Members that joined in the first months of the project. wiiw was involved in the methodological and conceptual work to identify the relevant assets and has provided data for the new Member States and Austria to produce the envisaged cross-country harmonised database of public sector intangibles. It also contributed to the work on spillovers from intangibles and on austerity & recovery, focusing on the effects of government spending in an international input-output framework.

<http://www.spintan.net>

### **Framework contract on services related to the coordination and provision of horizontal support to the EURES network.**

*European Commission, DG Employment, Social Affairs and Inclusion*

*September 2014 - August 2016*

The European Job Network EURES (European Employment Services) will be reformed in the coming years in order to bring it up to speed with the challenges posed by the current and future labour market situation. EURES will become a demand-driven and result-oriented recruitment tool satisfying economic needs and contributing to fulfil the employment objective of the Europe 2020 strategy. The overall aim of the network support activities is to provide assistance to EURES members and partners in initiating, developing and implementing intra-EU labour mobility actions and plans, to improve cooperation and mutual learning in connection with the objectives of the EURES reform and to reinforce the role of EURES as part of such mobility actions and strategies.

### **The evolving composition of intra-EU trade over time (wiiw Team Leader)**

*European Commission, DG Grow*

*January 2016 - July 2016*

Global trade in goods and services was severely hit by the economic crisis in 2008, which initiated a pronounced but short-lived trade collapse. Until 2011 trade flows recovered relatively quickly, but since then global trade in goods has been rather anaemic. This development is partly the result of the low dynamics of EU-related trade which accounts for a large share of global trade flows. Regarding intra-EU trade a strong increase in overall bilateral trade intensities is observed. The process of EU integration before the crisis and differentiated growth patterns of goods and services exports implied that exporting activities became slightly less concentrated across EU Member States. However, specialisation dynamics implied an increasing geographic clustering and specialisation of goods and services exports across Europe. These changes in the geographical patterns of intra-EU trade activities were mostly driven by changes in the patterns of trade in the medium-quality segment which can be interpreted as a 'climbing up' phenomenon of less advanced countries. Results from a gravity framework suggest a structural break of these trends after the crisis. Another aspect of the increasing trade intensity is the role and magnitudes of intra-firm trade and potential determinants thereof. However, research on this is hampered by a severe lack of data and only a few insights can be gained, mostly for extra-EU trade. Results based on foreign affiliates' trade statistics (FATS) data indicate that intra-firm trade flows were responsible for more than half of total trade between the EU and the US in 2012. Results also suggest that intra-firm trade has been more resilient to the trade crisis despite the more difficult

global environment for foreign direct investment and export activities. Based on a gravity approach, overall EU intra-firm trade is estimated to be lower, though these results need to be interpreted with caution. In a case study based on Irish firm-level data it is shown that intra-firm trade accounts for 30% of exports and 25% of imports.

**Mid-term skills supply and demand forecast** (*wiiw Team Leader*)  
*European Centre for the Development of Vocational Training (CEDEFOP)*  
*January 2013 - June 2016*

CEDEFOP's skills supply and demand forecasts for Europe are widely used and the forecast results appear in key EU strategic documents. The main objective of this project was produce regular forecasts of skill supply and demand in a quality, size and scope comparable to the previous CEDEFOP forecasts. The methodological apparatus was developed further and the results analysed in detail, including analysis of different scenarios and potential labour market imbalances. wiiw was a subcontractor of Alphametrics in this project, working on the harmonization, adjustment and processing of the data required for the project.

**Provision of updated input-output and supply-use tables of the World Input-Output Database (WIOD)**  
(*wiiw Team Leader*)  
*European Commission, DG Economic and Financial Affairs*  
*January 2016 - June 2016*

The EU/Seventh Framework project WIOD (as well as other ongoing initiatives such as OECD-WTO TiVA, EORA, EXIOPOL) produced comprehensive sets of internationally linked supply and use and/or input-output tables which have been widely used by academic researchers and policy-makers. Given the urgent requirement for having such data for recent years and the fact that the WIOD tables (as other efforts) are becoming outdated quickly, the need for an update of the WIOD arose. wiiw provided a revision and update of these data which - to the extent possible - are consistent with the existing data.

