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How Would a TTIP Affect Central and Eastern Europe?

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Elżbieta Czarny and Gabriel Felbermayr

Introduction

The Atlantic Ocean is a reality. Regardless of the relentless globalisation process driven by technological progress that lowers the costs of all sorts of flows – goods, services, finance, data – Americans and Europeans are not 'doomed' by nature to be related, like Germany and France may be. The size of the social, political and economic gaps between them depend solely on their political decisions. The *security community* NATO was created to make war in (Western) Europe impossible.

Against this backdrop, the 21st century has resulted in an unprecedented expansion of the transatlantic relationship. It resulted not only in the inclusion of many countries, but in a significant multi-dimensional convergence within both Europe and the transatlantic community. The Transatlantic Trade and Investment Partnership (TTIP) represents an attempt to bring transatlantic *economic* relations to the level of intensity seen in the area of security. Some of the same issues that occur in security cooperation crop up again in TTIP, including the distinction between the 'West' and the 'Rest', questions of relative influence between a powerful nation – the United States – and the very heterogeneous old continent still made up of nation states with independent identities and jealous of their sovereignty.

TTIP is both an opportunity and a challenge. For the negotiating parties, it is a chance to improve their positions in the world in the broader realm of international politics and economics, and, more narrowly, in the economic sphere. A TTIP could restart negotiations on non-discriminatory liberalisation, for example, in the framework of the World Trade Organisation (WTO). It could create new standards for regional trading agreements (RTAs) and, more generally, in international economic relations. For Europe, facing many problems (migration, Brexit, contradictions among the euro area members as well as between them and the rest of the EU, economic inefficiency, overregulation and bureaucracy), TTIP may be a chance to push the EU economy forward.

TTIP, however, should not be expected to benefit all EU countries, industries, or firms uniformly. Reductions in trade costs – whatever guise they take – may put additional pressure on the least efficient players.

Not only could TTIP increase disparities between and within EU member states, some members may even stand to lose out as a result. This is of special concern to the new member states (NMS). Most of them are post-communist countries starting out on the path towards democracy and market economy as late as in 1990. They are still lagging behind in terms of technologies, and their economies have relatively traditional economic structures based (at least partly) on agriculture and food processing. Poland is a prominent example of this type of country.

Conventional trade theory and more recent developments in the fields of industrial economics and economic geography lend support to the possibility of ambiguities: when a trade agreement leads to the lowering of trade costs with a big third country such as the United States, there is no guarantee that every member will win, and even less that the poorer members will gain more than their richer counterparts.

This special focus presents key insights gained at a conference on November 30 and December 1 2015 in Warsaw organised by the ifo Institute and the Warsaw School of Economics, and funded by Narodowe Centrum Nauki.[1] It brought together the chief negotiators Dan Mullaney (United States) and Ignacio Garcia Bercero (EU) with experts from the new EU member states and Germany. While the negotiators updated conference participants on the state-of-play, discussed difficulties, and gave outlooks, a scientific symposium explored various issues related to TTIP negotiations. We have selected ten contributions that shed light on the diversity and complexity of the problems related to transatlantic economic cooperation. The majority of them deal with Poland, but the insights are also generally applicable to the other NMS. And even if TTIP should never see the light, the lessons learnt during the negotiation process should be useful for a better understanding of the challenges of transatlantic cooperation and its heterogeneous impact on Europe.

Paper 1 sets the stage. It features a comparison of regional trade agreements (RTAs) already concluded by the EU and the United States. Papers 2 and 3 are dealing with the effects of TTIP on Poland's trade. Paper 2 offers an analysis of the potential impact of TTIP on Poland's position on the EU market and potential losses caused by gains in market share by American competitors. Paper 3 provides a comprehensive evaluation of TTIP's possible effects on the Polish economy using a computable general equilibrium model. Paper 4 broadens the perspective to a larger set of NMS, the

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1 Decision no. DEC-2013/09/B/HS4/01488.

four Visegrad countries. Paper 5 recognises that NMS' economies are tightly integrated in European value added chains and analyses the consequences that a TTIP might have on them. Paper 6 presents an Eastern European view on the much debated investment chapter, and particularly on the enforcement of investor rights by means of investor-state dispute settlement provisions. Paper 7 touches on another very critical issue in the debate, namely geographic indicators (GIs). EU member states are highly heterogeneous as far as the prevalence of GIs are concerned – the NMS have much less to gain than countries like Italy or France – and the European and American legal systems for protecting GIs differ quite substantially. Paper 8 turns to a topic of considerable political sensitivity: the energy sector. It focuses on the oil sector, and particularly on the dynamics of this sector in the United States and their possible influence on the future trade pattern with the EU. Chapter 9 provides an analysis of the potential impact of TTIP on the international security system and how such an economic agreement may impact the global economic order.

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EU and US RTAs — Is There Common Ground?

The European Union and the United States are among the most important economies of the world and crucial trading partners for each other and for others. Moreover, they are forces shaping global trade law, mainly within the framework of the World Trade Organisation (WTO). On the other hand, however, they have also created hubs of regional trade agreements (RTAs), mainly concluded with smaller and/or less developed partners.

Therefore, the Transatlantic Trade and Investment Partnership (TTIP), which has been under negotiation since July 2013, is perceived as one of the most important RTAs ever.[1] Negotiations were supposed to be easy and concluded by the end of 2014. The reality proved otherwise and differences turned out to be deeper than anticipated. In order to uncover the differences between the perspectives of the EU and the United States on these RTAs, this paper analyses their content and legal enforceability,[2] which makes it possible to compare the scope and legal meaning of these agreements.

According to the WTO database, the EU is party to over 40 RTAs, while the United States has issued notice of only 14. This results from a completely different attitude towards regional, extra-WTO integration, reflecting the different aims of the EU and the US RTAs. Moreover, the degree of integration in the RTAs concluded by both parties varies by region and when finalised. While the EU, being an RTA itself, has been a proponent of regional integration since the 1960s, the USA joined the process in the late 1980s, but 12 of its 14 agreements now in force were only signed between 2000 and 2007. The EU has concluded RTAs throughout its history. The oldest ones currently in force were signed in the 1970s with its closest partners, namely Norway, Iceland, Switzerland and Lichtenstein. The rest of these RTAs have been concluded since 1995 (although previous ones have been replaced by new, more advanced RTAs or have expired due to EU accession). The majority of them are association agreements concluded on a special legal basis with the aim of integrating a third country into the EU legal system. The aim of such agreements is, therefore, much more political then economic and implies a far broader scope to such agreements. In other words, they are not restricted to economic issues, but cover such areas as political dialogue, cooperation in the promotion of human rights and in fighting crime.

Nevertheless, the EU has recently negotiated agreements with developed states along mainly economic objectives. It concluded what is probably the deepest RTA in its history to date with South Korea, which entered into force in 2011. It also has negotiated agreements with Singapore and Canada. These three agreements (which can be called 'new-type RTAs'), together with the Trans-Pacific Partnership (TPP), signed with the United States, are probably the best indicators of what we can expect from TTIP.

There are no doubts that the most important and significant part of TTIP is going to be so-called WTO+ areas (issues regulated by WTO law, but with a deeper level of liberalization). Enforceable provisions related to trade in goods, both industrial and agricultural, can be found in all of the RTAs concluded by both the EU and the United States. Even although trade in agricultural goods is not always fully liberalised, all of the RTAs contain some concessions related to the sector. Furthermore, almost all of the EU and US agreements negotiated after the creation of the WTO contain provisions related to trade in services, mainly Modes 1–3 of supply: cross-border trade, consumption abroad and commercial presence. Notification of such deals (13 for the United States and 14 for the EU) were sent to the WTO as economic integration agreements (EIA). Among the EU RTAs are nine (concluded with North African states) that cover trade in services, even although they were reported only as FTAs in the notifications. Likewise, interim agreements with some Africa, Caribbean and Pacific groups of states were also reported as FTAs, but with the ultimate aim of concluding a full economic partnership agreement (EPA) also covering trade in services. Contrary to the US approach, almost all of the EU agreements also cover Mode 4 of the supply of services: the presence of natural persons. In the EU agreements, it is quite common to supplement provisions on the right of establishment (investments) by enabling investors to hire key personnel and some highly qualified specialists. In some cases, free movement of trainees is also allowed. On the other hand, in the US RTAs (including TPP), any preferences as to the movement of workers related to investments are explicitly excluded. Therefore, it is doubtful that such provisions will be included in TTIP and any additional liberalization for entering US labour market is improbable.

All of the EIAs that include the EU and the United Sates also cover another WTO+ area: intellectual property. In the case of the United States, these RTAs are always enforceable. However, for the EU 20 out of 27[3] of its RTAs contain such provisions, but only 13 are enforceable. A very similar situation exists in public procurement. While 20 of the EU RTAs cover that area, only 12 are enforceable. In the US RTAs, provisions on public procurement are always present and are not enforceable in just one case (Jordan).

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2 The methodology of the research is based on Horn, H., P. Mavroidis and A. Sapir, "Beyond the WTO? An Anatomy of EU and US Preferential Trade Agreements," *The World Economy* 33, 1565-1588.

3 RTAs concluded with EFTA states (Norway, Switzerland and Lichtenstein, Iceland) are excluded from further analysis as they are too closely linked to the EU to be compared to other RTAs, or those with mini-European states (Andorra and San Marino) and with non-independent countries such as the Faroe Islands.

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All of the areas covered by WTO law are also covered by the new-type of EU RTAs, as well as by TPP. All of these agreements cover liberalization of trade in goods and services, as well as intellectual property and public procurement (except for the EU-South Korea RTA where the latter is non-enforceable); even although all of the parties of these new-type RTAs are also parties to the WTO's Government Procurement Agreement, which has concrete provisions. Therefore, the covering of public procurement in TPP might be of greater importance, as not all of the TPP parties are parties to GPA. Nevertheless, we can expect all of these areas to be present in TTIP as well.

More interesting is the fact that WTO+ seems to be extra-WTO (WTO-X) areas related to the economy. They should be the best indicators of what to expect in TTIP besides merely a deepening of WTO integration. Coverage and enforceability of provisions in WTO-X categories is presented in the table below.

Obviously, the most 'popular' is environmental protection, which is also widely enforceable in the US RTAs. This area very often covers issues such as general sustainable development and/or climate change. On the other hand, provisions on environmental protection in the EU RTAs are rarely enforceable (they are vaguer then the US RTAs and there is a broad variety of the respective EU provisions; the US RTAs are very similar and contain obligations related to the potential for environmental regulations that conflict with trade-related measures, the relationship between the RTA and multilateral trade agreements, or consultations between parties).

Conversely, in two areas, almost all of the provisions present in the various EU RTAs are enforceable. These are competition policy and movement of capital. On free movement of capital, it is almost always limited to direct investment, while portfolio investments are excluded. In this case, the provisions in the US RTAs are similar and always enforceable as well. This coincidence might be explained by the fact that they are strongly related to investments and the cross-border supply of services. In fact, provisions that enable the transfer of capital related to foreign direct investment are an inevitable part of the liberalization of trade in services. On the other hand, competition provisions in the US RTAs are never enforceable. In the EU RTAs, they usually mirror exactly the relevant provisions of the TFEU (current articles 101 and 102, as well as 108 in relation to state aid). They simply widen the scope of EU competition policy to its partners.

If we compare areas covered by the EU and the US agreements here, the differences are significant. The only areas that seem to be common ground are environmental protection and working conditions, despite the fact that they are enforceable far more frequently in the US RTAs. Nevertheless, when we compare only new-type EU RTAs, their scope is much more similar to the US RTA model than to the usual EU RTA (that is, those used for concluding political agreements with less-developed states). Moreover, if we take into account the example of competition policy, we might see that its presence in TTIP looks possible – it is covered in all three of the new-type RTAs and by TPP. One of the most controversial parts of TTIP is going to be investments, but it is obvious from the negotiation mandate for TTIP that they are going to be included. Investment chapters are also always present in the US agreements, as well as in TPP.

To conclude, one may say that taking into account only the scope and enforceability of the agreements, the differences between the EU RTAs and the US RTAs seem to be significant. But the majority of these discrepancies concern WTO-X areas included in association agreements with the EU. That difference is not significant to TTIP, as the majority of these areas will not be included in the TTIP negotiating mandate. TTIP will probably be similar to RTAs such as the EU's with South Korea, Canada and Singapore (new-type). If we only compare the EU's new-type agreements with the US RTAs and TPP, the differences become much smaller in scope.

