

RESEARCH PROGRAMME 2019-20



2019-20 Research Programme

Introduction

This year's research programme coincides with the start of the new European Parliament and with new leaders taking over the European institutions, including the ECB. Over the course of the past year we have reflected on what we believe are the key challenges, old and new, that policy makers need to address. In a series of memos that we have produced we summarised our views and put forward policy recommendations. Our research programme for this year will represent the priorities culminating from this series of memos.

A radically different global landscape has emerged in which US trade action is used to compensate for perceived unfair competition advantages by China. The EU remains loyal to both open trade and fair competition but is debating how to update its views on trade, competition policy and industrial policy. A more antagonistic global environment may be forcing the EU to take sides, as it cannot rely on the global multilateral system to resolve disputes the way it used to. And the EU is also increasingly discovering that the ability to take autonomous economic decisions is constrained by its reliance on the US military guarantee. Pursuing good economic outcomes is now hindered by not being independent on security.

At the same time, the climate and energy transition have become an item of urgency. Some have even argued that we have passed a tipping point and that our policies now need to also address damage control. Europe has exercised global leadership on this topic but still has a long way to go. While we have managed to contain our CO₂ emissions, we have not made the necessary transformative adjustments to reduce also our CO₂ consumption through the import of goods from countries with lower environmental standards. But the demand to do so, particularly by the young, is unequivocal.

Last, a number of internal EU issues remain unresolved. On the one hand, significantly increased participation in the recent European elections has shown that citizens really do want European solutions to European problems. A more pluralistic European Parliament may look more difficult to govern with, but it will force consensus building that will be more inclusive and therefore hopefully more balanced. On the other hand, challenges remain acute. The economy may be coming to a recession, and countries in the EU are not in the same position to handle it. Signs of economic divergence are very visible. At the same time the instruments at the EU and euro area level to manage the macroeconomic cycle are either insignificant (e.g. euro area budget) or are constrained by legacy issues (e.g. low interest rates, excessive debts etc). The appetite for further architectural reform to more integration is at best mixed. And this is despite the fact that it is only in scale and unity that the EU can produce convincing solutions to old and emerging problems.

Our research programme will continue to balance the search for detailed solutions to short-term problems, versus strategic thinking to long-term shifts. Most of the questions that we posed in last year's programme remain relevant. The composition of our team of almost 40 experienced scholars has changed a little to reflect the priorities the way we see them. Trade policy in an increasingly protectionist environment; competition and how to establish a global level playing field; innovation and digitisation; energy transition and economic opportunities; and achieving the Paris climate goals are some of the topics that will feature prominently in our programme. We discuss them in more detail in this document.

Our overarching objective is to contribute to achieving good, sustainable and inclusive economic outcomes in Europe and beyond. Our degree of ambition remains as always high and our contributions will again as always be evidence-based, honest, and also provocative. We thank you for your continuous support and we look forward to a very inspiring research year.

Guntram Wolff and Maria Demertzis, 27 August 2019

A. Research Area: European macroeconomics and governance

Participants:

- *Scholars: Grégory Claeys, Zsolt Darvas, Maria Demertzis, André Sapir, Guntram Wolff, Francesco Papadia, Jean Pisani-Ferry, Giuseppe Porcaro, Thomas Wieser, Agnes Benassy-Quéré, Emmanuel Murlon-Druol, Marek Dabrowski, Martin Kahanec*

The EU is just choosing its top officials for the next five years. By the end of the year there will be new leadership installed in the EU institutions including the European Central Bank. This year will be a year for bringing new ideas to the fore. The first task for this new leadership will be to agree the new 7-year budget for the Multiannual Financial Framework (MFF). This will need to happen in a macroeconomic environment that is deteriorating, primarily due to global factors.

Two important issues for the EU economy will feature in our research: measurement and drivers of productivity in a digital transformative age. Second, an important challenge with regards to growth will be to maintain cohesion in the EU and revert divergences in the levels of welfare observed primarily in parts of southern Europe. Here we will also revisit the issue of migration. We will examine the space that fiscal and monetary policies have to provide and sustain a healthy macro environment and promote cohesive and sustainable growth.

The ability of this new EU leadership to advance with architectural changes needed to sustain a resilient economy will also depend on the existence of a European “demos”. We will study the degree of alignment of national public opinions on issues of European identity and concerns. Last, on the issue of Brexit the focus this time round will have to be more on the future relationship rather than on transitory arrangements.

We organise our research in this area into four main themes: 1. European Governance; 2. Macro policies in Europe; 3. Promoting cohesion in the EU; 4. Is there a European public opinion?

As in previous years the questions posed in this section cannot be studied in isolation from analysis elsewhere in the research programme, be it the global financial system or indeed trade. Issues of competition policy and industrial policy more generally will be defining characteristics of the growth agenda and managing the macroeconomic cycle.

1. Economic governance in the EU, euro area (A1)

Given the deteriorating outlook, we will ask what are the implications of the current macro environment for European economic governance. How can the European fiscal framework, but also national fiscal rules, be adjusted to become simpler, more efficient and ensure a countercyclical fiscal policy? How can Europe support much needed investments? This is an important question given that monetary policy appears rather constrained.

In advancing with EMU deepening we will continue identifying ways of completing architectural aspects that are necessary for ensuring the system’s stability as well as looking for innovative ideas to integrate further.

An important issue to examine first is the MFF. How can the EU budget address the new challenges that the EU faces (migration, border control, defence), eliminate or adjust those spending items that are no longer appropriate and subsequently deliver true European public goods?

Last, in our efforts on the issue of Brexit we will continue to monitor the issues of relevance and participate in discussion on establishing a sensible long-term relationship. Issues like redesigned balance in the context of euro area and non-euro Member States relations will also be we examined.

2. Macroeconomic policies in Europe (A2)

The macroeconomic environment in the euro area in particular is becoming less favourable. Both monetary as well as fiscal policy are constrained, although as far as the latter is concerned these constraints are not equally binding across countries. Our research will aim to identify an appropriate macroeconomic policy mix to tame adverse economic shocks that are coming, in particular through trade. There is also the question of new instruments, such as those that could be created in a “green new deal” to boost investment across Europe. The challenge that we face ahead of us is visible differences of economic performance between countries, due to many factors including demographics. Policies will need to, therefore, not only help increase aggregate welfare but also ensure that certain countries are not particularly strongly hit by a recession without an appropriate response. Last, as part of a Horizon 2020 programme we will contribute to the measurement of productivity and investigate the new drivers of productive capacity in the digital era.

3. Promoting cohesion in the EU (A3)

Cohesion, inclusiveness and equity in distribution are crucial elements to sustainable growth. In this year’s programme we will dedicate resources to analyse three issues.

First is the scope for attaining convergence in the EU. Central and eastern European EU members were able to converge closer to the European average from low levels in the past decades, even when the impact of the crisis is taken into account, while some southern European member states have fallen back from higher initial income levels. We will explore the literature on these issues as well as the “middle-income” trap to uncover the scope for further convergence in the European Union. Next to assessing convergence at the country level, it is important to also assess convergence between regions within countries. This is an important dimension for policymakers trying to improve cohesion and inclusiveness within their countries as well as for multilateral and national development banks.

The second issue is the implications of a long-term one-directional intra-EU migration. From some countries in the east and the south of the EU, a relatively large share of home country population emigrated to more advanced western and northern EU countries. Emigrants are typically young (aged 20-35) and it is an empirical question whether they are more or less qualified than the remaining population. Among the several key issues related to such intra-EU movement of people, we plan to focus on the net fiscal cost through the lifetime of the emigrant for the sending country - in the understanding that there are broader implications on societies.

A better understanding of migration and a more salient migration governance framework are urgently needed to enhance EU citizens’ confidence in the European Project, its social, political and economic viability, and their own feeling of security and safety. There is an urgent need for a sustainable migration policy framework. In 2019/2020 the key topics of this line of research will include (i) measuring policy determinants of immigration to the EU: migration, foreign, development, trade/FDI, and aid policies, (ii) a review of the determinants of perceptions and attitudes to migration among citizens in Europe and policy implications for a sustainable migration policy framework, and (iii) a study on the relationship between migration and inequality, social exclusion, and social cleavages.

Last, we will monitor how countries in the EU that have been through financial adjustment programmes, have managed their recoveries. While all the EU countries involved (Cyprus, Greece, Hungary, Ireland, Latvia, Portugal, Romania) were able to exit their financial assistance programme and growth has restarted, the strength of the recovery varies across countries, as well as market trust reflected in borrowing costs. This project will look at exit strategies and the factors that could have contributed to outcomes being differentiated.

4. European Public Opinion: is there one? (A4)

This is a continuation of last year's project on the definition of a European public opinion. One of the problems in pursuing European unity is the alleged weakness of a European "demos". An important component of this demos is a European public opinion. Genuine public opinions, it is argued, are national and this puts a limit to European integration, especially in its most federal form. Maintaining a balance between the aspiration to achieve an ever-closer union, as specified in the Treaty, and a vibrant European public opinion is essential. Measuring and analysing the developments of this public opinion is thus essential. In the absence of proper measurement, the importance of the argument remains theoretical. In the past year, we have spent a considerable amount of time collecting and monitoring data in a number of national newspapers and have presented them in a number of blogs. This year we will compare and contrast how public opinion evolve across Europe.