<http://www.wiod.org>

**The European construction value chain: performance, challenges, role in the GVC** (*wiiw Team Leader*)  
*European Commission, DG Grow*  
*January 2016 - June 2016*

The study made a clear picture of the construction value chain on the European level, its structure and connections and its development and efficiency. In the course of strengthening the internal construction market the integration within the European construction value chain was valued, especially in the sense of cross-border dimensions of market integration. In the context of the promotion of the position of the European construction industry, the European position and role at the global level was examined. Another point was to examine future settings that influenced activities within the construction industry - within Europe as well as on a global level, and to evaluate appropriate challenges for the construction value chain in Europe. Finally the prior political impacts, that emerge from the development and integration of European and global construction value chains, were filtered.

**EU wholesale trade: analysis of the sector and value chains** (*wiiw Team Leader*)  
*European Commission, DG Grow*  
*January 2016 - June 2016*

The study examined the European wholesale sector from several perspectives. First of all an overview of size and the economic significance of the wholesale was gained. As a second step the wholesale was seen as an economic function that connects different sectors and countries to global value chains. And as a third level it was gone deeper into the wholesale sector with a case study about the subsector 'Wholesale of mining, construction and construction engineering' which was examined more precisely.

**Review of the methods for the estimation of global multi-country supply, use and input-output tables (MEGLIO)** (*wiiw Team Leader*)  
*Joint Research Centre (JRC)*  
*October 2015 - April 2016*

The aim of this study was to take stock of all current international projects related to the construction of multi-country Supply and Use Input-Output Tables. Differences and similarities concerning data sources, balancing, and methodological choices in the construction steps have been compared and documented. Finally, recommendations for the construction of multi-country tables for the planned joint effort of Eurostat and OECD have been formulated.

### **Neighbourhood cooperation for a sustainable trade and investment policy** (wiiw Team Leader)

*Federal Ministry of Science, Research and Economy*

*October 2015 - January 2016*

This study focuses on the potential for cooperative activities of trade and foreign direct investment (FDI) policies with Austria and its neighbouring countries to further promote competitiveness of all countries and firms involved on the world markets, with a particular focus on oversea destinations. First, a detailed analysis of actual trends and patterns of trade and FDI at the global level and with a focus on the neighbouring countries is provided. Particularly, the study presents evidence on commonalities and differences of these countries in geographical patterns of trade and foreign direct investment both in Europe and more distant markets like Asia, Africa and America. Second, based on these findings a rationale for potential cooperative activities at the institutional level and the trade-off between benefits of cooperation on the one hand and the issue of competition amongst involved parties on the other hand are discussed. The study finally outlines some suggestions for concrete cooperative activities that were developed on the basis of discussions with practitioners. An appendix lists institutions involved in export promotion in the neighbouring countries and outlines existing activities in Austria that might serve as a starting point for developing cooperative activities, which in the future might be integrated into a policy framework promoting a competitive position in world markets for all partners.

### **Industrial competitiveness and market performance (ECSIP)** (wiiw Team Leader)

*European Commission, DG Grow*

*April 2012 - December 2015*

The individual studies of this framework contract provide an input to the assessment of existing and the formulation of future EU industrial and related policies as well as monitoring industrial performance. Typically, the unit of analysis is the individual industry or, as appropriate, groups of related industries. It also includes the value chain(s) in which the industry is embedded, an assessment of a particular (industrial) policy initiative and its impact on the competitiveness of the industry in question. The emphasis of the studies is on the structural and microeconomic factors affecting and reflecting competitiveness and market performance of an industry. Macroeconomic analysis, econometric analysis and modelling may complement the investigation. wiiw was involved in three of these studies: 'The luxury industry in Europe', 'The role of firm innovation and the impact of that decision on the location of innovation', and 'The relation between industry and services in terms of productivity and value creation'. In the latter one, wiiw also had the coordinator role.