Table 1

Areas covered under the EU and US RTAS

Area covered	EU		US	
	Number of provisions	Enforceable provisions	Number of provisions	Enforceable provisions
Agriculture	18 (0*)	1 (0)	0 (0)	0 (0)
Competition policy	21 (3)	17 (3)	7 (1)	0 (1)
Consumer protection	13 (0)	1 (0)	2 (0)	0 (0)
Data protection	13 (0)	8 (0)	0 (0)	0 (0)
Development aid	13 (0)	4 (0)	0 (0)	0 (0)
Economic cooperation	19 (0)	0 (0)	0 (0)	0 (0)
Environmental laws	24 (3)	5 (0)	13 (1)	13 (1)
Financial cooperation	16 (0)	1 (0)	0 (0)	0 (0)
Industrial cooperation	19 (0)	0 (0)	0 (0)	0 (0)
Investment protection and promotion	15 (2)	0 (2)	11 (1)	11 (1)
Movement of capital	22 (2)	19 (2)	12 (1)	12 (1)
Working conditions	10 (3)	4 (3)	13 (1)	13 (1)

* Brackets indicate areas covered by the three 'new-type RTAs' for the EU, and TPP for the United States.

Source: Author's compilation.

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Will Polish Goods Be Crowded Out by American Ones?

In this study,[1] we analyse the potential substitution of Polish goods exported to the EU with American ones after tariffs are eliminated within the framework of TTIP (the so-called trade diversion effect). The survey covers the year 2014. Statistics (HS2 classification) come from TRAINS (tariffs) and COMTRADE (exports) databases.

POLISH AND AMERICAN EXPORTS OF THE EU'S MOST TARIFF-PROTECTED PRODUCT GROUPS

In this section, we examine the Polish and American shares of exports to the EU of 10 of the Union's most tariff-protected HS2 commodity groups (Table 1). It may show that TTIP's entry into force will negatively affect the competitive position of Polish products that were previously tariff-protected.

In the EU, the highest tariffs are imposed on agri-food products (meat, sugar, tobacco, dairy products). All 10 product groups with the highest level of EU tariff protection belong to this category, with the majority being processed food products. The highest tariffs are imposed on meat, which also comprise the biggest share of Polish EU exports in the analysed sample (group 2; 2.05 percent in 2014). Shares exceeding 1 percent were recorded in groups 4 and 24 (dairy products, tobacco). Those three groups are among the EU's

most tariff-protected, each carrying more than a 35 percent tariff.

The US shares of exports in those three product groups (as well as in all the other products listed in Table 1) are considerably lower (respectively: group 2 at 1.29 percent; 24 at 0.11 percent; and 4 at 0.45 percent). However, although meat is highly protected, it also has a relatively high share in American EU exports. When TTIP is concluded, Poland can expect tough competition in the EU meat market.

Next, we look at how the EU's most tariff-protected product groups are represented in American exports to non-EU countries. This helps eliminate the relatively weak position of some groups in American exports elsewhere as a reason for their lack of success in the EU. Moreover, a comparison of the respective US shares with Poland's reveals the position of Polish goods from the analysed groups in third markets where no preferences are granted, as they are in the European Single Market (Table 2).

Shares of Polish exports to non-EU markets in seven out of 10 of the EU's most tariff-protected product groups are higher than for the USA. The relatively better position of Poland than that of the USA in the markets for tobacco and dairy products (groups 24 and 4) is of special importance, as these goods comprise relatively large shares of Polish exports. Moreover, dairy products, which amount to 1.73 percent of non-EU trade, are the leading group of Polish exports among the analysed commodities, and their share is over three times that of the comparable US trade. The share of Polish meat exports to non-EU countries is lower than that of United States (1.26 percent compared to 1.53 percent), but with the second-highest share among the analysed groups, Poland's position in this market is relatively good. However, this data shows a

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Table 1

Product groups most protected on the EU market (average tariff in %) in the year 2014 and their share of exports to the EU from Poland and the US, respectively, in %, in 2014

HS	Product groups	Average* tariff** on US products	Polish share of exports to the EU-27***	US Share of exports to the EU-28
2	Meat and edible meat offal	37.12	2.05	1.29
17	Sugars and sugar confectioneries	36.88	0.32	0.16
24	Tobacco and manufactured tobacco substitutes	36.23	1.20	0.11
4	Dairy produce; birds' eggs; natural honey; edible products of animal origin not included elsewhere	35.07	1.29	0.45
11	Milling industry products; malt; starches; inulin; wheat gluten	31.17	0.10	0.07
16	Preparations of meat, fish or crustaceans etc.	23.08	0.66	0.17
20	Preparations of vegetables, fruit, nuts or other parts of plants	22.77	0.63	0.37
10	Cereals	14.91	0.62	1.67
19	Preparations of cereals, flour, starch or milk; pastry products	14.58	0.83	0.31
23	Residues and waste from the food industries; prepared animal fodder	14.34	0.42	0.88

* Simply average (to highlight the role of the highest tariffs in each product group)
** Non-tariff measures are not included
*** EU-28 minus Poland

Source: http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=UNCTAD-~-Trade-Analysis-Information-System-%28TRAINS%29 and http://wits.worldbank.org (both accessed on 28 February 2015).

Table 2

Shares of the EU's most tariff-protected product groups in Polish and US exports to non-EU countries, in %, in 2014

HS	Share of Polish exports	Share of US exports
2	1.26	1.53
17	0.41	0.19
24	0.45	0.11
4	1.73	0.54
11	0.11	0.08
16	0.23	0.20
20	0.63	0.40
10	1.08	1.97
19	0.98	0.37
23	0.29	0.97

Source: http://wits.worldbank.org (accessed on 28 February 2016).

possible US challenge to Poland in the EU market for meat under TTIP as well.

TARIFF PROTECTION OF TOP POLISH EXPORT PRODUCTS AND THEIR POSITIONS AGAINST US EXPORTS

The last part of the study refers to the 10 product groups with the highest shares of Polish exports to the EU. We analyse the EU tariff protection of these products and their shares of Polish exports (Table 3), and subsequently compare them with the respective shares of US exports.

The most important items in Polish exports to the EU are processed goods (groups 84, 85, 87, 94 and 39, i.e. nuclear reactors, electrical machinery, vehicles, furniture and plastics). They are followed by less-proces-

sed commodities (e.g. mineral fuels and oils, iron, steel, and rubber as well as articles thereof).

EU tariffs imposed on the majority of the top 10 Polish export product groups coming into the EU market are low. The highest are tariffs on plastics (6.2 percent) and vehicles (5.86 percent). As the share of US exports to the EU of plastics is only slightly lower than the respective shares of Polish exports (0.71 p.p.) and a higher share of US exports than Polish exports go to non-EU markets (by 0.27 p.p.), this product is a potential rival to Polish plastics on the EU market. The situation is not much different with vehicles. Although their share in US exports to the EU is considerably lower than the respective share of Polish vehicles (by 2.82 p.p.), the difference between these shares in exports to non-EU countries is much smaller (2.12 p.p.) and the American share is bigger than the Polish one. It may make American vehicles an effective competitor to their Polish counterparts. This confrontation will not deprive Poland of opportunity, however, as these product groups account for a relatively large share of Polish exports to third countries too (respectively: 4.38 percent and 7.85 percent).

To conclude, we may say that the reasons for the smaller shares of the EU's 10 most highly protected product groups in US exports to the EU could be the Union's efficient protection of its products, the long distance between the trading partners, which prevents the transport of (often) perishable food products, and the weak position of some groups in overall US exports. It should be remembered that agri-food products will keep some degree of EU protection even after TTIP takes effect. Due to the fact that many of these pro-

Table 3

Product groups with the highest shares of Polish exports to the EU, Polish shares of exports of these products to the non-EU countries, and shares of these goods in US exports to the EU and to the non-EU countries (all in %), in 2014

HS	Product groups	Average* tariff** imposed on US products	Share of Polish exports to the EU-27 in 2014	Share of Polish exports to non-EU countries in 2014	Share of US exports to the EU-28 in 2014	Share of US exports to non-EU countries in 2014
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts	1.71	14.87	19.17	12.88	13.13
85	Electrical machinery and equipment; sound recorders and reproducers, television image and sound recorders and reproducers; parts and accessories	2.57	13.51	12.38	8.01	8.42
87	Vehicles other than railway or tramway rolling stock; parts and accessories	5.86	12.07	7.85	9.25	9.97
94	Furniture; bedding, mattresses, etc.	2.10	6.40	4.54	0.71	0.79
39	Plastics and articles thereof	6.20	5.14	4.38	4.43	4.65
27	Mineral fuels and oils and distilled products, etc.	0.61	4.76	4.13	11.35	11.66
73	Articles of iron or steel	1.67	3.79	3.65	1.49	1.64
89	Ships, boats and floating structures	1.12	3.02	10.37	0.23	0.24
40	Rubber and articles thereof	2.44	2.80	2.29	0.99	1.03
72	Iron and steel	0.26	2.46	1.27	1.32	1.50

* Simply an average (to highlight the role of the highest tariffs in each product group).
** Non-tariff measures are not included.

Source:http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=UNCTAD-~-Trade-Analysis-Information-System-%28TRAINS%29 and http://wits.worldbank.org (both accessed on 28 February 2016).

ducts are perishable or have relatively low value per weight unit (especially unprocessed ones), they are impossible or too expensive to transport, thus meaning that the EU market grants a long-lasting advantage to Polish products over American ones.

Plastics and vehicles are among those goods with the highest shares of Polish exports to the EU that are most at risk under TTIP. In other groups most important for Polish export, the tariffs are relatively low (not higher than 2.51 percent) and Poland's exports to non-EU countries perform as well as, or better than, the US exports (except for mineral fuels and oil, but these are not good candidates for the leadership of Polish exports).

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Poland and TTIP Trade Effects: Modest Gains

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The TTIP is a broad economic agreement. As far as international trade is concerned, apart from tariff elimination, the focus of the agreement is on the reduction of non-tariff barriers (NTBs), both in merchandise trade and in services. This includes regulatory cooperation in the form of a review of existing rules and increased mutual regulation and standards recognition, while cooperating on the joint elaboration of newly introduced technical and safety regulations. Separate chapters of the negotiated agreements will be devoted to technical barriers to trade (TBT) and sanitary and phytosanitary measures (SPS). Some sectors require sector-specific chapters and these include, *inter alia,* chemicals, pharmaceuticals and motor vehicles where national regulations are usually most common.

We aim to provide a comprehensive evaluation of the possible trade-related effects of TTIP on the economy of Poland. We use the GTAP[1] computable general equilibrium model, a widely used CGE modelling framework. In order to capture the country specificity in our simulation scenarios, we use estimates of NTBs that allow us to differentiate the impact of NTBs on the trade of Poland, the other new Member States (NMS) aggregately, Germany, Poland's largest trading partner, and the rest of the EU15. In this way, we can extensively analyse not only the bilateral impact of TTIP on Poland and the United States, but also on the bulk of Poland's bilateral trade relations.

Tariffs overall are low. In most sectors, the import-weighted average effectively applied tariff is lower than 5 percent, except for few selected sectors including agriculture, food and textiles/apparel. What matters are the non-tariff barriers. We estimate these barriers based on importer fixed effects in the gravity equation for both merchandise and services data. The details of the estimations are provided in Hagemejer and Sledziewska (2015). The overall NTB tariff equivalent in merchandise trade amounts to 26 percent, while in the EU15 it averages 21 percent. In services, the tariff equivalents tend to be higher (in construction and trade services they can go as high as 50 percent, while

in business services they are closer to 10 percent).

We consider three simulation scenarios: Partial, Actionable and Complete. They correspond to the removal of, respectively, 25, 50 and 100 percent of non-tariff barriers on top of the complete removal of tariffs. We treat the complete removal of NTBs as an upper bound for the possible long-run effects of TTIP. We treat the 50 percent actionability as the central scenario (Actionable) in our simulation (this is roughly compatible with the Ecorys (2009) survey assessment of NTBs actionability). We do not impose any shocks on the Coal-Petrol sector of the manufacturing industry, as we believe that analysis within this sector goes beyond the scope of our modelling. We also provide a long-run scenario in which we allow for investment-triggered capital accumulation as described by Baldwin (1992) and applied by Francois and McDonald (1996), where capital stock increases at a rate equal to investment, mimicking the steady-state in a dynamic growth model. All scenarios feature a complete elimination of tariffs in EU-US bilateral trade, as well as a reduction of NTBs modelled as a reduction of iceberg trade-related transaction costs.

The overall impact on macroeconomic aggregates is moderate, but varies slightly across the economies analysed. In the actionable scenario, the gains range from a 0.2-percent increase in the GDP of Poland and the NMS, through 0.4 percent and 0.3 percent for Germany and the rest of the EU15, respectively, to 0.5 percent for the United States. Policy shock has a minor effect on third countries. The distribution of the gains is somewhat in line with overall involvement in bilateral trade (the share of trade with the United States in total Polish trade amounts to half or less of the corresponding share of trade with the United States in total German trade). The United State gains slightly more than the EU15, while the NMS and Poland gain the least. The extra capital accumulation in the long-run scenario brings additional welfare gains to all economies involved and they amount to roughly 0.1 percent of extra GDP for Poland and the NMS; and proportionately more for Germany, the EU15 and the United States.

While TTIP certainly boosts Poland's trade with the United States, the impact on overall trade is rather low and TTIP is not necessarily trade-enhancing. Since Poland's major trading partners are now more involved in trade with the United States, due to limited resources, demand for Polish exports in the EU15 falls. Therefore, a large increase in exports to the United States is almost completely outweighed by a reduction of exports in Polish intra-EU trade. Poland's terms of

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1 For a complete description of the model, consult Hertel and Tsigas (1997).