5. Methodologies for evidence-based policy making: a role for AI? (A5)

The project deals with the *methodology* of formulation of policy, strategies, and legislation. In distinction to what Bruegel traditionally does, this project focuses on the process of policymaking rather than on specific outcomes. There are two dimensions we want to explore: methodologies for evidence-based strategic policy making and the application of AI, machine learning and big data to policymaking.

The same techniques that are transforming business and society also have potential application to the policymaking process, as a new discipline sometimes referred to as *RegTechs*. The promise is clear, but there are also risks that must be managed. To what kinds of decisions are these techniques likely to be most applicable? What is the risk of AI/ML (Machine Learning)/Big data reaching wrong conclusions, or perhaps technically correct but politically unacceptable conclusions? What more can be done to ensure that algorithms used in crafting policies and in implementing and enforcing policies are adequately explainable? How are affected parties to be given meaningful rights to review and appeal of decisions reached?

B. Research Area: Global trade and Governance

Participants:

- *Scholars: Zsolt Darvas, Maria Demertzis, André Sapir, Alicia Garcia-Herrero, Guntram Wolff, Nicolas Véron, Marek Dabrowski, Jean Pisani-Ferry, Niclas Poitiers, Suman Bery, Uri Dadush, Jianwei Xu*

The global multilateral system is now under serious threat of breaking down. The US has started a trade war with China, which in turn is also looking for ways to defend and retaliate. The same is also true for the EU where the threat of tariffs in the automotive industry is already putting a dent in growth projections and is considered the number one risk to actual growth in the EU.

In the research programme of this year we will study global trends in international governance under four headings: 1. A changing global scene: governance; 2. A changing global scene: trade; 3. China and its role in the global multilateral system; 4. EU Neighbourhood

1. A changing global scene: governance (B1)

The demand, and need for international collective action, are an order of magnitude larger than they have ever been. Traditional modes of international collective actions are, however, ill-suited to the new global economic and geopolitical context. The effectiveness of relatively soft forms of global governance is determined by a number of factors. First, it depends on the nature of the underlying interaction and the incentives for governments to cooperate or, on the contrary, to free-ride on common commitments. Second, it results from the degree of concentration in the field, i.e. on whether a few key players essentially determine the outcome or whether power

is relatively evenly distributed. Third, it is a function of the participation of private players and the degree to which their involvement increases the governments' incentive to act. Fourth, it is affected by the presence of epistemic communities that may, or may not, inform governments about the consequences of their actions and inform the public about the delivery on pragmatic commitments. Which of these different types of arrangements are the most effective and why? What are the main policy conclusions that European policy makers can put to use in order to help promote a functioning global system?

At the same time, we need to understand the process and the degree of de-globalization in which international economic linkages are broken or reduced. We will pursue research that aims to understand the main economic implications of such a process, take stock of recent trends of the flows of people, goods, services and capital globally and within Europe, as well as attempts to restrict such flows. By setting up alternative scenarios, we will examine the potential impacts on the global economy, Europe and individual countries of restricted movements of people, goods, services and capital. A crucial issue to be addressed is the contradiction between unrestricted globalisation and national security considerations. In recent efforts we have tried to estimate how exposed countries (and sectors) in various EU countries are to the US. This, however, does not explain in full the extent of economic effects that possible US tariffs will have on the European economy and indeed what would be the optimal response from the EU.

2. A changing global scene: trade (B2)

Our research on trade will continue be guided by the objective of having open and free trade. This year we will look closely at the trade relations between the EU, China, and Russia, whether they are complementary or competitive. China's increasingly important role in the global economy has transformed the nature of global competition and reshaped international trade. Meanwhile, the European Union has long been the most important power in global trade and continues to run a very large trade surplus. The competition between the two has been increasingly relevant, not only for their own home markets, but globally. Russia is a key area for both actors. We intend to explore evolving trade relations between China and Russia, on the one hand, and the EU and Russia, on the other. The main research question is whether these trade relations are complementary or whether they risk becoming antagonistic. To address the issue, we compare the products China and the EU export to Russia, and empirically estimate the elasticity of substitution between European exports and Chinese exports to Russian economies (i.e. how their exports to Russia respond to the changes in relative exporting prices).

We will explore the size and relevance of digital trade, in other words, of the sale of consumer products and online services on the Internet. But beyond that we need to explore the role of data and how data flows have enabled the provision of new services, have created global value chains to provide advantages to consumers on the variety, quality and price of manufacturing goods.

3. China and its role in the global multilateral system (B3)

We aim to produce a major report combined with a flagship event on China and its role in the global economy from an EU perspective. To do so, we aim to do research on a number of key issues described below.

There have been a lot of attempts in the US to measure the effects of the rise of China. The project aims to contribute to our understanding of China's economic involvement in the EU by documenting the direct and estimating the indirect economic impact of its presence in the EU. A specific example would be Chinese M&A activity in the EU.

We will also investigate China's latest efforts to open up its financial sector and partially open up the capital account. The new financial regulatory environment as of 2018, has allowed foreign financial institutions to acquire Chinese ones. Several financial institutions, including European ones, have used this opportunity to grow in China. Can this be continued if the US-China economic confrontation continues? Will there be enough demand from foreign companies to make a difference in such a huge market? Will it change the still very much state-led functioning of China's financial sector? On the capital account, the Chinese authorities have announced a further

removal of capital constraints on capital inflows but much less so for capital outflows. The inclusion of China's assets in the MSCI index (on the equity side) and in the Barclays-Bloomberg index (on the fixed income side) should also increase global demand for Chinese assets. We would like to estimate the potential size of the pool of Chinese assets and the size of global demand to understand the potential for capital flows. This can potentially be asymmetric if Chinese savings are not allowed to go overseas, therefore leading to imbalances.

4. The evolving transatlantic relationship (B4)

EU-US relations have seen ups and downs since World War 2. But the current situation is structurally different in a number of respects. First, China is a globally important economy and the EU has strong economic relations with China. This is very different to the period of the cold war, where Russia, while militarily a threat, was never a significant economic partner. The current confrontational stance of the US vis a vis China, which is not only driven by the US administration but rather supported by a bipartisan consensus, puts the EU therefore in a difficult spot. Second, the US is now explicitly questioning the security partnership with European countries, thereby increasing political pressure on the EU to comply with US views on China. Third, this US administration is, perhaps for the first time, openly hostile towards the European Union as such. It is, for example, actively trying to establish a privileged relationship with the UK to the detriment of the UK's relations with the EU.

In this project, we will organise a series of conferences in New York, Washington, Brussels and Berlin (probably during German EU presidency,) to explore various aspects of this evolving transatlantic relation. We will write policy notes on the strategic trade agenda, on the connection between security and economic sovereignty and on the rift in the transatlantic data economy.

5. EU Neighbourhood and beyond (B5)

We will continue our research on monitoring economic developments in countries having actual or potential EU candidate status (Western Balkans and Turkey), being EU partners within European Neighbourhood Policy framework (Southern and Eastern dimensions), Russia, and, in the broader Middle East and post-Soviet Central Asia. The issues of energy cooperation and managing immigration will be two points of focus. In a Horizon2020 project we will study the principles and procedures guiding the EU's relations with affiliated non-members.

We will also have three more specific projects that go beyond neighbourhood. The first one will feature Africa, in which we will analyse economic, political, social and institutional factors determining economic development of the continent and its various subregions. We will look at Chinese involvement in Africa, particularly from the perspective of M&A and "greenfield" investments. The aim is to guide EU policy vis a vis Africa. Last, we will look at India in the context of shifting global powers, and what its relationship with China can mean for the EU. These projects will mostly be about events and smaller research investments due to capacity constraints.

Last, we will collaborate with outside partners on analysing the current economic situation and challenges faced by Russia and its implications for EU-Russia economic and trade relations. This work will build on previous work we have done and will aim to explore how Russia can increase its potential growth through comprehensive economic, institutional and political reforms as well as changes in the priorities of Russia's foreign policy.

C. Research Area: Finance and Financial Regulation

Participants:

- *Scholars: Grégory Claeys, Maria Demertzis, André Sapir, Nicolas Véron, Guntram Wolff, Rebecca Christie, Alexander Lehmann, Dirk Schoenmaker*

Our research on financial issues will continue some of our previous themes with emphasis given to the structure of the EU's financial system, sustainable finance and long-term assets in capital markets. We will organise our research accordingly in three broad themes:

1. The future of the EU Financial Sector (C1)

In this section of the programme we will look at the future, as well as the past, of the EU financial system. Europe's banking union represents a regime change in European financial policy, and its consequences will reverberate for many years to come. We will both contribute to ongoing debates about implementation, and to the identification of the next steps of policy development, such as the creation of a European deposit insurance and potential limits on banks' sovereign exposures while addressing financial stability risks, including safe assets. More broadly, we will examine the future of the financial sector after Brexit. We will explore how Brexit is reshaping the EU financial landscape in significant and permanent ways. This project aims to frame those shifts and put them in the broader context of preserving financial stability and ensuring the European Union has the proper market infrastructure to support growth and investment and to enhance the international role of the euro. How will the EU maintain a leadership role in the global regulatory debate going forward?