<http://www.sectorcompetitiveness.com/>

### **Innovation in the CESEE region: from pre-crisis credit boom to the effects of the financial crisis**

*Anniversary Fund of the Oesterreichische Nationalbank*

*July 2014 - December 2015*

In Europe's Emerging Market Economies a change in the underlying growth and catching-up model of the last decades is becoming apparent. The proposed study was one of very few studies on developing and emerging economies in Central, East and Southeast Europe (CESEE) focusing on innovation activity in this region. It analysed drivers and effects of innovative activities at the firm level for a comprehensive set of countries in the CESEE region. The study looks at three phases of economic and financial development, namely 'financial normalcy' (2000-04), the emergence of the credit and housing 'bubble' (2004-08) and the 'crisis' (from 2008 onwards) and at two innovation strategies (make and buy) and analyses the role of (i) credit constraints as an impediment to innovation activities and success, of (ii) foreign-controlled enterprises and their potentially superior innovation and firm performance and of (iii) the strategic choice of R&D cooperation partners for innovation success.

### **The future development of EU industry in a global context** (wiiw Team Leader)

*European Commission, DG Enterprise and Industry*

*December 2014 - March 2015*

The objective of this study was to assess the future development of EU exports. By applying advanced econometric techniques, the future development of export performance of manufacturing and services sectors have been examined under various assumptions. In particular, the study aimed to identify future strengths and weaknesses in EU exports, in order to derive policy recommendations for Member States and EU institutions. Results of this exercise have been used to assess future developments of sectors classified by technological intensity, value added intensity, and growth impacts as well as other measures.

### **Growth-Innovation-Competitiveness: fostering cohesion in Central and East Europe (GRINCOH)**

*European Commission, 7th Framework Programme  
April 2012 - March 2015*

GRINCOH was an FP7 research project with the main objectives: (1) to establish development scenarios for the CEECs for the period up to 2020; (2) to identify the implications for sustainable growth - based on innovation and the development of technological capabilities - and greater economic, social and territorial cohesion in the CEECs; and (3) to advise on future policy options for the CEECs, and in particular for EU cohesion policy. wiiw led a work package on economic development patterns and structural change in the process of transition and EU membership. Furthermore, wiiw contributed research on labour market development, migration, inequality, trade integration, foreign direct investment, EU budget as well as regional aspects.

<http://www.grincoh.eu>

### **Energy efficiency and EU industrial competitiveness: energy costs and their impact on manufacturing activity (Competitiveness Report 2014)**

*European Commission, DG Enterprise and Industry  
October 2014 - November 2014*

This study serves as a background report for the annual European Competitiveness Report of the European Commission (DG ENTR). The European Commission is currently in the process of preparing a new energy and climate framework for the period up to 2030. For this purpose, DG ENTR has commissioned a study which should provide a comparative analysis of the impact of changing energy costs on EU industrial competitiveness at country and sectoral level, and vis-à-vis its main external competitors (the United States, Japan, China and Russia), with a view to identifying future trends in production and energy efficiency strategies. While the recent gains in energy efficiency in the EU manufacturing sector have been impressive, the gap in energy prices between the EU and the USA has widened, which might potentially undermine EU industrial competitiveness, particularly in energy-intensive sectors. To a large extent, the study relies on data from the latest version of the World Input-Output Database (WIOD).

### **The relation between industry and services in terms of productivity and value creation (wiiw Team Leader)**

*European Commission, DG Enterprise and Industry  
January 2014 - September 2014*

This Request for Services within a Framework Contract on Industrial Competitiveness highlighted the importance of the interrelation between manufacturing and services and its impact on productivity. The increasing 'servitization' of manufacturing becomes an important aspect with respect to competitiveness and the linkages between these activities become crucial. The purpose was to understand the mechanisms by which the industry and service sector complement each other to create higher value added products. This implied three central areas of interest: (i) quantification of the effects of co-operation; (ii) an improved understanding of the mechanisms of interaction, against the background of the changing natures of manufacturing and services and (iii) an understanding of the most important barriers concerning these interactions. wiiw had the lead in this project which was done in cooperation with Ecorys, IFO and IDEA.