Table 1

Changes (%) in GDP

Scenario	Poland	NMS	Germany	rEU15	US	rEurope	Turkey	rAmerica	Asia	RoW
Partial	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Actionable	0.2	0.2	0.4	0.3	0.5	0.0	0.0	− 0.1	0.0	0.0
Complete	0.4	0.4	0.8	0.7	1.1	− 0.1	0.0	− 0.1	− 0.1	− 0.1
Actionable – LR	0.3	0.3	0.9	0.7	0.9	− 0.1	− 0.3	− 0.4	− 0.3	− 7.8

Source: Own simulation. LR - Long Run.

Table 2

Overall Import and Export Changes in Poland

Exports	NMS	Germany	rEU15	US	rEurope	Turkey	rAmerica	Asia	RoW	Overall
% change	– 0.1	– 2.0	– 1.7	66.2	0.0	– 0.6	– 0.6	– 2.1	– 0.9	0.4
pp contribution	– 0.02	– 0.5	– 0.6	1.7	0.0	0.0	0.0	– 0.1	0.0	0.4
Imports	NMS	Germany	rEU15	US	rEurope	Turkey	rAmerica	Asia	RoW	Overall
% change	– 1.4	– 4.4	– 3.3	61.3	0.5	2.2	3.1	3.1	0.3	– 0.2
pp contribution	– 0.1	– 1.2	– 1.1	1.7	0.0	0.0	0.0	0.4	0.0	– 0.2

Source: Own simulation.

trade slightly deteriorate, making imports from the rest of the EU more expensive. That leads to an overall decrease in imports, which is a sort of trade diversion effect.

The overall effects on output are diversified across production sectors. While there are virtually no effects on output on services, some production sectors clearly reduce output. These include (in the Actionable scenario) motor vehicles (– 1.3 percent), other transport equipment (– 4.2 percent) and metals – 2.9 percent). Some expansion is expected in 'traditional' Polish production sectors (labour intensive), which include textiles (1.7 percent), apparel (1.4 percent) and wood (1.3 percent). This also resembles the structure of an initially revealed comparative advantage for Poland concentrated within basic, labour-intensive sectors. Given the slightly unfavourable effect on terms of trade, the overall welfare effects (measured as the equivalent variation in percent of GDP) are almost zero. The overall welfare gains from TTIP for Poland are simulated at 0.1 percent similar to those of the NMS, versus 0.5 percent in Germany and 0.4 percent in the rest of the EU15. The highest overall gains are expected in the United States at 0.7 percent of GDP. The gains in the most ambitious scenario are roughly double those in the Actionable scenario.

While the overall effects are small for Poland to the extent of being almost negligible, one has to bear in mind that some sectoral reallocations are likely to occur; and this may have non-zero effects depending on wage rigidity and labour market flexibility. Moreover, simulations such as the one presented here are subject to certain risks both on the part of modelling and in the simulation scenarios. One that comes to mind is the level of initial NTBs and the scope of their liberalization; however, as these barriers include all possible determinants of bilateral trade that are not captured by gravity variables, they might be overestimated; and, therefore, reduce the overall impact. This is probably not the case for agriculture where trade is generally protected in many countries and the underlying econometric model may not be able to assess the benchmark 'free trade' levels. Deeper liberalization in

agriculture may lead, however, to an amplification of the differences between Poland and other economies due to the relative structure of the Polish factor endowment.

REFERENCES

Baldwin, R.E. (1992), "Measurable Dynamic Gains from Trade", *Journal of Political Economy* 100, 162–174.

Ecorys (2009). *Non-Tariff Measures in EU-US Trade and Investment – An Economic Assesment,* Rotterdam: ECORYS Nederland BV.

Fontagné, L., A. Guillin and C. Mitaritonna (2011), *Estimations of Tariff Equivalents for the Services Sectors,* CEPII Working Paper.

Francois, J. and B. McDonald (1996), *Liberalization and Capital Accumulation in the GTAP Model,* GTAP Technical Paper, Center for Global Trade Analysis, Department of Agricultural Economics, Purdue University.

Hagemejer, J. and K. Sledziewska (2015), *Trade Barriers in Services and Merchandise Trade in the context of TTIP: Poland, EU and the United State,* University of Warsaw, mimeo.

Hertel, T.W. and M.E. Tsigas (1997), "Structure of GTAP", in: Hertel, T.W. (ed.), *Global Trade Analysis: Modelling and Applications*, Cambridge: Cambridge University Press.

Park, S.C. (2002), *Measuring Tariff Equivalents in Cross-Border Trade in Services*, KIEP Working Paper 2–15.

Table 3

Welfare Changes (in % of GDP, equivalent variation)

Scenario	Poland	NMS	Germany	EU15	US	rEurope	Turkey	rAmerica	Asia	RoW
Partial	0.0	0.1	0.2	0.2	0.4	– 0.1	– 0.1	– 0.2	– 0.1	– 0.1
Actionable	0.1	0.1	0.5	0.4	0.7	– 0.3	– 0.1	– 0.4	– 0.2	– 0.2
Complete	0.2	0.4	1.2	0.9	1.7	– 0.6	– 0.2	– 0.8	– 0.5	– 0.5
Actionable – LR	0.1	0.2	0.8	0.6	0.9	– 0.2	– 0.3	– 0.5	– 0.4	– 6.0

Source: Own simulation. LR - Long Run.

Gabriel Felbermayr

TTIP in the Visegrad Countries

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The proposed Transatlantic Trade and Investment Partnership (TTIP) agreement is hotly debated. Proponents hope that it boosts real income in the economies involved in it. However, as we well know from Jacob Viner (1950) and much subsequent analysis, it is not clear *ex ante* whether all partners of a preferential trade agreement actually do benefit. The reason is that the trade agreement affects relative prices, and these could easily move against some of the insiders. Moreover, in the context of Europe, TTIP is likely to create additional transatlantic trade, but it may divert intra-EU trade. Thus, it is an open question as to whether all EU members benefit from such an agreement. Here I look at a potentially vulnerable group of countries who have only recently joined the EU and who still have not fully caught up to, say German or French standards of productive efficiency and quality such as the Visegrad countries (Poland, Czech Republic, Slovakia and Hungary).

THE STARTING POINT

All four countries (henceforth denoted V4) are very open economies. According to estimates by Costinot and Rodriguez-Clare (2015), V4 countries depend dramatically more than the overall average on international trade linkages. Up to 96 percent of national income would be lost if Slovakia were to be artificially granted a status of complete autarky; for Hungary the share would be 91 percent, for the Czech Republic 87 percent and for Poland 57 percent. Naturally, the smaller the domestic market, the larger the dependence on international trade. Thus one might conjecture that the V4 countries should also benefit more than the average from TTIP. This is what many simple trade models such as Krugman (1980) would suggest.

However, domestic market size alone is certainly not a sufficient predictor for the potential welfare gains from TTIP, particularly if a country already faces very low trade costs with its partners. Moreover, the structure of comparative advantage should matter too. Standard trade theory would suggest that countries with a very different economic structure than that of their trade partners should benefit more than countries with similar production structures. From this point of view, one might also conjecture that the V4 countries should like the idea of a transatlantic agreement.

Indeed, the results from the Eurobarometer Survey of May 2016 show that 56 percent of Poles and Czechs, 55 percent of Hungarians, and 47 percent of Slovaks support the agreement. In the Baltic States, Romania and Bulgaria support is substantially stronger. In the EU core countries Germany, Austria, and Luxembourg, by cont-

rast, the majority of citizens is opposed to the agreement. EU wide, there is a 51 percent razor-thin lead of TTIP proponents.

SOME REMARKS ON METHODOLOGY

Reality is more complex than the cited simple models suggest. Firstly, V4 countries are strongly integrated into European production networks. This blurs the notion of comparative advantage. Secondly, the larger the potential gains from trade, the larger the costly and disruptive adjustment costs will be. The reason is that the efficiency gains from TTIP depend on the reallocation of resources such as labour from less productive sectors and firms to more productive ones. The more the productive structure of an economy is altered by the agreement, the higher the costs and the benefits. There is, however, an important asymmetry between the two: adjustment costs are short-lived, but the gains of higher efficiency endure.

Measuring the potential benefits of TTIP is fraught with problems. Firstly, the agreement is still not concluded, so one can only guess how ambitious it will be (if it comes). Secondly, even if we had a text already (which we have for the sister agreement with Canada, CETA), it is not straight-forward to quantify the trade-cost reducing effects of the innovative provisions in the agreement, namely those governing regulatory cooperation, rules, or investment protection. Thirdly, even if one has good estimates on trade cost effects, it matters what type of trade model one uses.

The approach of the Ifo Institute has been to analyse existing deep trade agreements, mostly concluded by the EU and the United States with countries like Chile, Korea, Mexico and so on, and estimate the trade cost effects that these agreements have delivered. In a second stop, these estimates are taken as a feasible scenario for TTIP. The idea is that what has been possible in other geographies should work across the Atlantic as well. Of course, the necessary condition is that there is a political will to unlock those gains. Thus, the Ifo top-down approach delivers insights into potential, or possibilities, but it is not to be understood as a forecast.

Other estimates, such as the one presented by Jan Hagemejer in this publication, have gone bottom-up. This means that analysts use industry surveys to figure out the agreement specific trade cost effects of a successful TTIP and use these in simulations. This approach is useful, because it shows very clearly which specific obstacles matter how much, but it is also problematic, because it is likely to be incomplete: the implicit, indirect, ancillary effects that have been empirically observed in other agreements are ignored. Consequently, estimates based on bottom-up effects are smaller.

RESULTS

Table 1 shows the predicted effects on real per capita income from three studies that provide country-level details. The numbers refer to the long-run level effect: about 10 years after implementing the agreement, the

Table 1

Potential long-run effects of TTIP on the level of real per capita income, %

Author	ifo[a]	ifo[b]	WTI[c]
Model structure	single-sector	multiple-sector	multiple-sector
Trade cost estimates	top-down	top-down	bottom-up
Poland	3.5	1.7	0.4
Czech Republic	3.0	1.3	0.1
Slovak Republic	3.4	2.2	0.5
Hungary	3.5	1.3	0.1
EU average	3.9	2.1	0.5

[a] Felbermayr *et al.* (2015). – [b] Aichele *et al.* (2014). – [b] World Trade Institute (2016).

Source: Author's compilation.

average person in the country would have a flow of income that is x percent higher than without the agreement. Other frequently cited simulation exercises such as that commissioned by the EU Commission (CEPR 2013) do not provide any detail on V4 countries.

The first column refers to a study prepared for the journal Economic Policy. It applies a top-down approach to trade costs as explained above, and employs a single-sector setup that builds on Krugman (1980). The V4 countries turn out to benefit quite substantially. Over 10 years, annual per capita income would ramp up to a level between 3.0 percent and 3.5 percent higher than without the agreement and stay higher after the implementation period. It turns out that the EU average is slightly higher (at 3.9 percent). The reason for this is that the V4 countries are more strongly affected trade diversion effects triggered by TTIP. For example, with TTIP German car manufacturers might turn to US suppliers instead of Slovak ones, as the former enjoy better market access in Europe.[1]

The second column also uses the top-down approach, but moves to a multiple-sector setup and to a trade model powered by comparative advantage, rather than product differentiation. It turns out that the simulation yields somewhat lower, but still sizeable benefits, which turn out to be a bit lower for the V4 countries than for the EU average. The gains are lower because the econometric estimates underlying the scenario imply a smaller amount of trade creation, and because imposing a rigid structure of comparative advantage rules out certain benefits due to additional adjustment of the productive system.

The third column turns to a simulation exercise that provides country-level detail to the CEPR (2013) study. Now, the quantification of trade costs follows a bottom-up logic, and the model combines a comparative advantage and a product differentiation logic of trade. Its set-up resembles that of Hagemejer in this publication. The results point towards much more modest gains from TTIP, averaging at about 0.5 percent for the EU as a whole. Again, the V4 countries are found to benefit somewhat less.

Taking the second column as the one covering the middle ground, the results for Poland suggest an annual income gain worth around 200 euros. Similar magnitudes prevail for the other V4 countries, which tend to benefit somewhat less (except Slovak Republic), but have higher initial levels of per capita income.

These gains in GDP per capita are supported by substantial increases in overall trade openness. Aichele *et al.* (2014) report increases in the share of value added in total domestic absorption. The change in this metric is intimately related to the welfare gains. The change is largest for Slovakia, where openness increases from 28.1 percent to 29.3 percent, it is also sizeable for Hungary (where it goes up from 31.1 percent to 31.9 percent), but somewhat smaller for Poland (19.5 percent to 19.9 percent) and the Czech Republic (26.2 percent to 26.5 percent). This increase in aggregate openness is driven by more transatlantic trade, but it comes at the expense of reduced European trade. Aichele et al. (2016) show that the share of exports destined for EU markets of the V4 countries may fall by about 1.5 percentage points.