We will also have an opportunity to reflect on financial stability risks that arise as a result of (cyber-) security threats and what EU policy makers should focus on to reduce those risks.

Also, we will explore the differences between bank insolvency laws in EU countries and on their potential harmonisation. Through analysing countries' bank insolvency regimes and their interaction with resolution regimes our work aims to identify potential available options in terms of the harmonisation of bank insolvency regimes. We will review how feasible these options are.

We will also explore a historical study on the factors that determine the rise and demise of international financial centres and to explore what this can tell us about today's predicament. What are the factors explaining the development and indeed decline of financial centres? Candidate factors are education of the workforce, geographical situation, languages, degree of financial (de)regulation, , legal system, religious factors. What hierarchy of financial centres can we establish given all the aspects above, and what does it tell us about contemporary developments?

Finally, we will organise an event on the first years of working of the single resolution board (SRB) and invite participants from the SRB, FDIC, the Bank of England and the Central Bank of Switzerland.

2. Demand for long term assets in the capital markets union (C2)

Moving the Capital Markets Union (CMU) agenda forward requires innovative thinking. Also, while there is a lot that has been said on the CMU, there is a distinct lack of analysis on the demand side: who will buy instruments like long-term assets and securities issued by second-tier corporates? We will take stock of where the EU stands, assess and analyse the EU landscape for institutional investors, in particular insurance and pension funds. Also, we will assess EU post-crisis capital market regulation as to whether it has discouraged allocations by long-term investors into long term or illiquid assets (specifically Solvency II and Basel IV). Can new products create meaningful demand (in particular the Pan-European Personal Pension Product, which critics say was watered

down). Finally, we will seek out proxies for risk tolerance by member states in publicly available data, in order to understand which markets are more open to capital markets investments.

3. Sustainable finance and financial literacy (C3)

This line of research will look at issues that have to do with the sustainability of finance.

First, the demand for greening finance is increasing as the urgency of climate change becomes more apparent. The sustainable finance agenda is becoming important in the context of the EU. We will examine the structural change that is required in the European financial sector as the sector comes under more scrutiny for climate-related risks. Our work will leverage and combine our traditional strengths in sustainability and in financial regulation, and closely engage with members from the industry and official sector. The ambition is to develop concrete recommendations that will allow the industry to adapt to a low-carbon world, understand potential risks to financial stability, and mobilize the funds required for a more sustainable European economy.

Second, subject to external financing, we would also like to take our work on financial literacy further. In particular, we would like to explore the interaction between financial and digital literacy. We will therefore like to explore the need for financial literacy in a world in which financial services are provided digitally. In partnership with the GFLEC, the global leader on financial literacy research, we will explore the risks of digital payments in the absence of financially literate consumers. Are consumers vulnerable to lowering the access threshold on making payments? Does financial literacy help to reduce these risks? We will explore these questions through specially designed surveys.

D. Research Area: Industrial Policy- Digital transformation, Innovation and competition policy

Participants:

- *Scholars: Georgios Petropoulos, Reinhilde Veugelers, J. Scott Marcus, Simone Tagliapietra, Georg Zachman, Mathew Heim, René Arnold, Jean Pisani-Ferry, Guntram Wolff, Maria Demertzis*

We have renamed this thematic part of the research programme to account for the importance of the issue of industrial policy. We will be examining how the EU can use innovation, competition and the digital economy to establish itself in an increasingly bipolar world. Themes that will feature include the data economy, levelling the playing field in competition, using public procurement to promote innovation.

Our research in the area is focussing on three themes: 1. The digital economy; 2. New industrial policy for the EU - Competition; 3. New industrial policy for the EU – Innovation.

1. The digital economy (D1)

We will continue our work on robots and automation and the effects on labour displacement. Recent literature has not been able to estimate accurately the replacement effect of automation. The predicted estimates vary significantly depending on methodology applied and how occupations and tasks at risk of being automated are defined. We will take this work forward by assessing the impact of the introduction of industrial robots (robots that are based on automated systems) and ICT in European markets and industries in the post 1990s era. We will also investigate the implications of these findings on EU countries' economies as well as what would be the optimal policy response to minimize associated risks.

We will also continue our previous work on geo-blocking with two objectives: (a) to identify and gather data, both qualitative and quantitative, from the supply as well as demand side as regards the audio-visual and non-audio-visual services giving access to copyright protected content using primary and secondary data sources; (b) to undertake an impact analysis of a potential extension of the Geo-blocking Regulation to the above identified sectors. This will be done as part of an external collaboration.

Third, GDPR is transforming the ownership structure of data. What impact does that already have on business models of existing and new companies and what could emerge?

2. New industrial policy for the EU - Competition (D2)

Competition policy will be a big topic in the upcoming 12 months. Does the EU need to adapt its competition policy as a result of unfair competition from third countries, and if yes, how will it need to do it and protect the standards on which it is designed? An important angle to pursue is identifying actual harm to competition done by having State-owned (i.e. public) enterprises (SOEs). There is scant data on this issue and only for very specific cases that can be of use that we can use as case studies.

Data has many applications in the digital economy, spanning many sectors. Data create opportunities for efficiencies, productivity, new services that can be of immense value to the economy. We wish to provide a proper taxonomy of different types of data that are present in the digital ecosystem, analysing the implications of each category for competition and/or regulation. In doing so we will exploit network effects and barriers to entry. We also wish to assess the risks arising from the concentration of different types of data in the hands of few big digital firms and provide some policy options to address the associated concerns.

3. New industrial policy for the EU - Innovation (D3)

We will also take an innovation angle to thinking about industrial policy. There is a lot going on in competition in regulating Intellectual Property Rights (IPR), yet without a proper assessment of the impact on incentives to innovate and investment. This goes against stated EU policies. With the aid of case studies, we aim to draw the line between competition and industrial policy.

Also, we will study the European patent system as a driver of innovation. We wish to characterise the position of EU firms in the global R&D landscape bringing together firm-level R&D spending information with patent information. This will give a better view on innovative performance particularly on sectors pivotal for EU's innovation growth potential: These include bio-pharma, digital and automobiles.

In the framework of a new industrial policy, we will also examine how Europe might use public procurement to promote its innovative companies. Given the size of public procurement (16 percent of EU GDP) it represents a unique tool to foster innovation. For example, mandating clean mobility solutions in public procurement tenders could provide a solid boost to the demand of electric cars and buses, propelling the transformation of the European automotive industry. This project seeks to provide a comprehensive framework for understanding the role of public procurement as a key tool of industrial policy in Europe. Also, staying with the innovative progress in batteries, we will investigate whether Europe can still play a role in battery manufacturing, and notably in the new generations of batteries. To do so, the project will map current global R&D and patenting developments in the field, in view of assessing who-is-doing-what in the field around the world, and in which segment Europe could expect to eventually play a role in the future.

Last, we will also like to link the discussion on competition and industrial policies to the issue of sustainability. The energy and transport sectors are undergoing a profound transformation driven by low-carbon technology developments as well as strong decarbonisation policies. There is a real opportunity to turn all this into an industrial revolution in Europe. But to do so, an adequate (industrial) policy tool-kit should be put in place. Understanding how to structure it is the ultimate aim of this project.

E. Research Area: Energy and climate policies

Participants:

- *Resident scholars: Simone Tagliapietra, Georg Zachmann, Reinhilde Veugelers*

Energy transition and climate change have become issues of paramount importance. Our research programme will feature “sustainability” issues across all themes. Our research in the area is focussing on four direct themes relevant for energy and climate: 1. Energy issues for Europe; 2. Geopolitics and energy; 3. Locating economic opportunities and challenges from rendering our societies greenhouse gas neutral; 4. Delivering on the Paris Agreement: A demand-driven, integrated assessment modelling approach.

1. Energy issues for Europe (E1)

We will research two issues of direct relevance for Europe. First the EU produces 10 percent of global GHG (Green House Gas) emissions. The only way that Europe can exercise global leadership in climate change is to move beyond its borders. To do so, the new European Commission should work out an initiative to “export the energy transition”, notably in view of de-risking investments beyond the directly financed projects. This research project will present a detailed proposal on how to structure this initiative, on which technologies to potentially prioritise and which recipient countries to target.

Our second project will analyse European gas consumption in the residential, commercial and industrial sector over the last 20 years. We will specify mathematical models of gas consumption for each sector to identify important drivers. This will help us explain how the relationship between determinants and natural gas use has changed over the period of observations, and its analyses the consumption trajectories of specific member states. Finally, this will allow us to speculate about future trajectories of gas demand in these sectors in the EU.