### **Framework contract to provide economic analysis in support of trade negotiations and policy issues (wiiw Team Leader)**

*European Commission, DG Trade  
April 2011 - April 2014*

Within this framework contract, the consortium provides economic analysis and advice in the area of international trade and investment policy. The scope of services also includes providing economic advice on trade dispute cases, development of analytical tools for trade policy and contributing to related workshops and seminars. wiiw is partner in a consortium led by CEPR.

### **Die Sachgüterproduktion Österreichs: Entwicklung und gesamtwirtschaftliche Bedeutung im internationalen Vergleich (wiiw Team Leader)**

*The Chamber of Labour (AK Wien)  
November 2013 - March 2014*

The employment and income situation in the manufacturing sector of a country - especially in small and open economies - is driven by different and partly opposing economic factors. This includes different productivity developments (e.g. catching-up of emerging countries), wage developments that may reflect the economic

conditions of other sectors of the economy or the economy as a whole, exploiting innovation potential and specialisation in relevant industries and the opportunities and challenges of internationalisation of production and trade. Individual countries positioned their manufacturing industries differently. This study analyses the development of the Austrian manufacturing industry compared to other countries, the potential determinants of this development and the importance of the manufacturing industry in terms of value added and employment in the Austrian economy.

### **The Future of Manufacturing in Europe** (*wiiw Team Leader*)

*Dublin Foundation*

*January 2013 - January 2014*

There is an increasing concern about the future role of manufacturing both at the European level and in individual Member States of the EU. In the EU as a whole the manufacturing sector employed around 30 million people in 2010 and generated EUR 1590 billion of value added. The future development of manufacturing and, in particular, the way that its share of value-added and employment will tend to change in the coming years is heavily affected, as in the past, by three main factors, or driving forces: technology, the nature of the demand for manufacturing goods, and globalisation. wiiw is part of a consortium lead by Applica. This study will examine the trends in manufacturing performance in different parts of Europe and the factors underlying them.

### **Study on various aspects of earnings distribution using micro-data from the European Union Structure of Earnings Survey** (*wiiw Team Leader*)

*European Commission, DG Employment, Social Affairs and Inclusion*

*June 2013 - January 2014*

This study contributed to a better understanding of the question as to what extent employment contract types, gender and skills affect the structure of earnings across industries and EU Member States. The study covered the 27 Member States, EEA countries (Iceland, Lichtenstein and Norway), Accession, candidate and pre-candidate countries (Croatia, Former Yugoslav Republic of Macedonia, Serbia and Turkey) for which data are available and highlight similarities and differences between them, as well as developments at the level of the European Union. To address this question, use has been made of the 2002, 2006 and 2010 release of the SES anonymized micro-data.

### **Austria's 'trade in value added'** (*wiiw Team Leader*)

*Austrian Ministry of Economy, Family and Youth*

*October 2012 - June 2013*

In this study we use the recently developed World Input-Output Database (WIOD) to calculate a series of indicators shedding light on trade patterns from this perspective of global production. With these indicators we develop a 'country trade statistical profile' for Austria which will provide a complete picture of Austria's position in the global economy and changes in this position over time (1995-2009 with a potential update until 2011) both at the aggregate and industry level. Austria's trade statistical profile includes inter alia Austria's degree of vertical specialisation in exports and imports, Austria's export market shares in terms of value added trade as well as domestic employment effects associated with international production sharing and offshoring. All results are compared to peer countries and in all cases developments over time are tracked. Finally, the crisis-related trade collapse starting in 2009 is re-calculated at the basis of value added exports and compared with the registered slump in standard trade data.

### **Reducing productivity and efficiency gaps: the role of knowledge assets, absorptive capacity and institutions (Competitiveness Report 2013)** (*wiiw Team Leader*)

*European Commission, DG Enterprise and Industry*

*November 2012 - June 2013*

This study serves as a background report for the yearly Competitiveness Report of the EC. It analyses the impact of knowledge assets on productivity and technical efficiency in the EU, as well as their role in the process of knowledge transfer. The analysis will cover the role of the institutional and regulatory environment in affecting productivity and technical efficiency and how different regulations interact with both the accumulation of knowledge assets and the transfer of technology. Special emphasis will be put on the analysis of trends and performance within the EU, across countries and sectors. The trends and performance of the EU at aggregate and sectoral levels will also be contrasted with that of other major competitors, such as the US, Japan or Korea. The study will also explore what are the effects of the recent crisis on productivity and efficiency at firm level. wiiw conducted this study in cooperation with NIESR and WIFO.