CONCLUSIONS

The following robust conclusions emerge: firstly, all V4 countries stand to benefit from TTIP – the exact magnitude of these gains depends heavily on assumptions about the depth of the prospective agreement. Secondly, countries in the core of the EU may profit more from TTIP than the V4 countries; this may lead to some very minor additional divergence in GDP per capita. Thirdly, the expansion of transatlantic trade is likely to come at the expense of a reduced relative importance of intra-EU trade.

REFERENCES

Aichele, R., G. Felbermayr and I. Heiland (2014), *Going Deep: The Trade and Welfare Effects of TTIP*, CESifo Working Paper 5150.

Aichele, R., G. Felbermayr and I. Heiland (2014), "TTIP and Intra-EU Trade: Boon or Bane?", ifo Working Paper 220.

CEPR (2013), *Reducing Transatlantic Barriers to Trade and Investment: An Economic Assessment,* Brussels/London: European Commission, prepared under implementing Framework Contract TRADE10/A2/A16.

Costinot, A. and A. Rodriguez-Clare (2014), "Trade Theory with Numbers: Quantifying the Consequences of Globalization", in: Gopinath, G., E. Helpman and K. Rogoff (eds.), *The Handbook of International Economics*, Amsterdam: Elsevier, 197-261.

Egger, P., J. Francois, M. Machin and D. Nelson (2015), "Non-tariff Trade Barriers, Integration, and the Transatlantic Economy", *Economic Policy* 30, 539–584.

Felbermayr, G., B. Heid, M. Larch and E. Yalcin (2015), "Macroeconomic Potentials of Transatlantic Free Trade: A High Resolution Perspective for Europe and the World", *Economic Policy* 30, 491–537.

Felbermayr, G., B. Heid and S. Lehwald (2013), Transatlantic Trade and Investment Partnership (TTIP): *Who Benefits from a Free Trade Deal?,* Gütersloh: Bertelsmann Stiftung.

Krugman, P. (1980), "Scale Economies, Product Differentiation, and the Pattern of Trade", *American Economic Review* 70, 950–959.

Viner, J. (1950), *The Customs Union Issue*, New York: Carnegie Endowment for International Peace.

World Trade Institute (2016), *TTIP and the EU Member States,* World Trade Institute, University of Bern.

[1] This study is an updated version of Felbermayr *et al.* (2013) (more countries, more recent data).

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Trade in Value Added of Countries Involved in TTIP: EU-US Comparison

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INTRODUCTION

The proliferation of global production networks has fundamentally altered the geography and complexity of global production (Baldwin 2014; OECD 2013; Timmer *et al.* 2014; Johnson 2014), affecting the labour markets of both developed and developing countries (Stone and Bottini 2012). It is estimated that most trade today is in intermediate inputs – over 50 percent of goods trade and almost 70 percent of services trade.[1] However, what we observe goes beyond trade in intermediate goods – countries are specializing in particular stages of the production process, adding value along global value chain. Los *et al.* (2015) document that in almost all product chains, the share of value added outside the country-of-completion has increased since 1995. It is also argued that there are signs of a transition from regional production systems to so-called 'Factory World' (Baldwin and Lopez-Gonzalez 2014).

The aim of this paper is to present key facts concerning trade in the value added of those countries participating in the Transatlantic Trade and Investment Partnership (TTIP). In particular, we describe how involvement in global production networks (GPN) varies across EU countries with respect to the United States. After describing the key concepts, we locate them within recent economic literature and present the results of an empirical exercise, comparing the domestic and foreign content of the analysed countries' exports.

GLOBAL PRODUCTION NETWORKS (GPN), GLOBAL VALUE CHAINS (GVC) AND TRADE IN VALUE ADDED (TIVA) – KEY CONCEPTS

There is no unique understanding of these terms in the economic literature, but GPN can be understood as networks that combine concentrated dispersion of the value chain across the boundaries of the firm and national borders, with a parallel process of integrating hierarchical layers of network participants. The concept of GPN is strongly linked to that of global value chains (GVC) and trade in value added (TiVA). GVC involve "all the activities that firms engage in, at home or abroad, to bring a product to the market, from conception to final use" (OECD 2013, 8) and nowadays

reflect such characteristics of the global economy as: the growing interconnectedness of economies, the specialization of firms and countries in tasks and business functions; networks of global buyers and suppliers; the fragmentation of production and resulting labour market effects. In recent literature the term GVC tends to be employed more frequently. TiVA describes a statistical approach used to estimate the sources of value that is added in producing goods and services. It traces the value added by each industry and country in the production chain and allocates the value added to these source industries and countries (OECD, WTO and UNCTAD 2013).

IMPORTANCE OF GPN, GVC AND TIVA

The potentially uneven distribution of gains from GPN across countries, firms and workers has attracted attention in policy debates and in scientific research. Recent trade theories redefined production sharing as trade in tasks (e.g. Baldwin and Robert-Nicoud 2014), rather than in the common meaning of trade in intermediate products. This is linked to so-called supply chain unbundling: some production stages previously performed in close proximity were dispersed geographically because the ICT revolution made it possible to coordinate complexity at a distance and the vast wage differences between developed and developing nations made such separation profitable (Baldwin 2014).

There are many empirical studies on the labour market consequences of global production sharing. Empirical tests of 'trade in task' theories have mainly considered the impact on labour in developed countries. Unsurprisingly, much of the attention has been put on outcomes visible in US labour market, primarily considering the effects of offshoring to developing countries. Recent US-focused research seem to have been particularly concerned with: the results of occupational exposure to globalization due to rising import competition from China (Autor *et al.* (2013) called it 'the China syndrome'), the polarisation observed in the US labour market (that is, rising employment in the highest and lowest paid occupations – see Autor *et al.* (2013)) and the general impact of trade in value added on wages and job displacement (Crino 2010; Ebenstein *et al.*, 2014). Similar analyses were performed to assess the response of labour markets to global production sharing and TiVA in advanced Western European countries (such as Denmark: Hummels *et al.* 2014; Germany: Baumgarten *et al.* 2013).

HOW TO MEASURE TRADE IN VALUE ADDED?

The fragmentation of global production calls for a new approach to measuring trade, and particularly to measuring value-added trade. The involvement of different tasks and stages performed in distinct locations has made production segmentation more complex and almost impossible to measure using gross trade statistics. Vertical specialization measures decompose a country's exports into domestic and foreign val-

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1 See: OECD remarks prepared for G20 Trade Ministers Meeting (6 October 2015), http://www.oecd.org/about/secretary-general/istanbul-g20-trade-ministers-meeting-remarks-at-session-on-the-slowdown-in-global-trade.htm.

ue-added share based on a country's input–output (IO) table. The computation of input-output tables for several economies within the WIOD project (Dietzenbacher *et al.* 2013) facilitated further empirical work on GVC and TiVA. Koopman *et al.* (2014) proposed a more elaborated decomposition of gross exports into various domestic and foreign components, integrating previous measures of vertical specialization and value-added trade (such as: Johnson and Noguera 2012) into a unified framework. Wang, Wei and Zhu (subsequently referred to as WWZ; Wang *et al.* 2013) developed Koopman's methods to measure a sector's position in an international production chain that varies by country, and to quantify revealed comparative advantage that takes into account both offshoring and domestic production sharing. We shall rely on WWZ method in our empirical exercise.

TRADE IN VALUE ADDED IN THE EU AND THE UNITED STATES

Using WIOD's input-output data we have employed WWZ methodology to decompose gross export *(EXP)* into main four components: domestic value-added absorbed abroad *(DVA)*, value-added first exported, but eventually returned home *(RDV)*, foreign value-added *(FVA)* and pure double counted terms *(PDC): EXP = DVA+RDV+FVA+PDC. RDV* can be treated as a proxy of offshoring. Right hand side variables can be further decomposed depending on whether they refer to final or intermediate goods, e.g. *FVA* is the sum of foreign value added used in final goods exports and foreign value added used in intermediate exports, while each can be sourced from the direct importer or other country. Similarly, *DVA* is the sum of domestic value-added absorbed abroad in final goods exports, absorbed by direct importers and intermediates re-exported to third countries. The following two figures show the effects of a basic decomposition performed for 14 EU countries and USA for the years limited by data availability (1995–2011).

Figure 1 shows that foreign value added (FVA) accounted (on average) for 18.45 percent of European gross exports in 2011 – approximately twice the figure in the case of the United States. It means that the analysed sample of EU economies was far more dependent on value added performed in other countries than the American economy. It is also clear that there is significant cross-country variability, with some EU economies (IRL, LUX, SVK, CZE) having considerably higher foreign content in their exports than, for instance, GER or FRA. Additionally, between 1995 and 2011 we observe the rise in foreign value added *(FVA)*, implying a drop in domestic value added *(DVA)*, visible both in the United States and in Europe.

The US economy relies more on offshoring than Europe. As shown in Figure 2, the *RDV* component of gross exports (value-added first exported and then returned home) for the United States is on average 6 times higher than for the analysed EU group. Offshoring intensity varies greatly across EU countries,

Figure 1
Foreign value added
Sorted according to 2011 value
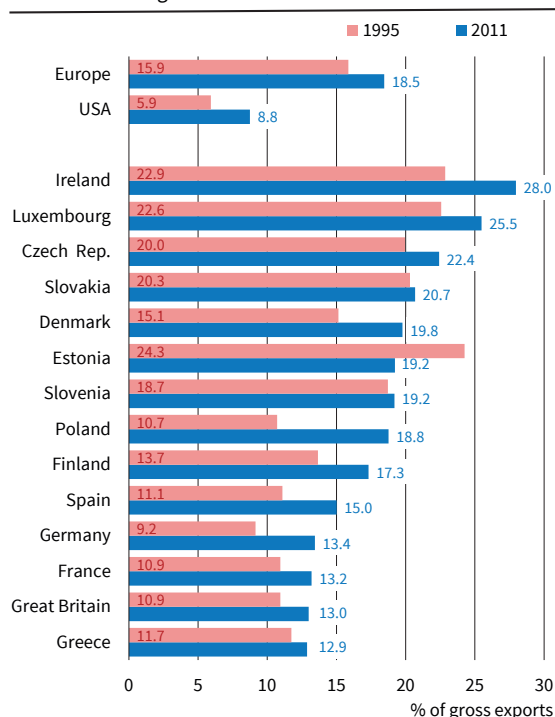
Source: Own elaboration based on WWZ methodology and WIDD data.

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with Germany (DEU) being the leader. As far as trends in time are concerned, only a slight change in *RDV* took place. Germany is one of the exceptions to this rule, as the dependency of its exports on offshored elements is decreasing.

Figure 2
Value added first exported - returned home
Sorted according to 2011 value
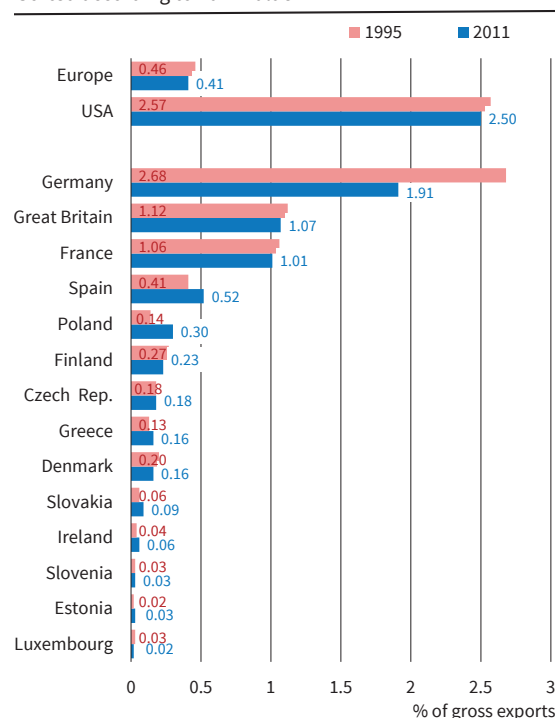
Source: Own elaboration based on WWZ methodology and WIDD data.

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Whether or not the above described trends will change after TTIP remains an interesting empirical question to be answered in the future. The resulting effects on the labour markets of the countries involved described by Felbermayr and Larch (2013) are also plausible.

REFERENCES

Autor, D.H., D. Dorn and G.H. Hanson (2013), "The China Syndrome: Local Labor Market Effects of Import Competition in the United States", *American Economic Review* 103, 2121–2168.

Baldwin, R.E. (2014), "Trade and Industrialisation after Globalisation's 2nd Unbundling: How Building and Joining a Supply Chain Are different and Why It Matters", in: Feenstra, R.C. and A.M. Taylor (eds.), *Globalization in an Age of Crisis: Multilateral Economic Cooperation in the Twenty-First Century,* NBER Conference Report, Chicago: University of Chicago Press, 165–212.

Baldwin, R. and J. Lope-Gonzalez (2014), "Supply-Chain Trade: A Portrait of Global Patterns and Several Testable Hypotheses", *The World Economy* 38, 1682–1721.