2. Geopolitics and energy (E2)

In our second part, we will link the energy transition to geopolitics. The Paris Agreement marked a major step forward in global efforts to address global warming. For the first time, developed and developing countries committed to act in order to limit global average temperature increase to well below 2 °C, and to pursue efforts to even limit it to 1.5 °C above pre-industrial levels. Meanwhile, technological advancements have significantly increased the cost-competitiveness of low-carbon technologies such as solar and wind power generation, power storage technologies and electric vehicles. This has already started to reshape the global energy system, notably by giving a greater role to solar and wind in the power generation mix. By transforming the global energy architecture, international decarbonisation policies and low-carbon technology advancements will also have profound geopolitical implications. This project seeks to map how all these aspects of the global energy transition will shift the balance of geopolitics.

In a specific example, we will discuss the EU’s energy and climate relations with China and Russia. Russia’s economy is highly dependent on energy exports to the EU and China. We will analyse how the energy relations between Russia and the EU, as well as between Russia and China have evolved and how they are expected to

develop in the future. This will look into trade flows, as well as contractual and infrastructure relations. The analysis will focus on areas where there is an interrelation between Russia-EU and Russia-China relations, for example, in the prioritisation of investments linked to exports to one region or the other.

3. Locating economic opportunities from decarbonisation (E3)

When discussing the impact of decarbonisation on the economy, there is a tendency to focus policy on defending the visible losers from this process. However, the decarbonisation process will bring new business opportunities for companies and well-paying jobs in low-carbon sectors will emerge.

Thus, we propose to analyse in which regions of Europe competitive strength can develop in specific low-carbon sectors— and what policy tools are needed to support this process. We will use regionalized patents data as a proxy for technological activity that provides high geographical granularity and coverage in order to estimate the proximity between old and new technologies (e.g., capacitors and PV cells) and predict potential regional strengths. We will combine these regional estimates with a large number of demographic and economic variables (spanning across the same geographical and temporal dimensions) in order to determine industrial policy gaps, including in skills and knowledge, towards the creation or exploitation of technological potential. As such we hope to contribute to a new “green industrial policy”.

Still, the transition itself is not equally easy for all and as we had showed in our study last year, some of the costs fall disproportionately more on the economically weak. Policies need to be crafted to compensate the losers and the path to objectives set needs to account for the starting point. We will continue contributing with shorter pieces to this debate**4. Delivering on the Paris Agreement: A demand-driven, integrated assessment modelling approach (E4)**

In a project with partners across Europe, we will aim to increase the policy relevance of major European modelling exercises by designing and organising an interface between stakeholders, policy-makers and modellers. This should ultimately lead to better assessments of the advantages and disadvantages of different EU pathways to the 2030 and 2050 objectives of climate neutrality. Large scale integrated assessment models allow us to compare the impact of different pathways towards climate neutrality on complex economic systems. But in the public discourse these powerful models are difficult to use – as they are hard to communicate. Policy-makers worry that due to a large number of assumptions, methodological differences and uncertainties, results are arbitrary. In addition, there is a risk that modelling exercises focus too much on academic originality and too little on providing useful guidance on the most important policy questions. Our project will aim to bridge that gap.

Appendix:

Project descriptions

A. EUROPEAN MACROECONOMICS AND GOVERNANCE

Name of project	A.1: Economic governance in the EU, euro area
<i>Participants:</i>	
<ul style="list-style-type: none"> <i>Resident scholars</i> 	Grégory Claeys, Zsolt Darvas, Maria Demertzis, Francesco Papadia, Jean Pisani-Ferry, André Sapir, Guntram Wolff, Thomas Wieser
<i>Description of project and policy relevance</i>	
<ul style="list-style-type: none"> • EU, euro area governance in a constrained macro environment. What are the implications of the current macro environment for European economic governance? In particular what are the implications for the fiscal framework? This question is discussed in academia, by think tanks etc. but not much by policymakers. We will continue to work on this issue not only discussing how to revise the European framework but also national fiscal rules. • Advancing with EMU deepening. The deepening of EMU is not advancing quickly. However, eurozone reform is still ongoing. Building a eurozone budget (or budget line inside the EU budget to foster convergence and competitiveness), improving the functions and governance of the ESM, changing the fiscal rules, are all possible avenues for reform. Building on earlier Bruegel work on this topic, we will continue to actively participate and shape that debate. • Innovative ideas on how to further integrate. We will contribute to the broader debate on European integration with an emphasis on the opportunity of having a variable geometry EU with differentiated circles. We will continue to examine the role of non-euro area countries in the EU, their perspectives in the various aspects of governance (e.g. banking union, budget, Eurogroup vs ecofin). • The future of the EU budget: the negotiations for the Multiannual Financial Framework for 2021-27 will enter their final stage in 2020. This will be the first big task for the new leadership of the European institutions. We will look in particular at how the EU budget can address the new challenges the EU faces (migration, border control, defence, climate change), eliminate or adjust those spending items that are no longer appropriate and how the EU budget can deliver European public goods. • What is next for Brexit and the future relationship? The likelihood is that Brexit will not be resolved easily this year. We will continue to monitor the issues of relevance and contribute to analysis. We will naturally also participate in the debate on the alternative scenarios for the future long-term relationship between the EU and the UK and the transition to this long-run relationship. 	
<i>External financing</i>	
On the area of Research&Innovation a potential funding from <i>Wellcome</i> Trust (“EU-UK science deal”) is under discussion.	

Name of project	A.2: Macroeconomic policies in Europe
<i>Participants:</i>	
<i>Resident scholars</i>	Grégory Claeys, Zsolt Darvas, Maria Demertzis, Francesco Papadia, Jean Pisani-Ferry, André Sapir, Guntram Wolff, Agnès Bénassy-Quéré
<i>Description of project and policy relevance</i>	
<ul style="list-style-type: none"> • Macro policies at the current juncture. The current macro environment in Europe is characterized by low interest rates, low (core) inflation, low wage growth, low demographic growth, and as a result low nominal growth prospect. We observe a lack of convergence (or even divergence) between some 	

countries or regions. It is essential to understand the drivers behind these trends to understand their consequences and find some solutions, as this has strong implications for macroeconomic policies.

- **New challenges for monetary policy.** In terms of monetary policy of the euro area, lower nominal means less space for conventional rate cuts in case of shocks and the need to discuss the toolbox of the ECB. But low inflation also means that rates will have to stay low for longer, which could have some financial stability implications (housing, asset bubbles, financial sector, leverage, zombie loans): there is a need to investigate further macroprudential tools and their setup in the EU.
- **What is the role of fiscal policy and what is the right macro policy mix?** For fiscal policy, low rates for long might have opposite implications as it makes it easier to reduce debt in good times, give more fiscal space for policymakers in bad times and also give some room for public investment in some strategic sectors (such as the energy transition or R&D). We will thus continue to discuss the role of fiscal policy, and discuss the actual and desirable fiscal stance for the euro area as a whole but also in each country, because the space might be different in each country (as difference in yields demonstrates). Also, in this context we would like to think about the quality of public finances (how to maximise the effect of fiscal policy via composition of revenues/expenditures). In general, it is also important to discuss the policy mix and the interaction between fiscal and monetary in the future in such an environment.
- **Understanding the productivity slowdown.** Bruegel participates in a Horizon2020 project (MICROPROD) on this subject. Part of our contribution to this project for this coming year will be use some of the findings on the new ways of measuring as well as the drivers of productivity researched by our partners to understand how this has impacted the equilibrium interest rate. This will help us understand the new narrative of the cost of capital.

External financing

“MICROPROD” project financed through Horizon 2020

Name of project	A.3 Promoting cohesion in the EU
• <i>Scholars</i>	Zsolt Darvas, Maria Demertzis, Marek Dabrowski, Martin Kahanec
Description of project	
<ul style="list-style-type: none"> • The scope for restoring convergence in the EU. Central and eastern European EU members were able to converge closer to the European average from low levels in the past decades, even when the impact of the crisis is taken into account, while some southern European member states have fallen back from higher initial income levels. Beyond the well-researched issue of the southern divergence, a key issue is the conditions for convergence of these southern countries as well as the prospect of further convergence of central and eastern European countries. By conducting an extensive literature review, including the literature on the so-called “middle-income trap” and data analysis, the project seeks to uncover the scope for further convergence in the European Union. • Fiscal costs of intra EU mobility. From some countries in the east and the south of the EU, a relatively large share of home country population emigrated to more advanced western and northern EU countries. Emigrants are typically young (aged 20-35) and it is an empirical question how their skill levels compare with the local population. Among the several key issues related to such largely one-directional intra-EU movement of people, we plan to focus on the net fiscal cost through the lifetime of the emigrant in the country of sending. While there is a lot of research on the fiscal costs/benefits for the recipient country, relatively little is known for the sending country. Raising children in the sending country involves direct fiscal costs though free or subsidised public services (such as education, healthcare, security, transport, public amenities, etc), while the emigrants pay most of their labour, 	

consumption and other taxes in their destination country after emigration. Emigration of working age cohorts can cause labour shortages with negative impacts on certain industries, and worsen the demographic trends of the sending country and can undermine the sustainability of pensions systems, especially if the children of emigrants also stay abroad. Also, if sending countries are heavily indebted, a smaller amount of tax payers is left to carry the tax burden. At the same time, remittances sent home by emigrants boost public revenues of their source country (if e.g. spent on consumption), boost GDP through demand effects and reduces the need for public infrastructure, such as health-care services as emigrants age. Some emigrants return to the source country with improved skills and from that point they contribute more to public finances.