### **Study on structural change (Competitiveness Report 2013)**

*European Commission, DG Enterprise and Industry*

*November 2012 - June 2013*

This study serves as a background report for the yearly Competitiveness Report of the EC. It illustrates and analyses the broad trends in the relative weight of quite highly aggregated sectors within market activities. It provides an overview as well as an explanation of the broad patterns and trends of structural change for the EU-27 member states. Based on empirical evidence, economic consequences of the observed patterns of structural change will be examined with special attention to the implications of emerging middle-income growth traps. The results will include policy conclusions and provide evidence on the stylised facts of structural change in Europe, the importance of structural change for aggregate growth and the relevance of basic economic mechanisms at work. Furthermore, it will highlight the importance of manufacturing relative to other sectors, which is not sufficiently captured merely by the percentage of the workforce it uses. wiiw's partner is a consortium led by The Nordic Institute for Studies in Innovation, Research and Education (NIFU).

### **A manufacturing imperative in the EU - Europe's position in global manufacturing and the role of industrial policy (Competitiveness Report 2013)**

*European Commission, DG Enterprise and Industry*

*November 2012 - June 2013*

This study served as a background report for the annual European Competitiveness Report of the European Commission (DG ENTR). The objective was (i) to detect the structural changes that have occurred in the European economy in order to identify the major challenges that lie ahead European manufacturing and (ii) to analyse and evaluate past and current approaches to industrial policies (and instruments) at the European and the EU Member State level. Based on the structural challenges for the EU economy and experiences with industrial policies the study formulated suggestions for potential elements of a renewed European industrial policy. The policy conclusions took into account the interaction of industrial policy with related policies such as competition rules, innovation policies and trade policies. The study contains both qualitative and quantitative analyses, including cluster analysis and various econometric techniques and made use of numerous data sources such as the World Input-Output Database (WIOD), OECD ANBERD, Eurostat, European Commission State Aid Scoreboard database and the Community Innovation Survey (CIS).

### **The extent and impact of offshoring in the European Union**

*Anniversary Fund of the Oesterreichische Nationalbank*

*July 2011 - June 2013*

In this project, the impact of both offshoring of production and of services on the structure and the macro-economy of EU countries is examined, using data over the period 1995-2010. In particular, the impact of production and services offshoring on both the level and structure of wages and employment in EU countries is examined. One issue addressed is whether the impact of production offshoring – which is expected to impact negatively upon low-skilled workers – has been offset by the increase in service offshoring, which mainly involves the offshoring of tasks undertaken by skilled labour. Furthermore, the impact of production and service offshoring on the macro-economy as well as on business cycle volatility and co-movement is examined.

### **Global value chains and growth: impacts and prospects for EU Member States (wiiw Team Leader)**

*European Commission, DG Economic and Financial Affairs*

*August 2012 - March 2013*

This study investigated the different degrees of international competitiveness and their correlation with the growth performance of individual European countries. In doing so, the internationalisation of countries and the respective comparative advantages were analysed on the basis of value added chains. The importance of certain specialisation patterns, technology intensities, regional and international integration, and offshoring strategies as drivers of productivity and economic growth is analysed, contributing to an explanation of the differing growth trajectories and structural developments within Europe.

### **The development of EU and its Member States' external competitiveness (wiiw Team Leader)**

*European Commission, DG Trade*

*August 2012 - March 2013*

The objective of this work was to analyse the recent developments in the EU's external competitiveness updating



the study 'The Evolution of EU and its Member States' Competitiveness in International Trade' study from January 2009. This study considered the EU's relative position and thereby developments in rising emerging markets, but also the effects of the economic crisis. wiiw worked on the services and value-added (WIOD) type indicators to flank the elements of the data analysis to be done by CEPII.