Baldwin, R. and F. Robert-Nicoud (2014), "Trade-in-Goods and Trade-in-Tasks: An Integrating Framework", *Journal of International Economics* 92, 5–62.

Baumgarten, D., I. Geishecker and H. Görg (2013), "Offshoring, Tasks, and the Skill-Wage Pattern", *European Economic Review* 61, 132–152.

Crinò, R. (2010), "The Effects of Offshoring on Post-displacement Wages: Evidence from the United States", *The World Economy* 33, 1836–1869.

Dietzenbacher, E., B. Los, R. Stehrer, M. Timmer and G. de Vries (2013), "The Construction of World Input-Output Tables in the WIOD Project", *Economic Systems Research* 25, 71–98.

Ebenstein, A., A. Harrison, M. McMillan and S. Phillips (2014), "Estimating the Impact of Trade and Offshoring on American Workers Using the Current Population Surveys", *Review of Economics and Statistics* 96, 581–595.

Felbermayr, G.J. and M. Larch (2013), "The Transatlantic Trade and Investment Partnership (TTIP): Potentials, Problems and Perspectives", *CESifo Forum* 14(2), 49–60.

Hummels, D., R. Jørgensen, J. Munch and C. Xiang (2014), "The Wage Effects of Offshoring: Evidence from Danish Matched Worker-Firm Data", *American Economic Review* 104, 1597–1629.

Johnson, R.C. (2014), "Five Facts about Value-Added Exports and Implications for Macroeconomics and Trade Research", *The Journal of Economic Perspectives* 28, 119–142.

Johnson, R.C. and G. Noguera (2012), "Accounting for Intermediates: Production Sharing and Trade in Value Added", *Journal of International Economics* 86, 224–236.

Koopman, R., Z. Wang and S.J. Wei (2014), "Tracing Value-Added and Double Counting in Gross Exports", *American Economic Review* 104, 459–494.

Los, B., M.P. Timmer and G.J. de Vries (2015), "How Global Are Global Value Chains? A New Approach to Measure International Fragmentation", *Journal of Regional Science* 55, 66-92.

OECD (2013), *Interconnected Economies: Benefiting from Global Value Chains,* Paris: OECD Publishing.

OECD, WTO and UNCTAD (2013), *Implications of Global Value Chains for Trade, Investment, Development and Jobs*, Report prepared for the G-20 Leaders Summit, Saint Petersburg.

Stone, S.F. and N. Bottini (2012), *Global Production Networks: Labour Market Impacts and Policy Challenges*, TAD/TC/WP(2011)38/FINAL, 2012, Paris.

Timmer, M.P., A.A. Erumban, B. Los, R. Stehrer, R. and G.J. de Vries (2014), "Slicing Up Global Value Chains", *The Journal of Economic Perspectives* 28, 99–118.

Wang, Z., S.J. Wie and K. Zhu (2013), *Quantifying International Production Sharing at the Bilateral and Sector Levels*, NBER Working Paper 19677.

Jerzy Menkes

ISDS and TTIP – Polish Prospects

RESEARCH APPROACH

TTIP[1] has been researched from a whole range of per-spectives: the EU, transatlantic and global. This analy-sis narrows the perspective to exclusively the Polish view. In the Investor-State Dispute Settlement (ISDS) regime, Poland represents a special case in its relations with the United States. Although numerous observa-tions and conclusions regarding ISDS in both universal and inter-regional relations (the EU and a third party) are applicable to Poland, a comprehensive Polish per-spective on the maintenance of the current system of dispute settlement (regulated by a Poland-US bilateral agreement[2]), the regime (American investment in Poland) or its alteration by a TTIP-created regime, seem specific.

ISDS CRITICISM

ISDS as a TTIP component, as well as ISDS in any agree-ment, has been criticised on both sides of the Atlantic.[3] The common denominator of the criticism is the assumption that if regulations providing for interna-tional arbitration in the EU-USA agreement (and better yet, TTIP) are absent, then the EU, the United States and the rest of the world (including Poland) will be pro-tected against disaster. ISDS criticism stems from sys-temic issues symbolized by, and based upon the cases 'Philips Morris v. Australia' and 'Vattenfall v. Germany' (two cases).[4] The ISDS mechanism -in the opinions of its critics – limits the host state's potential to protect, among other things, public health, the natural environ-ment or human rights, depriving it of discretional authority. This allegation is not true, since even an unfavourable arbitration ruling would not force, for example, Australia to lift nicotine restrictions or Ger-many to withdraw its ban on atomic energy or ease environmental requirements regarding coal-fired power plants, but rather would require payment to investors for damages as a result of breaches of their 'rightly acquired rights'. This criticism of the ISDS mech-anism within TTIP, and more broadly against TTIP, and indeed, against tightening cooperation with the USA, is advocated by Polish critics.

2 Traktat o stosunkach handlowych i gospodarczych między Rzecząpo-spolitą Polską a Stanami Zjednoczonymi Ameryki, 21 March 1990 r. Dz.U. 1994 No. 97 poz. 467.

3 See *European Initiative against TTIP and CETA,* https://stop-ttip.org/?nore-direct=en_GB. In the United States thirteen congressmen have signed on to the Protecting America's Sovereignty Act, see http://pocan.house.gov/sites/pocan.house.gov/files/POCAN_ISDS_HR967.pdf.

4 The former case has been decided against the suitor; the latter case is still pending.

The TTIP opposition movement in Poland does not follow the standard split into an anti-market and anti-American left and a pro-market and pro-American right. This movement intersects the political and social divisions of anti-Americanism with a common denomi-nator of Polish political (mainstream) parties being pro-American and focused on improving trans-Atlantic links (what differentiates the right-wing parties from the rest is their attitude towards the EU). However, given Poland's significant specific characteristics, this criticism disregards reality. In the event of the non-in-clusion in TTIP of an investor-state dispute settlement mechanism, the situation for Poland would not change because the country, like Canada, Germany and other states, has existing investment arbitration procedures with the United States. Thus, American investors will still be able to continue to implement ISDS in disputes with Poland. The latter may change the situation, however, were it to withdraw from the treaty on trade and economic relations. Even then, ISDS would be in force for another 10 years (Article XIV). Thus, even if TTIP becomes binding, it would not worsen Poland's situation with regard to the ISDS regime. Adversely, the current trend in TTIP towards settling investor-state disputes in or before international arbitration panels clearly points to a future EU–USA agreement that would change the present Polish-American mechanism to provide for the lack of ISDS legal solutions.[5]

Poland concluded BITs covering ISDS because, when it was bankrupt in 1990 at both an international and a domestic level (i.e. with regard to both foreign and local creditors), it had neither capital nor functio-nal state institutions. The Polish economy needed capi-tal and knowledge, so to attract foreign investors, sta-ble ones in particular, it had to provide them not only with potential economic benefits (obviously higher than in highly developed direct capital exporting sta-tes), but also with legal and political security for the investments comparable to the level in the countries of origin. That is why Poland is bound by a BIT concluded with sixty-one states. Thanks to that, foreign capital arrived to Poland.

The Polish-American context of the current ISDS mechanism is also significant. In 1990, Poland entered into an agreement with the United States within the broadly conceived social and economic transition and reorientation of Polish politics. Poland wanted to turn to the West and expected not only US economic aid, but also security, that is, to be covered under the American defense umbrella. The United States was perceived as a promoter of EU and NATO accession and met Polish expectations. Currently, Poland expects more Ameri-can involvement in its security and actual equality among both old and new NATO members. It is hard to understand the rationale of the opponents of TTIP, and specifically regarding the ISDS mechanism in Polish-American relations, when they assume that politics and defense are independent of each other in economic

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5 *Transatlantic Trade and Investment Partnership Trade in Services, Invest-ment and E-Commerce,* http://trade.ec.europa.eu/doclib/docs/2015/sep-tember/tradoc_153807.pdf.

terms, and that the United States will be more committed to providing Poland with security even after taking unfriendly business actions.

POLISH EXPERIENCE WITH INTERNATIONAL ARBITRATION

Poland is relatively rarely sued through international arbitration. For example, in 2014 Poland was party to three arbitration proceedings and was not (in principle) the losing party.[6] Although not much comes from summarising such awards, it should be noted, however, that Poland has won two cases vitally important for the state. One is 'Schooner Capital v. Poland' (November 2015) and the other is an earlier case, 'Minolta and Lewis v. Poland' (May 2014). The effect of these proceedings showed that Poland was a state of law. No adjudications by a Polish court were as outwardly or equally convincing.

ISDS UPHOLD THE RULE OF LAW

In this context, I want to recall the case 'Saar Papier Vertriebs GmbH v. Poland'.[7] Less relevant are the substantive issues of the dispute or the arbitral award (Poland was obliged to compensate the indirect expropriation). What was interesting in this case, however, was what took place in the course of the arbitration proceedings and after its completion. Poland refused to respect the award and its enforcement. Poland paralysed the proceedings, for example, by not appointing an arbitrator and then by not meeting the obligation to pay. Although it was obliged to pay damages of 2.3 million DM in 1995 along with the lawsuit's costs (amounting to 4 million DM), Poland only paid in 2001. In the meantime, accounts were blocked, it became a political dispute and required German government inter-vention.

Poland – the state and its institutions – behaved like a crook, evading the obligation to execute or enforce the award. The conduct of the state authorities and their representatives has never been investigated as part of a competent (domestic) criminal proceeding. Similar to this, despite some differences, was the case of 'Eureko B.V. v. Poland' in which there was no doubt that Poland failed to meet its obligations as per the agreement. An evaluation of Poland's behaviour is, in my opinion, quite obvious. This is not just a Polish experience, however. The Hermitage Capital Management case proved the need to not only protect property, but also the security of the proprietor (the death of Sergei Magnitsky confirmed the need for an international law enforcement regime). Poland also has, to a relative extent, encountered similar events, although not as

dramatic, such as the case of L. Jeziorny and P. Rey.[8] Perhaps the ISDS mechanism has value as a preventive instrument protecting not only property, but also the life and freedom of proprietors. Perhaps host state authorities would be less eager to attack property and proprietors if they expect court control (through international arbitration) as a response to acts against a property or proprietor. Perhaps public officers would be less likely to benefit from illegal activities if they feared the *Magnitsky Act* because they would not be able to benefit from the fruits of their crime.

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6 In March 2014, ICSID had reviewed 463 disputes, including 55 cases regarding EU members and 39 internal cases. The loser and sued leaders include the Czech Republic, Spain, Slovakia and Hungary. See: Recent Developments in Investor-State Dispute Settlement (ISDS), UNCTAD No. 1, April 2014, http://unctad.org/en/PublicationsLibrary/webdiaepcb2014d3_en.pdf; and *The ICSID Caseload – Statistics (Special Focus – European Union),* https://icsid.worldbank.org/apps/ICSIDWEB/resources/Documents/Stats%20EU%20Special%20Issue%20-%20Eng.pdf.

7 Decision, http://www.italaw.com/sites/default/files/case-documents/italaw3049_0.pdf.

8 See Czuchnowski, W. and J. Sidorowicz, *Bananowa republika w Krakowie czyli sprawa Jeziornego i Reya.*, Gazeta Wyborcza, 13 February 2010.

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Geographical Indications in TTIP Negotiations

GEOGRAPHICAL INDICATION AS AN INTELLECTUAL PROPERTY RIGHT

The quality, reputation or other characteristics of many products may depend on where (geographically) they come from. When this is the case and it is positive, producers may consider emphasizing this fact by indicating the place of origin of the product, i.e. protect it by means of geographical indications (GIs).[1] Apart from distinguishing their goods from those offered by others, they are able to garner extra profits if consumers associate such an indication with better quality or some other desired trait. GIs are very often premium quality products, expensive to manufacture, produced locally by small and medium-sized firms and especially exposed to misuse and counterfeiting. Legal protection is therefore a useful tool for safeguarding producers' and consumers' interests.

According to the Agreement on Trade-Related Intellectual Property Rights (TRIPS),[2] GIs can be place names (e.g. Parma ham) or words associated with a place (e.g. 'oscypek' which is sheep milk cheese originating from the Podhale region in Poland).

As WTO members both the United States and the European Union are obliged to provide protection for GIs as required by TRIPS. According to Article 22 of this agreement, all products can benefit from a standard level of protection, i.e. GIs have to be protected in order to avoid misleading the public and to prevent unfair competition.[3] GIs are not protected when a name has become common (or 'generic'),[4] or when a term has already been registered as a trademark.

Granting legal protection for GIs lies within the jurisdiction of separate domestic laws. Mechanisms of protection vary considerably, depending on whether a public or private legal system approach is adopted (FAO 2013). The first approach appears when public authorities enact legislation dedicated to the specific protection of GIs (a *sui generis*[5] system).[6] The second approach entails the use of laws against unfair competition and is connected with trademark laws such that protection is primarily based on private actions.[7] The public approach is generally accepted in EU member states and the private approach in the United States (see Table 1).