- **A sustainable migration framework for the EU.** Free movement of workers is a cornerstone of the EU and the European Single Market. Yet, a growing gap between (i) observed social and economic outcomes and (ii) public perception, discourses, and politicization of migration. This cleavage often contributes to the adoption of ill-informed and ill-chosen policy approaches to migration and mobility, resulting in a vicious circle from adverse outcomes through negative attitudes and perceptions to ill-chosen policies, and back to adverse outcomes. A better understanding of migration and a more salient migration governance framework are urgently needed to enhance EU citizens' confidence in the European Project, its social, political and economic viability, and their own feeling of security and safety. In 2019/2020 the key topics of this line of research will include (i) measuring policy determinants of immigration to the EU: migration, foreign, development, trade/FDI, and aid policies, (ii) a review of the determinants of perceptions and attitudes to migration among citizens in Europe and policy implications for a sustainable migration policy framework, and (iii) a study on the relationship between migration and inequality, social exclusion, and social cleavages.”
- **Monitoring recoveries from EU financial adjustment programmes.** While all the involved EU countries [Cyprus, Greece, Hungary, Ireland, Latvia, Portugal, Romania] were able to exit their financial assistance programmes and growth has restarted, the strength of the recovery varies across countries, as well as market trust reflected in borrowing costs. This project will look at exit strategies and the factors that could have contributed to different outcomes.

External financing

None

Name of project	A.4: European public opinion: is there one?
<i>Participants:</i>	
• <i>Resident scholars</i>	Giuseppe Porcaro, Francesco Papadia, Emmanuel Mourlon-Druol
• <i>Description of project</i>	
<p>This is a continuation of last year's project on the definition of a European public opinion. One of the problems in pursuing European unity is the alleged weakness of a European "demos". An important component of this demos is a European public opinion. The genuine public opinions, it is argued, are national, and this limits European construction, especially in its most federal modality. Maintaining a balance between the aspiration to achieve an ever-closer union, as specified in the Treaty, and a vibrant European public opinion, is essential. Measuring and analysing the developments of this public opinion is thus essential. The argument has some validity, but in the absence of proper measurement its importance remains a source of disagreement.</p>	
<ul style="list-style-type: none"> • Measuring European public opinion. We have dedicated substantive resources to collecting data throughout the year and understanding the relevant methodology. We have produced a blog post on 	

the results on Le Monde, and we will be ready to publish similar blogs soon on La Stampa and Die Zeit-Der Spiegel.

- **Understanding the relevance of a European public opinion.** Our ambition for this year is to understand whether there is such a thing as a European public opinion and what makes it distinct from national ones. Our objective is to understand whether the European Union is running ahead of itself, in the sense of not being based on a sufficiently developed pan-European public opinion, or whether there is a basis on which further progress towards “an ever-closer union” could be achieved.

External financing: none

Name of project	A.5 Taking the <i>methodology</i> of policymaking to the next level
• <i>Scholars</i>	J. Scott Marcus, Adriaan Schout, Guntram Wolff
<i>Description of project</i>	
<p>The project deals with the <i>methodology</i> of formulation of policy, strategies, and legislation. In distinction to what Bruegel traditionally does, this project focuses on the process of policymaking rather than on specific outcomes.</p> <ul style="list-style-type: none"> • Methodologies for evidence-based <i>strategic</i> policy-making. The EU's evidence-based Better Regulation methodology looks at individual legislative measures from the bottom-up. In crafting strategies that entail multiple policy measures, a complementary top-down view appears to be needed. Working top-down could, for instance, facilitate the assignment of candidate action lines to individual legislative instruments and to Better Regulation (BR) impact assessment options. In estimating economic benefits, starting top-down reduces the risk of inconsistency and double-counting. The intent is to develop top-down approaches that could be complementary to the current bottom-up approaches, not to supplant them. The work would benefit from recent work that Bruegel has done for the Parliament and for the Commission. Any methodologies developed are likely to prove useful not only for EU and member state institutions, but also for Bruegel's own analyses. • Application of AI, machine learning and big data to policymaking. The same techniques that are transforming business and society also have potential application to the policymaking process, as a new discipline sometimes referred to as <i>RegTechs</i>. The promise is clear, but there are also risks that must be managed. To what kinds of decisions are these techniques likely to be most applicable? What is the risk of AI/ML (Machine Learning)/Big data reaching wrong conclusions, or perhaps technically correct but politically unacceptable conclusions? What more can be done to ensure that algorithms used in crafting policies and in implementing and enforcing policies are adequately explainable? How are affected parties to be given meaningful rights to review and appeal of decisions reached? 	
<i>External financing</i>	
none	

B. GLOBAL TRADE AND GOVERNANCE

Name of project	B.1: A changing global scene: governance
<i>Participants:</i>	
<ul style="list-style-type: none"> • <i>Scholars</i> 	Zsolt Darvas, Guntram Wolff, Maria Demertzis, André Sapir, Jean Pisani-Ferry, Niclas Poitiers, Alicia Garcia-Herrero, Uri Dadush, Jianwei Xu
<i>Description of project</i>	
<ul style="list-style-type: none"> • New Patterns of International Collective Action The demand, and need for international collective action are an order of magnitude larger than they have ever been. Traditional modes of international collective actions are, however, ill-suited to the new global economic and geopolitical context. The effectiveness of relatively soft forms of global governance is determined by a number of factors. First, it depends on the nature of the underlying interaction and the incentives for governments to cooperate or, on the contrary, to free-ride on common commitments. Second, it results from the degree of concentration in the field, i.e. on whether a few key players essentially determine the outcome or whether power is relatively evenly distributed. Third, it is a function of the participation of private players and the degree to which their involvement increases the governments' incentive to act. Fourth, it is affected by the presence of epistemic communities that may, or may not, inform governments about the consequences of their actions and inform the public about the delivery on pragmatic commitments. Based on a series of sectoral seminars held with experts, policymakers and practitioners, the project aims at reaching precise conclusions on the effectiveness of various types of arrangements and the reason for them. It is also intended to provide recommendations for the design of international cooperation mechanisms. • The economics of de-globalisation. Economic globalisation, which has been supporting economic growth around the world, is now facing a crossroads, and pressure against globalisation has been strengthening. The project will take stock of recent trends of the flows of people, goods, services and capital globally and within Europe, as well as attempts to restrict such flows. By setting up alternative scenarios, we will examine the potential impacts on the global economy, Europe and individual countries of restricted movements of people, goods, services and capital due to increased populism and protectionism, including break-downs in existing global supply chains. A crucial issue to be addressed is the contradiction between unrestricted globalisation and national security considerations. In recent efforts we have tried to estimate how exposed countries (and sectors) in various EU countries are to the US. This however does not explain in full the extent of economic effects that possible US tariffs will have on the European economy and indeed what would be the optimal response from the EU. 	
<i>External Funding</i>	
none	

Name of project	B.2: A changing global scene: trade
<i>Participants:</i>	
<ul style="list-style-type: none"> • <i>Scholars</i> 	Guntram Wolff, Maria Demertzis, André Sapir, Jean Pisani-Ferry, Niclas Poitiers, Alicia Garcia-Herrero, Uri Dadush, Jianwei Xu
<i>Description of project</i>	

<ul style="list-style-type: none"> • Trade relations between the EU, China, and Russia: complementary or competitive? China's increasingly important role in the global economy has transformed the nature of global competition and reshaped international trade. Meanwhile, the European Union has long been the most important power in global trade and continues to run a very large trade surplus. The competition between the two has been increasingly relevant, not only for their own home markets, but globally. Russia is a key area for both actors. With this project we intend to explore evolving trade relations between China and Russia, on the one hand, and the EU and Russia, on the other. The main research question is whether these trade relations are complementary or whether they risk to become competitive. To address the issue, we compare the products China and the EU export to Russia, and empirically estimate the elasticity of substitution between European exports and Chinese exports to Russian economies (i.e. how their exports to Russia respond to the changes in relative exporting prices). • Digital trade. We will explore the size and relevance of the sale of consumer products and online services on the Internet. But beyond that we need to explore the role of data and how data flows have enabled the provision of new services, has created global value chains and the creation of new types of manufacturing that are smarter and cheaper to consumers.
<i>External Funding</i>
The first project is done in collaboration with the EU-Russia Expert Network on Foreign Policy (EUREN) and the EU Delegation to the Russian Federation, with financial support from the European Commission's Partnership Instrument.