### **Study on the Luxury Industry in Europe** (*wiiw Team Leader*)

*European Commission, DG Enterprise and Industry*  
*September 2012 - February 2013*

The overall objective of the study is to obtain a complete overview of the luxury industry across Europe including less commonly known initiatives in new, small or peripheral Member States. It shall become clear how the luxury industry works both within Europe and internationally and which factors are specific to luxury only. The outlook shall highlight which framework conditions will have an impact on the future of the industry. wiiw conducts an in-depth-analysis of trade flows to the project. This was a Request for Service within a Framework Contract on 'Industrial Competitiveness' with (EU) DG Enterprise.

### **Forecasting skill supply and demand in Europe** (*wiiw Team Leader*)

*European Centre for the Development of Vocational Training (CEDEFOP)*  
*February 2011 - December 2012*

The general aim of the project was to develop a robust system for regular medium-term forecasts of skill needs (demand and supply) at a pan-European level. This was to be based on available comparative data. wiiw cooperated with Alphametrics in this project and was part of a larger consortium. The role of both institutions was to deliver a coherent and validated set of data based on EU-LFS for the projection exercise. These data comprise detailed employment figures for supply and demand broken down by several characteristics (sex, age, education, occupation) for the EU-27+2 countries over the period 1995-2006.

### **Internationalisation of business investments in R&D and analysis of their economic impact** (*wiiw Team Leader*)

*European Commission, DG Research and Innovation*  
*June 2010 - October 2012*

The internationalisation of corporate research and development activities is one of the most important issues within the current integration of the world economy. The study aimed at providing an in-depth analysis of this development. A consortium consisting of wiiw and AIT (Austrian Institute of Technology) construed a comprehensive dataset on R&D activities of foreign-owned firms in a number of countries. In a second step, they employed this database to analyse cross-country patterns of R&D internationalisation, as well as the drivers and impacts of R&D internationalisation. wiiw contributed its expertise in the analysis of economic growth and structural change, international trade and foreign direct investment, labour markets and the European integration process to the study.

### **Creation of a database for value added and gross output (sales) according to the KiA classification** (*wiiw Team Leader*)

*Joint Research Centre (JRC)*  
*January 2012 - August 2012*

KiAs (Knowledge-intensive Activities) are defined as economic sectors in which more than 33% of the employed labour force has completed academic-oriented tertiary education. The Commission requested the compilation of a database for the two following series: value added and gross output (sales) according to the KiA classification, for all Member States of the European Union, EFTA countries, and the main competitors of the European Union, including the United States, Japan, Brazil, China and South Korea.

### **Multidimensional inequality and poverty in the EU considering polarisation and social mobility**

*Anniversary Fund of the Oesterreichische Nationalbank*  
*September 2010 - July 2012*

The project contributes to cross-country inequality and poverty research on income and well-being as well as on income polarisation. Part 1 provides a regression-based decomposition analysis of income inequality and poverty in the EU. The research, based on EU-SILC data, allows identifying micro- and macro-level determinants of social stratification. In Part 2 the analysis is broadened to multidimensional inequality and poverty, detecting sources of

dispersion of well-being. Part 3 goes beyond the static examination of poverty and inequality by looking at intergenerational mobility and inequality and poverty persistence. Part 4 presents a multi-level analysis of macro- and microeconomic determinants of income polarisation in the EU, which is also based on EU-SILC data.

### **The EU industry and the global value chain (Competitiveness Report 2012)** (wiiw Team Leader)

*European Commission, DG Enterprise and Industry*

*January 2011 - May 2012*

This study serves as a background report for the yearly Competitiveness Report of the EC. It identifies a number of policy measures that support the capability of firms in the EU to be competitive in a global market. Especially the changes in value chains within the last ten years, which have led to an extension of trade in the course of globalisation and to an increasing segmentation of the production process, have been analysed. Furthermore, the impact of the economic crisis on changes in trade patterns and potential disruptions of international supply chains as well as possible long-term dynamics of value chains on the competitiveness of firms in the EU and their internationalisation have been analysed. The results serve as an input for the re-formulation of measures in the EU's industrial policy. The study was coordinated by wiiw.