As a result of these different approaches, the protection of GIs takes many forms. The United States is one of several countries[8] that protect GIs through certi-

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3 A higher level of protection is guaranteed by Article 23 for wines and spirits: in general, they have to be protected even if misuse would not cause the public to be misled. There are several exemptions to these rules (Article 24).
4 For example, 'bologna' in the United States refers to a particular type of meat not necessarily made in Bologna, Italy.
5 *Sui generis,* from the Latin meaning 'of its own kind', is a term used to identify a legal classification that exists independently of other categorizations because of its uniqueness or as a result of the specific creation of an entitlement or obligation (FAO 2013).
6 This approach generally consists of an official recognition of GIs by granting the status of a public seal of quality. Registration often does not carry an administrative fee and there is no need to renew it. The aim is to protect the authentic designation of a product.
7 Registration is the most common legal tool to define legitimate users and ensure protection for GI products. Registration must be periodically renewed. The aim is to certify the quality of the product.
8 These include Australia, Canada, Japan, parts of Africa and a number of Arab countries.

2 The TRIPS Agreement was negotiated during the 1986-94 Uruguay Round of the GATT trade negotiations. The Agreement was the first to introduce extensive intellectual property rules into the multilateral trade law system and the first to establish the legal definition of GI.

Table 1

Key distinctions between trademarks and geographical indications

Feature	Trademarks (private approach)	Geographical indications (public approach)
Ownership	Anyone. Typically, an individual entity or corporation, sometimes collective or government.	Producers or government.
Transferability	To anyone, anywhere.	Linked to origin. Cannot be de-localized.
Rights to origin name	First in time, first in rights principle.	Distinguishes legitimate rights to origin, not first to apply for a name. Registration confers rights to all legitimate producers.
Protection	Private. Burden entirely on the owner.	Public. Government responsible but some private burden to identify infringement.
Use	Trademark: typically private, can license. Collective mark: closed group. Certification mark: open according to set rules.	Collective, open to all producers that comply with the rules.
Quality	Private. Usually not specified except sometimes for certification marks.	Disclosed in standards or specifications and obligatorily linked to origin.
Name or brand	May be created. May or may not have geographic linkage.	Must exist already and must link to *terroir*.

Source: Adapted from International Trade Center (2009).

fication marks, collective marks or trademarks;[9] while the EU has a specific system of GI protection.

THE POSITIONS OF THE EU AND THE US IN THE TTIP NEGOTIATIONS ON GEOGRAPHICAL INDICATORS

The protection of GIs is one of the most disputed parts of the TTIP talks. The EU model of GI protection is very strong – it stands above the TRIPS standard level and corresponds to the one offered by TRIPS to wines and spirits. The United States protects GIs through trademark law. Due to the fact that a lot of names referring to European geographical areas are currently considered generic in the United States, they cannot be protected. This partly explains the US reluctance to extend GI protection. Some scholars even claim that the idea of protection of GIs is alien to American law and culture (Chen 1996).[10]

The high level of GI protection in Europe is largely determined by the commercial value of GI products. According to the Database of Origin & Registration (DOOR), there were 1,256 registered GI agricultural and foodstuff products in the EU in 2015, of which 1,237 registrations originated in the EU member states. Italy, France and Spain accounted collectively for 55 percent of a total of 680 registrations. Several Central European countries also ranked high: Czech Republic, Poland and Slovenia were among the 10 countries with the most number of registrations, i.e. 29, 27 and 19, respectively. Chevere *et al.* (2012) estimate that in 2010 the worldwide sales of GI agricultural products, foodstuff, wines and spirits registered in the EU amounted to 54.3 billion euros (representing about 5.7 percent of the total food and drink sector in the EU). About 60 percent of sales were in domestic markets, 20 percent was intra-EU trade and 19 percent (10.6 billion euros) was extra-EU. The largest non-EU importer of EU GI products was the United States (3.4 billion euros, which accounted for 30 percent of total US imports of food and beverages from the EU). Exported GI products came mainly from France, Britain and Italy, which together account for 86 percent of extra-EU sales of GI products.

Another reason for the high GI protection in the EU is that it is part of a much larger policy that seeks to preserve traditional production methods and ways of life in the face of globalization (Watson 2015). Commentators in America condemn European GIs as trade barriers, whereas trade agreements are supposed to reduce barriers to trade. US agricultural industrial lobbies are heavily against GIs.[11] EU commentators talk about inferior imitations of European GIs in the United States and vow to solve the problem through TTIP. The EU wants the United States to improve its system, notably by protecting an agreed list of EU GIs.

It is unlikely that TTIP negotiations over GI protection will result in an outcome that both sides find satisfactory and it is still unclear how the issue of GIs will be resolved in the TTIP talks; or even whether it can be resolved. There is pressure on the US negotiators to completely reject any EU calls for GIs in TTIP.

REFERENCES

Chen, J. (1996), "A Sober Second Look at Appellations of Origin: How the United States Will Crash France's Wine and Cheese Party", *Minnesota Journal of Global Trade* 5, 29–37.

Chever, T., C. Renault, S. Renault and V. Romieu (2012), *Value of Production of Agricultural Products and Foodstuffs, Wines, Aromatised Wines and Spirits Protected by a Geographical Indication (GI)*, http://ec.europa.eu/agriculture/external-studies/value-gi_en.htm.

DOOR, *Database of Origin & Registration*, http://ec.europa.eu/agriculture/quality/door/list.html.

FAO (2013), *Legal Protection of Geographical Indications,* http://www.fao.org/fileadmin/ user_upload/foodquality/fichefiles/en/c6.1.pdf.

International Trade Centre (2009), *Guide to Geographical Indications Linking Products and Their Origins,* Geneva.

Watson W. (2015), *Geographical Indications in TTIP: An Impossible Task,* http://www.cato.org/publications/cato-online-forum/geographical-indications-ttip-impossible-task.

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9 GIs may be protected through a registration under trademark law, in the form of a trademark, a certification mark or a collective mark. A trademark is a distinctive sign that is used by a company to identify itself and its products or services to consumers. It cannot refer to generic terms or exclusively to geographical terms. A certification mark is a specific type of trademark that certifies that goods or services bearing the mark meet a certain defined standard or possess a particular characteristic. Such marks are usually registered in the name of trade associations, government departments, technical institutes or similar bodies. A collective mark is a specific type of trademark that indicates that a product bearing the mark originates from members of a trade association, rather than just one trader.

10 That is because American intellectual property law is built on the foundation of disseminating knowledge as widely as possible in order to spur innovation and favour new entrants to the market.

11 It is worth remembering that the United States is not demanding that the European Union allow the sale of American products as GIs.

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The Transatlantic Trade and Investment Partnership and Crude Oil and Distillate Trade between the US and EU: Implications for Poland

As a result of the 'shale revolution', the US production of crude oil, as well as consumption of oil and distillates, is on the rise. Since 2010 imports of oil have dropped by around 100 million tons and this trend will continue. US refineries use mainly heavy and sour grades of oil, including oil imported from Canada and Venezuela. Unconventional oil, which is expected to account for over 50 percent of domestic production in the years ahead, is light. As a result, there is the high possibility of a strong oversupply of light and sweet oil on the North American market.

The situation in Europe is different situation. Most of the oil produced in the North Sea and Norway is light and sweet. Oil production and consumption are steadily dropping, as are imports, which are currently at roughly 500 million tons. Refineries are undergoing a transformation; some plants have closed (over 30 between 2009 and 2014, taking with them a total capacity of ca. 120 million tons), some have re-configured to produce biofuels, and some are used as storage facilities. There are no signs indicating that this trend will reverse.

From a technical point of view, any lighter (higher API gravity) or sweeter (lower sulfur content) oil may serve as a substitute for heavier and more sour types. However, from an economic point of view, this may not be feasible. It is easier to produce more gasoline from light oil, but if there is an abundance of gasoline on the market then the oversupply of light oil cannot be used optimally. Therefore, projecting trends on the basis of aggregate data (net imports and exports of oil) may lead to false conclusions and the analysis must include various types of oil in trade.

The United States will remain an importer of oil (heavy grades), but exports of light grades will continue to rise. There is the potential for future crude oil exports from North America to Europe, which may start in 2017. Their volume will depend on the situation with the US domestic market, prices and the availability of adequate types of oil for exports. TTIP can primarily contribute by lifting export restrictions in the United States. This potential flow would largely reflect a shift of exports destined for other markets (in particular, to Latin America).

In the most optimistic scenario, potential exports of oil from the United States to Europe may peak (in 2025) at more than 100 Mtoe, which may constitute ca. 23 percent of the total demand of European refineries for imported crude oil (see Figure 1). According to our estimates, in 2020–2030 the maximum potential should be around 70 Mtoe (15 percent of Europe's imports) and in 2040 there will be a drop to around 21 Mtoe (5 percent). In such a scenario, in 2020-2030, the United States could become at least equally important as Russia, Kazakhstan, the Arab Gulf countries (jointly) or African countries (jointly).

In the short and medium term, US oil exports would be dominated by light and sweet types, while one should expect larger quantities of sour types after 2020, both light and medium. Canadian oil will also enable US exports of crude oil, as well as distillates.

Figure 1

Projections of potential oil exports from the US and Canada to the EU after TTIP is signed
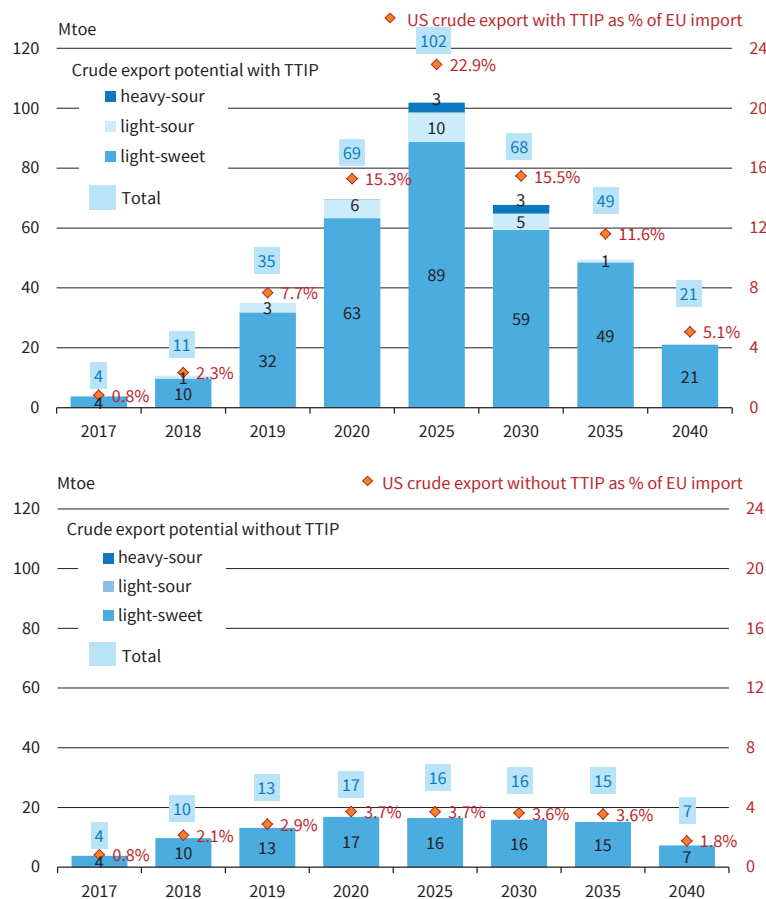
Source: Authors' own computation.   © ifo Institute

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Light and sweet oil from the United States would flow mainly to West Europe and will meet import demand to a certain extent. European imports will continue to be dominated (up to 60-65 percent, or a total of 250–280 Mtoe) by light and medium sour types mainly from Russia, Kazakhstan and the Arab Gulf states. This is mainly due to demand for intermediate refined oil products, which, from an economic point of view, are best produced from medium-sour types. The share of light types, imported mainly from Africa (Libya, Algeria, Nigeria and Angola) and the Caspian region, constitutes less than a third of the import needs (130–150 Mtoe).

Until recently, small amounts of crude oil were exported from Europe (i.e. mainly Norway) to the United States. These exports will gradually be phased out. As of 2017, the trend is most likely to be reversed, initially to the order of 15–17 Mtoe (an amount used by a medium-sized refinery like the one in Płock, Poland).

As for refined products, Europe will remain a net importer, particularly of medium distillates, jet fuel and LPG while the United States will become an exporter, particularly of diesel oil and, to a lesser extent, of LPG and naphtha. We estimate that in the period 2015–2040, the potential profits of US exporters from the lifting of duties on distillates will be much larger than that of European exporters. The US profits would total 16.123 billion US dollars (mainly for LPG), while for the EU it would be 2.371 billion US dollars (mainly gasoline). TTIP will not generate a new substantial flow of distillates since the current prices and duties already render such trade profitable. However, lifting duties will increase the profits. Since the duties are much higher in Europe (usually in the range 3.5-4.7 percent *ad valorem*) than in the United States (0.052–0.52 USD/bbl, which is 0.1–0.5 percent at the current price), US exporters' benefits would be larger. Should competition pressure reduce the price, then some of the benefits would be shared by consumers, in this case mainly in Europe.