Name of project	B.3: China and its role in the global multilateral system
Participants:	
<ul style="list-style-type: none"> • <i>Resident scholars</i> 	Maria Demertzis, Jean Pisani-Ferry, André Sapir, Guntram Wolff, Alicia Garcia-Herrero, Uri Dadush, Jianwei Xu
<i>Description of project and policy relevance</i>	
<ul style="list-style-type: none"> • Understanding the economic impact of China in the EU. There have been a lot of attempts in the US to measure the effects of the rise of China. The project aims to contribute to our understanding of China's economic involvement in Europe by documenting the direct and estimating the indirect economic impact of its presence in the EU. This project will be an important input to thinking about a "smart" strategic approach to China that capitalises on economic relations with due considerations to Chinese practices and to the evolving global geopolitical scene. A specific example will be M&A activity. The rising presence of Chinese companies in the EU's mergers and acquisition market has drawn global concerns. In this project, we establish the regional and sectoral patterns of China's investment in the EU and discuss the pros and cons for EU member states. • China's selective opening of its capital account: where do we stand? The Chinese authorities have announced a further removal of capital constraints on capital inflows but much less so for capital outflows. The inclusion of China's assets in the MSCI index (on the equity side) and in the Barclays-Bloomberg index (on the fixed income side) should also increase global demand for Chinese assets. Given the still rapid growth of China's economy, at least for international standards, we can expect the size of financial assets to continue to grow and, thus, the supply of Chinese assets for the rest of the world. It would be interesting to estimate what is the potential size of that pool of Chinese assets and the potential demand for the rest of the world. Policy conclusions can be drawn for the global financial 	

system and other financial assets globally. This is especially important if Chinese savings are not allowed to go overseas as a rebalancing factor.

- **Opening up the Chinese financial sector?** Last year in November, Chinese authorities announced the opening up of their financial sector (banks, insurance and asset management) to foreign investors. The new regulatory environment became a reality in 2018, which means that foreign institutions can now acquire Chinese ones with control. Several financial institutions, including European, have used this opportunity to grow in China. Several questions are raised. Is there a likelihood of a reversal if the US-China economic confrontation continues unabated? Will there be enough demand from foreign companies to make a difference in such a huge market? Will it change the still very much state-led functioning of China's financial sector? What about the impact on the relative closeness of China's capital account?

External Financing (none)

Name of project	B.4: The evolving transatlantic relationship
<i>Participants:</i>	
<ul style="list-style-type: none"> • <i>Resident scholars</i> 	Guntram Wolff, Uri Dadush, André Sapir, Maria Demertzis, Scott Marcus, Jean Pisani-Ferry
<i>Description of project</i>	
<p>EU-US relations have seen ups and downs since World War 2. But the current situation is structurally different in a number of respects. First, China is a globally important economy and the EU has strong economic relations with China. This is very different to the period of the cold war, where Russia, while militarily a threat, was never a significant economic partner. The current confrontational stance of the US vis a vis China, which is not only driven by the US administration but rather supported by a bipartisan consensus, puts the EU therefore in a difficult spot. Second, the US is now explicitly questioning the security partnership with European countries, thereby increasing political pressure on the EU to comply with US views on China. Third, this US administration is, perhaps for the first time, openly hostile towards the European Union as such. It is, for example, actively trying to establish a privileged relationship with the UK to the detriment of the UK's relations with the EU.</p> <p>In this project, we will organise a series of conferences in New York, Washington, Brussels and Berlin (probably during German EU presidency,) to explore various aspects of this evolving transatlantic relation. We will write policy notes on the strategic trade agenda, on the connection between security and economic sovereignty and on the rift in the transatlantic data economy.</p>	
<i>External financing</i>	
Chumir Foundation for Ethics in Leadership	

Name of project	B.5: EU Neighbourhood and beyond
<i>Participants:</i>	
<ul style="list-style-type: none"> • <i>Resident scholars</i> 	Marek Dabrowski, Alicia Garcia-Herrero, Guntram Wolff, Suman Berry
<i>Description of project</i>	
<ul style="list-style-type: none"> • Relations with the EU Neighbourhood. Continuous analysis and monitoring of economic developments in countries having the actual or potential EU candidate status (Western Balkans and 	

Turkey), being EU partners within European Neighbourhood Policy framework (Southern and Eastern dimensions), Russia, and, in the broader Middle East and post-Soviet Central Asia. Analysis of EU economic relations with individual regions, sub-regions and countries, and intra-regional economic cooperation (for example, between Western Balkan countries, Southern Mediterranean countries, countries of the former Soviet Union, etc.), including energy cooperation and managing migration. Review of the EU policy frameworks towards candidate and neighbouring countries.

- **Beyond the EU's neighbourhood.** Analysis of economic, political, social and institutional factors determining economic development of the African continent and its various subregions. In particular, the focus will be given to the role of peace dividends (conflict resolution), resource endowment, trade policies and regional/ sub-regional trade integration, role of FDI (and countries/ regions of origin, for example, EU, China, India, US), macroeconomic policies and institutional actors. The policy of the EU vis a vis Africa. We will also continue our participation in the Mediterranean Dialogues (MED conference) where this time we will report on Chinese involvement in Africa. China's involvement in Africa has clearly strengthened in recent years not only in trade but also investment. We will analyse the economic role of China in Africa from the perspective of M&A and "greenfield" investment, and assess its impact on the European Union.
- **Current economic situation and challenges faced by Russia: implications for EU-Russia economic and trade relations.** In 2014-2016, the Russian economy suffered from the currency crisis caused by a collapse of oil prices and the country's engagement in a conflict with Ukraine. Although the crisis has been overcome in the second half of 2016 thanks to prudent macroeconomic policies and higher oil prices, economic recovery remains weak and medium-term growth prospects look disappointing. The weak growth prospects are caused by several factors such as (i) adverse demographic trends; (ii) poor business and investment climate; (iii) a difficulty to diversify its economy out of the dominant role of the hydrocarbon sector; (iv) US and EU sanctions against Russia. Increase of potential growth requires comprehensive economic, institutional and political reforms as well as change in priorities of Russia's foreign policy; that is, abandoning geopolitical rivalry with the US and EU. This work stream will build on our work on the subject in the current year. (see project above)
- **EU3D: Bruegel will contribute to a report outlining the key principles, underlying logic and types of country affiliation to the EU, including Brexit.** We will study the principles and procedures guiding the EU's relations with affiliated non-members by surveying the academic literature and the specific modes of EU affiliation with non-members in order to render explicit the basic principles, nature and range of EU affiliations with non-members

External financing

EU and Russia: This project is done in collaboration with the EU-Russia Expert Network on Foreign Policy (EUREN) and the EU Delegation to the Russian Federation, with financial support from the European Commission's Partnership Instrument. "EU3D" project is financed through Horizon 2020.

C. Finance and Finance regulation

Name of project	C.1: The future of the EU Financial Sector
<ul style="list-style-type: none"> • <i>Scholars</i> 	Rebecca Christie, Nicolas Veron, Alexander Lehmann, Guntram Wolff, Maria Demertzis, Emmanuel Murlon-Druol, Thomas Wieser, Anna Gelpern (PIIE/Georgetown)
<i>Description of project</i>	
<ul style="list-style-type: none"> • The financial sector after Brexit: A framework for the future. Europe’s banking union represents a regime change in European financial policy, and its consequences will reverberate for many years to come. We will both contribute to ongoing debates about implementation, and to the identification of the next steps of policy development, such as the creation of a European deposit insurance and limits on banks’ sovereign exposures. More broadly, we will examine the future of the financial sector after Brexit. Regardless of how the final outcome looks, the Brexit process is reshaping the EU financial landscape in significant and permanent ways. This project aims to frame those shifts and put them in the broader context of preserving financial stability and ensuring the European Union has the proper market infrastructure to support growth and investment. Research will encompass interviews with policymakers across Europe, industry participants and other stakeholders, combined with available data (as useful). Brexit brings its own risks and also highlights ongoing challenges that Europe would be facing regardless. We aim to take a comprehensive look at these threats. How will the EU work with third party countries? Will the UK be in close regulatory accord with the EU and the euro area, or will it be at a further remove than known partners like the US and Switzerland? How will the EU maintain a leadership role in the global regulatory debate going forward? • (Cyber-)security and financial stability. We will also have an opportunity to reflect on financial stability risks that arise as a result of cybersecurity threats. • Harmonisation of bank insolvency laws in the EU. This study will explore the differences between bank insolvency laws and on their potential harmonisation. The study will: 1)- gather information on bank insolvency regimes in the Member States and their practical application; 2) analyse the interaction between bank insolvency regimes and resolution regimes; 3) assess the potential disadvantages of a non-harmonised bank insolvency regime; 4) identify potential available options in terms of the harmonisation of bank insolvency regimes to address the divergences identified, as well as the feasibility, benefits, obstacles and impact of these options. • The rise and demise of international financial centres. The 2008 financial crisis, Brexit, and the CMU project call into question the established geography of international financial centres in Europe. This project aims to look at the driving, structural factors leading to the rise (and demise) of financial centres over the long run; and to explore what this can tell us about today's predicament. In particular, it will look at the following questions: What are the factors explaining the development/stagnation/decline of financial centres? (education of the workforce, geographical situation, languages, financial (de)regulation, country where the centre is located, legal system, religious factors...). What are the criteria used to determine the “size” of a financial centre (what transactions)? What does “international” really mean: regional? continental? global? What hierarchy of financial centres can we establish given all the aspects above, and what does it tell us about the contemporary developments? These questions will be set against the backdrop of the large literature that exists on international financial centres. • The initial years of the Single Resolution Board. We will organise an event on the first years of working of the SRB and invite participants from the FDIC, the Bank of England and the Central Bank of Switzerland. 	