[http://ec.europa.eu/enterprise/policies/industrial-competitiveness/competitiveness-analysis/european-competitiveness-report/index\\_en.htm](http://ec.europa.eu/enterprise/policies/industrial-competitiveness/competitiveness-analysis/european-competitiveness-report/index_en.htm)

### **World Input-Output Database (WIOD)** (wiiw Team Leader)

*European Commission, 7th Framework Programme*

*May 2010 - April 2012*

WIOD aimed to develop databases, accounting frameworks and models for policy-makers who are facing increasing and pressing trade-offs between socio-economic growth and environmental problems. The core of the database is a set of harmonised supply and use tables, alongside with data on international trade in goods and services. These two sets of data have been integrated into sets of inter-country input-output tables. Taken together with extensive satellite accounts with environmental and socio-economic indicators, these industry-level data provided the necessary input to several types of models used to evaluate policies aimed at striking a suitable balance between growth, environmental degradation and inequality across the world. wiiw led two work packages in this project: (1) WP2 „International Trade Data“ and (2) WP8: „Application of the database: Socio-Economic Aspects“. The institute also contributed to WP3 „Estimation of inter-country input output tables“ and to WP5 „Satellite Accounts: Socio-Economic Indicators“.

<http://www.wiod.org>

### **Monitoring of sectoral employment** (wiiw Team Leader)

*European Commission, DG Employment, Social Affairs and Inclusion*

*December 2010 - April 2012*

The aim of the study was to provide a comprehensive collection and a long-term analysis of key sectoral data with a view to identifying and monitoring sectoral employment developments and inter-dependencies. The impact of the crisis has been analysed for a representative set of sectors, paying special attention to issues such as flexicurity, skills, outsourcing and restructuring, labour productivity, technological change. wiiw coordinated this project in collaboration with Applica and with support from various local experts.

### **Evaluation of the reaction of the ESF to the economic and financial crisis** (wiiw Team Leader)

*European Commission, DG Employment, Social Affairs and Inclusion*

*December 2010 - December 2011*

This evaluation focused on the assessment of experience collected with the ESF since the beginning of the crisis (i.e. second half of 2008), i.e. it referred to the 2007-2013 ESF programming period. In doing so, also the findings of recent social policy research including labour market studies and economic theory were taken into account. Consistency between the findings of this evaluation and general research had to be ensured. The main role of wiiw in this project, which was conducted in cooperation with Metis, was to perform econometric estimations of the impact on the labour market.

### **Regional development in Central and Eastern Europe** (wiiw Team Leader)

*WISDOM*

*September 2010 - December 2011*

This project analysed and investigated the effects of the internationalisation of labour markets, also using simulation techniques. It pursued three aims: (1) provide coherent scenarios at the level of Austrian regions and neighbouring countries (including Poland, Romania and Bulgaria) with respect to employment, qualification and migration; (2) develop a long-term simulation model for Austria; and (3) identify potentially growing gaps at the regional level with respect to employment, qualification and migration based on the robust scenarios. Particularly, the project provided a detailed overview of the developments with respect to employment and migration processes of Austrian regional labour markets as well as in the neighbouring countries.

### **Services and EU's external competitiveness (Competitiveness Report 2011) (wiiw Team Leader)**

*European Commission, DG Enterprise and Industry*

*November 2010 - March 2011*

This study serves as a background report for the annual European Competitiveness Report of the European Commission (DG ENTR). It investigates the role of knowledge-intensive service sectors in the EU economies as compared to other major economies such as the US and Japan. This is done from different perspectives pointing towards the various trajectories that the phenomenon of 'quarternisation' (i.e. the structural changes of the economies following 'tertiarisation') might take. Finally, we point towards the increasing role of service trade in overall trade, relate it to the patterns of trade in high-tech manufacturing goods and the relative importance of imported KIBS services in production costs and the increasing share of KIBS in value added exports.