The potential for a collision of interests, as well as a challenge for European refineries, lies in gasoline. Gasoline was the main distillate exported from Europe to the United States. The United States traditionally had a deficit of gasoline, which was largely met by imports from Europe. High gasoline production in Europe is expected to be maintained. However, due to an oversupply of light oil in the United States, the situation in the market will become balanced, or an oversupply will even emerge. European refineries may need to look for new markets for their gasoline if they want to continue this level of production.

The consumption of medium fuels (diesel and heating oil) has dropped in Europe and the United States as a result of the economic crisis. Traditionally, Europe had a deficit of diesel fuel, which was imported from Russia and Belarus, for example. Should US fuels become competitive and relations with Russia remain strained, we may expect a flow from the US to the European market. The impact would consist mainly of the displacement of fuels produced using Russian oil, especially in Central and Eastern Europe.

As regards naphtha, both markets are balanced and we do not envisage any major flows between them. Neither will the jet fuel trade be affected. Europe needs over 12 million tons annually, but its imports are not from the United States, which has a balanced market and, therefore, will not become a significant exporter.

As far as heavy fuels are concerned, we envisage a drop in consumption due to environmental restrictions. There seems to be no perspective for greater trade between Europe and the United States.

Due to the small volume of exportable medium sour- and sour-oil types, the potential for US trade with Poland is limited (at most, ca. 1.5 Mt). Sweet oil constitutes only roughly 10 percent (the remaining part being mainly heavy and sour Russian oil) of the total crude oil processed by the Polish refineries in Płock and Gdańsk (in 2014, 24.2 Mt). It is usually bought on spot markets in small quantities. These refineries can work with US light oil, but this is not economic. In view of a possible drop in the supply of Russian Urals oil (as an effect of sanctions and lack of investments in the upstream sector) in the medium and long term, a need to increase imports from other countries may arise, perhaps also from North America.

Potential imports of cheaper light oil to Western Europe do not constitute an important challenge for Polish refineries. Currently, around 80–90 percent of domestically produced distillates in Poland are destined for the domestic market. Imports are mainly from refineries in neighbouring countries (Belarus, Slovakia, Germany, Czech Republic and Lithuania), which all use the same Russian oil.

We assume that, regardless of TTIP, the US government will sooner or later liberalize exports of oil.[1] The US energy companies, its economy and society stand to gain more from a liberalized exports regime than from a ban, given the current large oversupply of oil on international markets and technological progress in the upstream sector. Today, the situation in the energy markets is very different than when the ban was introduced in the Energy Policy and Conservation Act of 1975 and the subsequent Export Administration Act of 1979. However, for the foreseeable future, a long-term solution will probably still involve some administrative procedures, perhaps resembling those for LNG.

Most of the scenarios presented above will take place regardless of TTIP. As a result of the shale revolution, all important international benchmarks in the oil sector are set by US companies and the situation in the US market. This has a positive impact on the stability of international oil markets and reduces speculation and uncertainty, which were common features of these markets in recent years.

Even if this potential is not fully used, then imports of oil from the United States will increase diversification and security for Europe, contributing to the goals

1 On 18 December 2015, the former President Barack Obama signed a bill lifting the ban on oil exports.

of the Energy Union. The potential impact could consist of some substitution of European imports from third countries (as a general principal of all free-trade areas). A positive effect would be stronger competition in the European market, implying increased pressure to lower the price for consumers. Due to the current European tariff regime, US exporters of distillates stand to gain more than European exporters.

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The Transatlantic Trade and Investment Partnership and the International Security System

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We investigate[1] the possible impact of the Transatlantic Trade and Investment Partnership (TTIP) on the international security system and see closer economic cooperation between the EU and the United States as a supplement to their political alliance. In our opinion, closer economic cooperation between the EU and the United States is currently essential due to the international security gap revealed, *inter alia*, by Russia's expansionist policy, the European migration crisis, and general global instability.

THE US POLITICAL DILEMMA: ORIENTATION TOWARDS ASIA OR EUROPE?

The modern international order is determined by two factors of crucial importance and conflicting impacts. The first is a stability paradigm as a determinant of operational methods and political values, particularly in US political strategy. The other is organic turbulence in the world. The instability determinant is the lack of an effective regime of control over different actors' activities (non-states, states or groups of states). In the unipolar order in which the United States is a hyperpower,[2] there is both a place and the need for regional and supra-regional economic and political powers like the EU. There is also the will and desire not to limit international relations to common values and unity of civilizations. The position of states and regions[3] nevertheless varies in American foreign policy.

Current US policy towards Asian countries is reflected in the trans-Pacific formula of the 'pivot to Asia'. Among the factors influencing this idea are Asian, European and global ones. In assigning Asia a greater role in US policy, it demonstrates, *inter alia*, the region's bigger role in the world economy and in US-China bilateral relations and political issues, focuses on recognizing

the territories of NATO countries as inviolable in military conflicts and attempts to move military confrontations to the periphery.

The pivot-to-Asia concept is also influenced by the fact that the United States assumes Europe will not be the main source of instabilities in the future. Outside Europe, at the point of turbulence, the United States has very limited power to initiate and control the process of social, economic and political change. To influence those areas, the United States has attributed greater importance to Asia. The 'pivot' is also a sign of EU and US competition for access to developing countries' markets. The expansion of discriminatory liberalization agreements with the EU (called Regional Trading Agreements in WTO nomenclature, or RTAs) has been so large that the United States considers their proliferation dangerous to its own interests[4] and has started to retrieve its position through similar agreements such as the recently negotiated Trans-Pacific Partnership (TPP). TPP is a RTA that will connect its North and South American partners (NAFTA countries, Chile, Peru) with its Asian (Brunei, Japan, Malaysia, Vietnam, Singapore) ones, as well as with Australia and New Zealand.

There are many reasons for the relative mutual distancing of Europe and the United States, particularly in stable periods. Among them are the significant discrepancies between their social and cultural models, as well as the European conviction that its security is ensured at no cost. Many Western European countries continue to benefit from the post-Cold War peace dividend, consequently ignoring political changes affecting their security.

Moreover, despite intensive economic and political cooperation, the transatlantic partners are not bereft of economic conflicts and some have turned quite ideological. Such is the case with genetically modified food and animal feed (Genetically Modified Organisms, or GMOs).[5]

TTIP'S IMPORTANCE FOR THE TRANSATLANTIC REGION

TTIP would strengthen and intensify the bilateral economic relations between its parties. Future cooperation can be perceived as a consolidation of the Atlantic bridge and an upgrade of economic cooperation to a level comparable to a political, defense and cultural alliance.

The EU, particularly Western Europe, must fear the effects of the US pivot to Asia and reduction of its presence in Europe. The fear stems from the likelihood of a security vacuum, particularly dangerous in the face of Russia's return to the aggressive and expansionist policy of the former USSR. In its confrontation with

2 A 'hyperpower' is "a country that is dominant or predominant in all categories … this domination of attitudes, concepts, language and modes of life", a definition coined by French minister of foreign affairs Hubert Vedrine (quoted in The New York Times, 5 February 1999). The hyperpower status means a complete range of dominance, which distinguished it from the former USSR and the United States and their military potential during the Cold War period.

3 The region is conventionally isolated, relatively homogenous, and distinguished from adjacent areas by natural or acquired traits. There are physiographic (e.g. climate, soil) and economic (e.g. agricultural, industrial) or economic and administrative regions that are objects of planning and management (*Encyklopedia Geografii,* Warsaw 2002, 531). Because the region is described not only by natural but also by acquired features, the same term refers to common values and not only to areas of geographical vicinity (Czarny *et al.* 2010).

4 See, for instance, "U.S. companies […] are being surrounded by preferential trade and investment agreements negotiated by their foreign competitors' governments. Time is running out for the United States to get back into the game", http://web.archive.org/web/20021030045704/http://www.brtable.org/pdf/498.pdf.

5 Prestowitz, the president of the Economic Strategy Institute (ESI), summarized the EU objections in the following way: "so, if you had a cancer-curing GM corn, I don't think you would have any problems selling it in Europe," (www.econstrat.org/news/cprestowitz_cnnmoney_02162003.htm), after Mann (2007), 208–209.

Ukraine, Russia not only reinforces its traditional desire to enlarge its territory at the expense of its neighbours and destabilize adjacent states, but also uses economic tools to subordinate other states (by differentiating natural gas prices, for example. For further details, see Czarny *et al.* 2009).

Even while acknowledging that the EU and the USA had shared the same intensity and belief in Russia's transformation in the past, driving towards a partnership based on respect for law and common values, the consequences of this belief are different in US and European policy. The United States, secure thanks to its geopolitical and military position, still feels responsible for international security. For Europe, rapprochement with Russia can result in political and military dependency (in resource supplies, as well as the avoidance of military conflict on the EU's borders).

Political interests also force the EU and the United States to cooperate. No other partner would be as good at, for example, combating international terrorism. Common values make Europe a more natural partner for the United States than the culturally, politically and religiously diverse Asian states that are becoming the main focus of economic cooperation. Besides security and values, economic interests also prompt the United States to remain a staunch EU ally, due in no small part to the massive flood of commodities, services and capital traded between them. Moreover, the parties are natural allies in international organisations.

TTIP'S GLOBAL SIGNIFICANCE

In the geopolitical dimension, TTIP will allow the EU and the United States to maintain their dominance of the world economy and increase the stability of the global economic system. It may also encourage states blocking the current WTO round on non-discriminatory trade liberalization to increase their inclination to cooperate. That assumption seems to be reflected in, for example, a decision at the Davos Summit (January 2014) to resume negotiations on trade and pro-environment services, which although covered by the Doha mandate are stalled by discussions of merit. Furthermore, TTIP may provide solutions for the WTO negotiations; or at least encourage further discussion. Otherwise, the threat that WTO negotiations may be down-graded significantly; or replaced by numerous non-transparent bilateral or multilateral RTAs may become real. That would be detrimental to the world economy, composed as such by separate groups of countries. Not only would the process of development of the worldwide economic system based on the non-discrimination principle have been stopped, but it also could force the world economy to retreat to the pre-war period when the world was divided by numerous protectionist and discriminatory economic agreements.

CONCLUSIONS

The United States has just finished negotiations on TPP and is negotiating TTIP. An important signal from the US administration was the former President Obama's signature in June 2015 to grant the negotiations Trade Promotion Authority, the first time it had been used since 2002, and on the Trade Preferences Extension Act. That means that TPP and TTIP will be voted on in their entirety with no amendments, possibly easing passage.

It may be evaluated as positive that the world's political and economic situation seems to strengthen and consolidate EU–US cooperation. Errors on the part of both parties were critical. The US 'pivot to Asia' should not become a political alternative to the EU, but a supplement to the transatlantic link. Europe, in turn, treated Russia as if it had adopted Western patterns and was becoming more Europe-like, which meant that the latter should recognise and respect European values. It is hard to overestimate the scale of both mistakes. However, there is now a fresh chance for a return to cooperation, and to turn the Atlantic into an inner lake in a community of democracy, security and economic prosperity.

REFERENCES

Czarny E., J. Menkes and K. Śledziewska (2010), "Gravity Model and OECD in Territorial Division of the World", *Argumenta Oeconomica* 2(25), 79–94.

Czarny E., J, Menkes and P. Toporowski (2009), "Gazprom — Threat to Europe ?", *Poznań University of Economics Review* 6, 44–66.

Fuller J. (2014), "Why Almost Everyone Hates the Trade Deal Obama's Negotiating in Japan", *Washington Post*, 23 April.

Mann G.H. (2007), *Transatlantische Freihandelszone*, Frankfurt am Main: Peter Lang.

Matthias Diermeier and Henry Goecke

Productivity, Technology Diffusion and Digitization

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INTRODUCTION

Digitization is everywhere, but productivity progress is not. Researchers are divided into techno-optimist and techno-pessimists fighting over whether or not productivity progress already kicked in, or whether there will be a great leap forward in the near future.

In order to identify the link between digitization and productivity, we analyse technology diffusion's development over time. We discuss the preconditions for technology take-up and their implications for productivity growth. To carve out the more specific relationship between digitization and productivity, we also zoom in on whether infrastructure, individuals or enterprises constitute the driving force behind productivity enhancing technological progress.

During the years after the financial crisis of 2008 many mature economies experienced a significant slowdown in GDP growth compared with the pre-crisis period (The Conference Board 2016). Economists are highly concerned with the countries' weak growth performance. Introducing the buzzword 'New Secular Stagnation', Summers (2014a) describes an economic situation where GDP deviates massively from its potential as investments fail to equal savings in the short run. In the post-crisis period extremely low interest rates are accompanied by a severe slump in investment which has plunged to a historical trough (Diermeier and Hüther 2015). What is more, with the increasing deflation risk, real interest rates are not expected to increase significantly in the near future (Demary and Hüther 2015). One of the main structural breaks in the economic environment now identified as triggering low returns and weak investments is the slowdown in technological growth: 'slower technological growth means a reduction in the demand for new capital goods to equip new or more productive workers' (Summers 2014b).