<i>External financing:</i>
DG Fisma funding for study on harmonisation of insolvency laws

<i>Name of project</i>	C.2: Demand for long term assets in the EU's capital market
<i>Participants</i>	
<ul style="list-style-type: none"> <i>Scholars</i> 	Rebecca Christie, Alexander Lehmann, Nicolas Véron, Grégory Claeys, Maria Demertzis
<i>Description of project</i>	
<ul style="list-style-type: none"> The next phase of the capital markets integration agenda. European public policy to date has focused on creating regulatory conditions that could enable more integrated capital markets investment and support issuance by a wider set of companies. There is a dearth of analysis on the demand side: who will buy instruments like long term assets and securities issued by second-tier corporates? We will take stock of where the EU stands, including assessing the various high-level working groups; commitments made under the G20 workstream on long-term investment, which has been under way since 2013; and elements of the CMU agenda. We will assess and analyse the EU landscape for institutional investors, in particular insurance and pension funds. We will survey baseline conditions across all 27 member states. We will assess EU post-crisis capital market regulation as to whether it has discouraged allocations by long-term investors into long term or illiquid assets (specifically Solvency II). Can new products create meaningful demand (in particular the Pan-European Personal Pension Product, which critics say was watered down). Finally, we will seek out proxies for risk tolerance by member state in publicly available data, with the goal to analyse which markets are most open to capital markets investments and which are more conservative and would retain a preference for bank accounts and annuities even in favourable market conditions. Monitoring Capital flows. We will update the data on international capital flows that we have done for the past five years. This allows us to observe irregularities as well as trends in international capital movements. 	
<i>External financing</i>	
Capital flows project financed by DG Fisma	

<i>Name of project</i>	C.3: A model for Sustainable Finance
<ul style="list-style-type: none"> <i>Scholars</i> 	Alex Lehmann Dirk Schoenmaker, Nicolas Véron, Rebecca Christie, Georg Zachmann, Simone Tagliapietra, Maria Demertzis
<i>Description of project</i>	
<ul style="list-style-type: none"> Sustainable Finance: European leadership and vulnerabilities. This project will examine the structural change that is required in the European financial sector as it adopts EU legislation on sustainable finance, and comes under more scrutiny for climate-related risks. The project will leverage and combine our traditional strengths in sustainability and financial regulation, and closely engage with members from the industry and official sector. What modifications to capital market legislation 	

are needed? Are EU taxonomy and disclosure rules consistent with those in other financial markets? Can European standards for green finance become an international template? How can national and euro area supervisors gauge climate related risks to the financial system?

- **An Integrated Economy: Balancing Profit and Impact.** Society faces several challenges on the social front (inclusiveness, gender equality, human rights) and on the environmental front (climate change, natural food, fresh water, biodiversity). These challenges are summarised in the UN Sustainable Development Goals (SDGs). The SDGs form the global strategy to promote sustainable development. The SDGs are an agenda for all to act upon: governments, enterprises and citizens. This project addresses how enterprises can contribute to the SDGs, alongside governments and citizens.
- **Financial literacy.** Following previous work on the subject we will explore the need for financial literacy in a world in which financial services are increasingly provided digitally. In partnership with the GFLEC, the global leader on financial literacy research, we will explore the risks of digital payments in the absence of financially literate consumers. Are consumers vulnerable to lowering the accessibility threshold to making payments? Does financial literacy help in reducing these risks? We will explore these questions through specially designed surveys to replicate this research done in the context of US millennials.

External financing

The project on financial literacy will be conditional on external financing sought from a balanced mix of private foundations, banks and financial institutions and national governments.

D. Industrial Policy: Digital transformation, Innovation and Competition

Name of project	D.1: The digital Economy
• <i>Scholars</i>	Georgios Petropoulos, Scott Marcus, René Arnold
<i>Description of project</i>	
<ul style="list-style-type: none"> • Robots, ICT and EU Labour Markets. Thanks to complex virtual learning techniques and algorithms, automated systems are now able to perform a wide range of physical and cognitive tasks. Their efficiency and accuracy are expected to further increase as algorithmic AI systems advance. The increased capabilities of automated systems create concerns about the future of work and human employment. In general, automation affects employment in two opposing ways: i) negatively – by directly displacing workers from tasks they were previously performing (displacement effect); ii) positively – by increasing the demand for labour in other industries or jobs that arise due to automation (productivity effect). Recent literature was only able to estimate the displacement effect of automation but it is still inconclusive as the predicted estimates vary to a large extent depending on methodology and how occupations and tasks that are at risk (to be automated) are defined. In this project we assess the impact of the introduction of industrial robots (robots that are based on automated systems) and ICT in European markets and industries in the post 1990s era. We also investigate the implications of these findings on EU countries' economies as well as what would be the optimal policy response to minimize any associated risks. • Geo-blocking regulation and the impact on copyright protected content. The study has two objectives: (a) to identify and gather data, both qualitative and quantitative, from the supply as well as demand side as regards the audio-visual and non-audio-visual services giving access to copyright protected content using primary and secondary data sources; (b) to undertake an impact analysis of a potential extension of the Geo-blocking Regulation to the above identified sectors, where the trader has the required rights for the relevant territories, taking into account the following aspects: 1) impact on the sectors concerned, 2) impact on all relevant actors depending on the sector, including rights holders and distributors, and 3) impact on consumers. • GDPR and the new evolving data economy. GDPR is changing the proprietary nature of data. How will this new data structure impact existing business models and which new business models are emerging and will be emerging? 	
<i>External financing</i>	
Robots, ICT and EU Labour Markets funding from Horizon 2020 (Marie Curie), Geo-blocking regulation funding from DG Connect, MasterCard Centre for Inclusive Growth	

Name of project	D.2: New industrial policy for the EU? Competition
• <i>Scholars</i>	André Sapir, Simone Tagliapietra, Mathew Heim, Jean Pisani-Ferry, Georgios Petropoulos
<i>Description of project</i>	
<ul style="list-style-type: none"> • Why an EU industrial policy? EU Industrial policy is back on several advanced countries' policy agenda. More and more governments regard the sectoral composition of output as a legitimate and even necessary matter for policy targeting and envisage to promote it through hitherto unconventional policy instruments. These developments call for a renewed reflection on the ways and means of an industrial policy for the 21st century. The issue is, can Europe develop new tools without falling into the traps that discredited industrial policies in the late 20th century, such as 	

<p>misguided technological choices, capture by incumbents, and failure to terminate unprofitable projects. At an EU level, can it take initiatives without being paralyzed by inter-country rivalries over the distribution of subsidies and jobs, which often result in costly organizational choices and the survival of obsolete production designs.</p> <ul style="list-style-type: none"> • The level playing field in competition. Competition policy will be a big topic in the upcoming 12 months, and which will evolve considerably. The literature is clear; industrial policy in competition enforcement is inefficient and not advisable. But the literature usually assumes a context of fair competition from third countries. What happens if that is not guaranteed? Should other, industrial policy means be used to redress a balance? In addition, there are a number of industrial policy angles in EU competition anyway (how far does the consumer welfare standard go; how to prioritise cases; how to focus on digital issues to boost EU firms, especially relating to remedies design etc) that one can tie in. An important angle, and one that we wish to pursue, is identifying actual harm to competition from Chinese SOEs. There is scant data on this issue and in very specific cases that can be of use (the EPSC data on solar panels exit of many firms and entry of Chinese firms is one example). <p>The Data Economy and Competition. Data has many applications in the digital economy, with applications spanning all sectors, creating opportunities for efficiencies, productivity, new services and whole sectors that can be of immense value to the economy. But, at the same time, they have been disruptive and a source of regulatory controversy, notably through concentration and issues related to ownership, data protection etc. Data and the impact of platforms that gather and/or hold large amounts of data have become the focal point of the antitrust debate. In this project we wish to provide a proper taxonomy of different types of data that are present in the digital ecosystem, analysing the implications of each category for competition and/or regulation. We also wish to assess the risks arising from the concentration of different types of data in the hands of a few big digital firms and provide some policy options to address the associated concerns.</p>
<i>External financing</i>
<ul style="list-style-type: none"> • None

Name of project	D.3: New industrial policy for the EU? Innovation
<ul style="list-style-type: none"> • <i>Scholars</i> 	Simone Tagliapietra, Reinhilde Veugelers, Mathew Heim, Bruno von Pottelsberghe
<ul style="list-style-type: none"> • <i>External</i> 	Michele Cincera
<i>Description of project</i>	
<ul style="list-style-type: none"> • Global innovation in batteries. Batteries are at the core of the transformations occurring in both the electricity sector and the automotive sector. Battery production is thus emerging in Europe as a strategic imperative for the clean energy transition as well as for the competitiveness of the automotive sector. This project seeks to investigate whether Europe can still play a role in battery manufacturing and recycling, and notably in the new generations of batteries. To do so, the project will map current global R&D and patenting developments in the field, in view of assessing who-is-doing-what in the field around the world, and in which segment Europe could expect to eventually play a role in the future. • Public policies to promote innovation. Regulating IPR. There is a lot going on in competition in regulating IPR, yet without a proper assessment of the impact on incentives to innovate and investment. This goes against stated EU policies. With the aid of case studies, we will aim to identify where we can draw the line between competition and industrial policy. Also we will study the European 	

patent system as a driver of innovation as well as Public procurement as a key tool of industrial policy. Understanding country differences in this regard is an important starting point. In the framework of a new industrial policy, Europe might consider making use of public procurement to promote its innovative companies. In the EU, the public purchase of goods and services has been estimated to be worth 16 per cent of GDP. Given its size, this represents a unique tool to foster innovation. For example, mandating clean mobility solutions in public procurement tenders could provide a solid boost to the demand of electric cars and buses, propelling the transformation of the European automotive industry. This project seeks to provide a comprehensive framework of understanding for the role of public procurement as a key tool of industrial policy in Europe, to formulate sensible policy recommendations to the EU institutions.