[http://ec.europa.eu/enterprise/policies/industrial-competitiveness/competitiveness-analysis/european-competitiveness-report/comrep2011\\_en.htm](http://ec.europa.eu/enterprise/policies/industrial-competitiveness/competitiveness-analysis/european-competitiveness-report/comrep2011_en.htm)

### **Study on trade in intermediate products and EU manufacturing supply chains (Competitiveness Report 2010) (wiiw Team Leader)**

*European Commission, DG Enterprise and Industry*

*December 2009 - January 2011*

The study analysed trade in intermediate products across several dimensions. First the volume, number of varieties and the quality of intermediates imported were analysed as well as the structure of EU exports and their competitive advantage. Additionally, the study investigated how increased trade in intermediate products impacts on manufacturing supply chains in terms of geographical sourcing. Secondly, the study looked at the inter-linkage between manufacturing and services using a case study on "EU Manufacturing value chains in the light of globalisation: The case of the ICT industry". Thirdly, the impact of the crisis as well as other possible factors (such as exchange rate movements or regional integration) on the trade in intermediate products have been compared with the impact on the final goods trade. Finally, policy implications have been derived from the results obtained.

### **The Competitiveness of firms, regions and industry in the knowledge-based economy: What room for job-rich growth in Europe? (MICRO-DYN)**

*European Commission, 6th Framework Programme*

*October 2006 - January 2011*

MICRO-DYN dealt with growth, employment and competitiveness in the knowledge-based European economy through a micro-founded firm-based approach. The nature of the analysis was 'bottom-up' i.e. moving from the micro-entities of economic actions and strategies at the enterprise level to sectoral, regional, national and European levels. The rationale for such an approach was that understanding the microeconomic foundations of innovation, competitiveness and growth at the firm level, as well as the firms interactions with the labour market, is key to understanding the nature of these phenomena at a more aggregated (regional, sectoral or macro) level and of the resulting aggregate economic performance. The analysis used as far as possible comprehensive data-sets across all European regions and industries. wiiw co-ordinated a consortium of 17 research institutions.

<http://www.micro-dyn.eu>

### **Inequality and fiscal policy in transition countries**

*Oesterreichische Nationalbank/Austrian Ministry of Finance*

*January 2009 - December 2010*

The main objective of the project is to establish economic research capacities throughout Southeast Europe (SEE) and the Commonwealth of Independent States (CIS), to promote knowledge transfer into the regions, to facilitate networking between researchers and to assist in securing knowledge transfer from researchers to policy makers. Activities to achieve this include research calls, mentoring, workshops, conferences and policy dialogues. The project is structured into bi-annual research cycles focusing on a specific research theme of particular importance.

During this phase, research dealt with inequality and fiscal policy in transition countries of Southeast Europe (SEE) and the Commonwealth of Independent States (CIS). Research aimed to analyse issues of income and other distributions (e.g., wealth, wage, skills, opportunities) in transition countries with special interest in the role of market liberalisation and fiscal redistribution. The project is part of the Global Development Network (GDN), a multilateral organisation founded by the World Bank in which wiiw acts as a hub for SEE.

### **The role of services in the economy: an input-output analysis for the new Member States and Austria**

*Anniversary Fund of the Oesterreichische Nationalbank*

*July 2008 - October 2010*

Using input-output analysis, the study investigates the role of services in the Central European new EU Member States (NMS) Czech Republic, Hungary, Poland, Slovak Republic, and Slovenia and compares it to that in Austria. Investigation is done at the 2-digit level, comprising 26 service industries (NACE 50-99), for the years 1995, 2000 and 2004. The role of services includes not only their position in the production structure per se but also their increasing importance as intermediate inputs. The main questions investigated are: (i) Has there been a structural convergence process concerning the role of services between the NMS and Austria? What explains differences across individual NMS? (ii) Do services already have the same importance as a supplier of intermediate inputs in the NMS as in Austria? Are services still less intertwined with the rest of the economy? (iii) Is there still a lag in the development of knowledge-intensive business services in the NMS?