- **Linking R&D Scoreboard and Patent Information.** We wish to characterise the position of EU firms in the global R&D landscape bringing together firm-level R&D spending information with patent information. This will allow us to get a better view on innovative performance particularly in sectors pivotal for the EU's innovation growth potential: in high-tech sectors where technological innovation is important, the speed of change is high, and the changes are drastic. These include bio-pharma, digital and automobiles. The level of detail possible will allow us to investigate technology positions in much more detail, such as the position in AI, IoT, robotics, Crispr (gene editing) technologies. Finally, it will also allow us to identify where EU based firms are locating their inventive activities and which non-EU firms are locating inventive activities in the EU.
- **Industrial policy for sustainability.** After France and Germany recently unveiled a manifesto for a European industrial policy fit for the 21st century, a lively debate sparked across the continent on this issue. While this discussion tends to remain at a more general level, this project seeks to investigate how an industrial policy for sustainability should look like. The energy and transport sectors are undergoing a profound transformation driven by low-carbon technology developments as well as strong decarbonisation policies. There is a real opportunity to turn all this into an industrial revolution in Europe. But to do so, an adequate (industrial) policy tool-kit should be put in place. Understanding how to structure it is the ultimate aim of this project.

External financing

- None

E. Energy and Climate Policies

Name of project	E.1: Energy issues for Europe
• <i>Scholars</i>	Simone Tagliapietra, Georg Zachmann
<i>Description of project</i>	
<ul style="list-style-type: none"> • Exporting the energy transition: a flagship initiative for the new European Commission. The EU produces 10 percent of global GHG emissions. This implies that the only way for the EU to exercise global leadership in climate change is to move beyond its borders. To do so, the new European Commission should work out an initiative to “export the energy transition”, notably in view of de-risking investments beyond directly financed projects. This initiative could be a triple-win. First, it could help to meet Europe’s climate finance obligations and hence help to achieve the “conditional” GHG emission reduction commitments of developing countries. Second, it could enable European industry – that is very competitive in many of these technologies – to find new markets. And third, it can help economic development in Africa and other recipient developing countries, providing an invaluable stability 	

<p>dividend. This research project will elaborate on this concept, presenting a detailed proposal on how to structure this initiative, which technologies to potentially prioritise and which recipient countries to target.</p> <ul style="list-style-type: none"> • Key drivers of natural gas demand in Europe. This project analyses European gas consumption in the residential, commercial and industrial sector over the last 20 years in the EU. It specifies mathematical models of gas consumption for each sector to identify important drivers of gas consumption. It explains how the relationship between determinants and natural gas use has changed over the period of observations and its analyses of consumption trajectories of specific member states. Finally, it speculates about future trajectories of gas demand in these sectors in the EU.
<i>External financing</i>
None

Name of project	E.2: Geopolitics and energy
• <i>Scholars</i>	Simone Tagliapietra, Georg Zachmann
<i>Description of project</i>	
<ul style="list-style-type: none"> • Geopolitics of the energy transition. The world is undergoing an historical energy transition, driven by increasingly strong decarbonisation policies and quick low-carbon technology developments. The Paris Agreement marked a major step forward in global efforts to address global warming. For the first time, developed and developing countries committed to act in order to limit global average temperature increase to well below 2 °C, and to pursue efforts to further limit this to 1.5 °C above pre-industrial levels. This reinforces decarbonisation measures already being undertaken in different parts of the world. Meanwhile, technological advancements have significantly increased the cost-competitiveness of low-carbon technologies such as solar and wind power generation, power storage technologies and electric vehicles. This has already started to reshape the global energy system, notably by giving a greater role to solar and wind in the power generation mix. By transforming the global energy architecture, international decarbonisation policies and low-carbon technology advancements will also have profound geopolitical implications. The large-scale shift to low-carbon energy is disrupting the global energy system, impacting economies and changing the political dynamics within and between countries. This project seeks to provide a comprehensive analysis of the geopolitical aspects of the global energy transition. • Energy security policy: EU energy and climate relations with China and Russia. The aim of this workstream is to zoom out on EU-Russia-China energy relations. Russia's economy is highly dependent on energy exports to the EU and China. We will analyse how the energy relations between Russia and the EU, as well as between Russia and China have evolved and how they are expected to develop in the future. This will look, both, into trade flows, but also contractual and infrastructure relations. The analysis will focus on areas, where there is an interrelation between Russia-EU and Russia-China relations, for example, in the prioritisation of investments linked to exports to one region or the other. (EUREN) 	
<i>External financing</i>	
This project is done in collaboration with the EU-Russia Expert Network on Foreign Policy (EUREN) and the EU Delegation to the Russian Federation, with financial support from the European Commission's Partnership Instrument.	

Name of project	E.3: Locating economic opportunities from Decarbonisation
<i>Participants:</i>	
<ul style="list-style-type: none"> • Resident scholars 	Georg Zachmann
<ul style="list-style-type: none"> • Non-resident scholars and external contributors 	
<i>Description of project</i>	
<p>The decarbonisation process will bring new business opportunities for companies and well-paying jobs in low-carbon sectors will emerge. When discussing the impact of decarbonisation on the economy, there is a tendency to focus policy on defending the visible losers from this process. While this is important for political economy reasons, in the long term it is also important to focus on the potential winners, and enable them to exploit this potential.</p> <p>Thus, we propose to analyse in which regions of Europe competitive strength can develop in specific low-carbon sectors– and what policy tools are needed to support this process.</p> <p>Starting from regionalized patents data as a proxy for technological activity, our empirical approach will exploit the high geographical granularity and coverage in order to estimate the proximity between old and new technologies (e.g., capacitors and PV cells) and predict potential regional strengths.</p> <p>We will combine these regional estimates with a large number of demographic and economic variables (spanning across the same geographical and temporal dimensions) in order to determine industrial policy gaps towards the creation or exploitation of technological potential. As such we hope to contribute to a new “green industrial policy”.</p>	
<i>External financing</i>	
Partly through Horizon 2020 “COP21 RIPPLES” project	

Name of project	E.4: Delivering on the Paris Agreement: A demand-driven, integrated assessment modelling approach
<ul style="list-style-type: none"> • Resident Scholars 	Georg Zachmann
<ul style="list-style-type: none"> • External Participants: 	National Technical University of Athens (NTUA); Asociacion BC3 Basque Centre for Climate Change - Klima Aldaketa Ikergai (BC3); The Chancellor Masters and Scholars of the University of Cambridge (Cambridge); Cicero Senter Klimaforskning Stiftelse (CICERO); Fondazione Centro Euro-Mediterraneo SUI Cambiamenti Climatici (CMCC); Energy Engineering Economic Environment Systems Modeling and Analysis SRL (E4SMA); Ecole Polytechnique Federale de Lausanne (EPFL); Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V (Fraunhofer ISI); Imperial College of Science Technology and Medicine (Grantham); Holistic IKE (HOLISTIC); Institute for European Energy and Climate Policy Stichting (IEECP); Seureco Societe Europeenne D'Economie SARL (SEURECO)
<i>Description of project</i>	
<p>The European Commission in late 2018 published its vision for a carbon neutral economy. In 2019/2020 the EU will have to deliver its formal long-term climate strategy and submit its revised mitigation commitments (NDC) to the UNFCCC. These discussions on targets will have to translate into a discussion on the desirable decarbonisation pathways and the policies to move along this pathway.</p>	

Large scale integrated assessment models allow us to compare the impact of different decarbonisation pathways on complex economic systems. But in public discourse these powerful models are difficult to use – as they are hard to communicate. Policy-makers worry that due to a large number of assumptions, methodological differences and uncertainties, results are arbitrary. In addition, there is a risk that modelling exercises focus too much on academic originality and too little on providing useful guidance on the most important policy questions.

The purpose of our project is to increase policy-relevance of major European modelling exercises by designing and organising an interface between stakeholders, policy-makers and modellers. This should ultimately lead to better assessments of the advantages and disadvantages of different EU Decarbonisation pathways.

External financing

Horizon 2020 “PARIS REINFORCE” project