With lower technology growth, investments are held back, as investors prefer to wait for better opportunities in the future. Lower investment and R&D spending consequently hold back productivity progress and, ultimately, GDP growth (European Commission 2015; Andrews and Criscuolo 2013). Indeed, Total Factor Productivity (TFP) growth has been historically low or even negative after 2011 (The Conference Board 2016). During the 1990s and early 2000s, a co-movement of mature economies with relatively stable TFP contributions to GDP growth between zero and two percent can be identified. TFP growth drops after the financial crisis to a value around zero, and even becomes negative for Eurozone countries.

The productivity sceptics' godfather, Robert Gordon (2012), explains the current productivity slowdown with a lack of game-changing innovations and diminishing returns on innovation. Unlike the introduction of industrial electricity consumption that generated huge productivity leaps, this stream of literature doubts that recent information and communications technology (ICT) innovations had have a comparable impact on TFP – especially in Europe (Brasini and Freo 2012; Inklaa *et al.* 2005; van Ark *et al.* 2008).

TOTAL FACTOR PRODUCTIVITY IN THE AGE OF DIGITIZATION

TFP has enjoyed a bad reputation as the blind spot of economic models for a long time. Deducted as the residual between the growth rates of measurable GDP and the factor inputs capital and labour, TFP used to be the exogenous unexplainable void that was hard to interpret. Although it remained a vague concept, TFP became the most famous proxy for an economy's productivity. By representing the productivity of both labour and capital, TFP is more complex, but also more sophisticated, than simple labour productivity.

Finally, the most important determinant of TFP is the incorporation of a new technology into the production process, thereby yielding more output for the same input. Until recently, ICT technologies' impact on productivity was merely incorporated into economic models as inputs in the classical production function approach (van Reenen *et al.* 2007; OECD 2004). In recent years, growth accounting started to control for qualitative factors in capital and labour in order to reduce the residual and to make TFP a more adequate measure of technological progress (van Ark 2014). A major leap forward in growth accounting is the calculation of the contribution of ICT capital formation to GDP growth. By and large, ICT capital formation has a relatively small and volatile impact on GDP growth, and makes positive contributions even during the crisis years. What is more, ICT investments have resisted the general investment recession present in many countries during the post-crisis period (The Conference Board 2016).

Although many problems remain: in the age of digitization, pinning down the ICT sector's capital contribution to economic growth is a step in the right direction. The contribution of ICT capital in the United States accounts for 35 percent of GDP growth during the post crisis period – and in Germany this figure is even as high as 42 percent (The Conference Board 2016). Apart from ICT capital deepening, however, productivity progress from digitization could additionally be driven either by technological progress from the ICT sector itself; or by complementary innovations that exploit external effects from ICT technologies on production in other sectors.

With respect to TFP growth from the 1990s onwards, ICT-using industries experience stronger TFP growth than other sectors (Jorgenson *et al.* 2004). Additionally, van Ark (2014) underlines the importance of network effects in non-ICT sectors based on the use

of ICT technology – a classical technological spill-over. Although the latter is much harder to quantify, techno-optimists usually assume the spill-over effect to be of very high importance. However, although consumers might be better off through an increased variety of goods and services, the national accounts may suggest a decrease in economic performance (see also Grömling 2016a and 2016b). This has two interesting implications: a flaw in GDP accounting goes hand in hand with an evident flaw in the TFP residual. If we believe GDP to be biased downwards, the same must hold for TFP. Additionally, it is possible that research and development with respect to 'Industrie 4.0' – the digitization of the entire value chain from raw material producer to retail consumer – have not effectively raised productivity yet, but are already paving the way for innovations that will enhance it in the future. Both implications stress the underestimated importance of TFP in the present due to advancing digitization. Therefore, the following section presents an analysis of digitization technologies and their possible impact on productivity.

IS DIGITIZATION SPECIAL IN THE HISTORY OF TECHNOLOGICAL PROGRESS?

To assess the potential productivity contributions of digitization, one should zoom in on the respective technologies and their diffusion. As explained above, technology and especially digitization are important driving factors of TFP. However, the digitization channel that finally triggers productivity remains unclear. Evangelista *et al.* (2014) identify access, usage and digital empowerment as transition mechanisms to productivity variables aggregated at the national level. Access in terms of infrastructure is certainly a necessary pre-condition for a successful adoption and application of technologies. By itself, however, it does not seem to be productivity enhancing (OECD 2004; NTATREP 2006; Fornefeld *et al.* 2008; Thompson and Garbacz 2007).

By grouping technologies into different categories and taking into account the actual technology's penetration and adoption rates, we will be able to narrow down the TFP black box. Using the European Commission's Digital Agenda Scoreboard (DAS), we determine the average use of technologies in relation to the technology leader – the country in the sample that uses the respective technology most. We call this ratio the technology penetration rate. By definition, this rate ranges between zero and one. The penetration rate is a common measure for technology diffusion. It is high if countries homogeneously apply a technology close to the technology frontier. The penetration rate is low if

one country is far ahead of the other countries. We identify the following 15 technologies to be relevant ICT technologies divided into three subgroups: infrastructural pre-conditions, the application of digital technologies by enterprises and the application of digital technologies by individuals. The latter two will be named enterprises' ICT empowerment and individual ICT empowerment, respectively.

Figure 1 sets the average penetration rates against the last data point available of the respective technology – ranging from 2012 to 2014. The penetration rate of each technology i is defined in equation (1). The arithmetic average of all standardised (e.g. per capita) technology use for all j countries (with j representing the amount of countries sorted by the intensity of technology use), but the frontier country in the peak year is divided by the technology usage in the frontier country and peak year.

$$(1) \quad pen_i = \frac{\left(\sum_{j=1}^{J-1} tech_{i,j}\right)/(N-1)}{tech_{i,front}}$$

The discrepancies between penetration rates are high – even for the homogeneous sample including only EU countries and only digitization technologies. The infrastructural subcategory is clustered around 80 percent and higher. In combination with the high levels of these technologies' distribution, this means that basic pre-conditions for technological progress are equally in place, and the countries in the sample are well-prepared to develop complementary innovations. The lower and more dispersed penetration rates of technologies in the applied categories enterprises and individuals range between 40 and 80 percent. The significantly lower penetration rates in the applied categories are accompanied by lower intensities of the technologies' use: even in the frontier countries, the technology take-up of enterprises, as well as individuals, is very different. For the analysed set of applied technologies, the Nordic countries as well the Netherlands are located at the technology frontier with a significant gap to other countries – leading to comparatively low penetration rates.
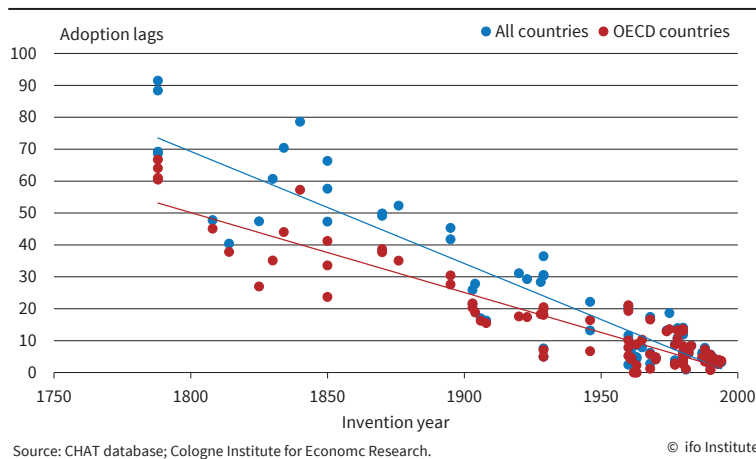
Figure 1

Penetration rates of digital technologies in the EU in different categories
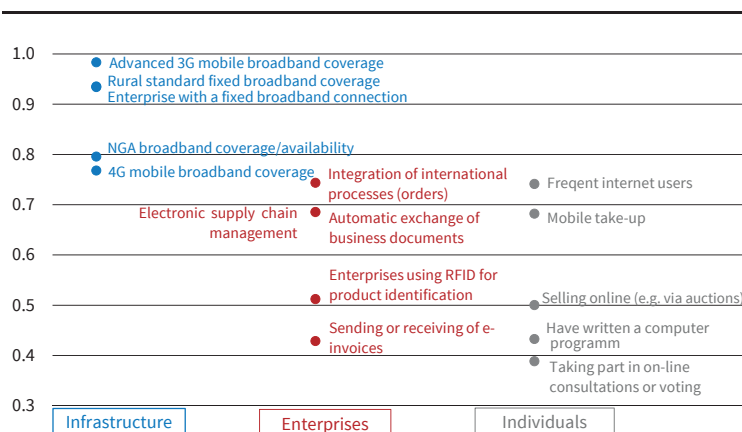
Source: Digital Agenda Scoreboard; Cologne Institute for Economic Research.   © ifo Institute

Figure 2
Adoption lags of new technologies

Adoption lags

Source: CHAT database; Cologne Institute for Economc Research.

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Unfortunately, the DAS data is limited to EU countries and is still somewhat incomplete as data only became available for many technologies and countries in recent years. To interpret the technologies' penetration rates with respect to the probability of current or future productivity leaps, we will therefore look at the historical perspective of technology diffusion; and especially the role of digitization's technology diffusion. Before determining historical penetration rates, we focus on adoption rates – the amount of time an average country needs to implement a new technology. This is the pre-condition for penetration.

The adoption and penetration rates presented in Figures 2 and 3 are calculated from the CHAT database, which contains more than 100 technologies in over 150 countries, starting in 1800 and ending in 2003 (Comin and Hobijn 2004; Comin and Hobijn 2009). We proxy the invention year of a technology by using the first data entry on the respective technology for any country. Hence, our invention year is likely to be biased to the right, as numbers might not immediately be reported after the introduction of a technology. Figure 2 plots the proxied invention year against the mean adoption rate of all countries and only OECD countries. The first entry for automobiles, for example, is the year 1895. On average, it took 42 years for the first car to be used in most countries (30 years in those countries known today as OECD countries).

In general, adoption rates of new technologies have decreased significantly over the last 200 years. The newest technologies listed in the database only needed a few years to diffuse in all countries in the sample, whereas an adoption lag of several decades used to be the rule rather than the exception just 50 years ago. Furthermore, adoption lags have decreased independently of whether the OECD membership or the entire

sample is considered. In the past, however, an OECD economy has always introduced technologies faster than the average country.

Unfortunately, the sample only includes data up to the year 2003, so brand new digitization technologies cannot be analysed. However, the newest relevant ICT technologies available at the time – the use of personal computers, mobile phones and the Internet – do fit nicely in the adoption rate's acceleration. What is more, anecdotal evidence suggests that the speed-up of technology adoption has tremendously increased in the last few years: new technologies have been adopted not after years, but after weeks or even days. Google+, for example, was used by 10 million people after only 16 days (Ernst & Young 2011).

Due to the facilitated access to real-time networks and the proceeding value chain internationalization, an interpolation of this trend for new technologies, for instance with respect to 'Industrie 4.0', seems extremely probable. In a nutshell, the trend, extracted from Figure 2, confirms that the pre-conditions for the digital revolution are in place. To analyse European technology diffusion further, we now turn to historical penetration rates.

Figure 3 plots the technologies' average penetration rates, defined in equation (1) as the ratio of the average use in the technology peak year in all countries, but the frontier country and the technology use in the respective frontier country. Again, we define the technology's penetration rate as zero if it is used in only one country, and one if it is equally used in all countries. The usage of automobiles, for instance, reached its highest rate in 2001 when 0.8 cars per capita were registered in the United States. The average value of registered cars over all countries was only 0.16 cars per capita, leading to a penetration rate of 21 percent (56 percent for today's OECD countries). This means that the number of

Figure 3

Penetration rates of leading technologies
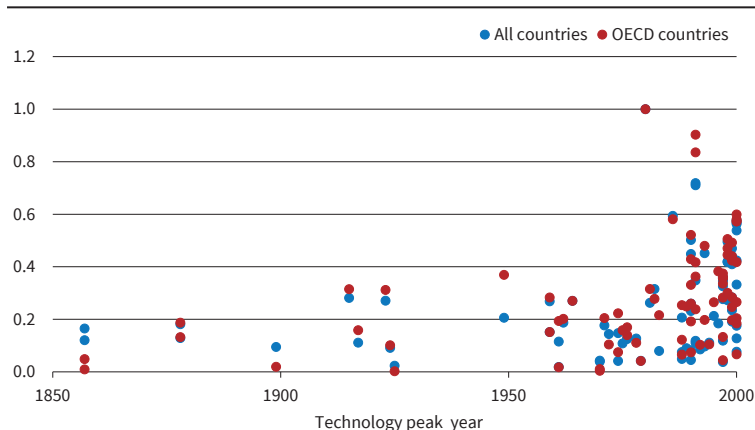
Source: CHAT database; Cologne Institute for Economic Research.

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cars per capita is 21 percent in an average country (56 percent in OECD countries) compared to the amount of automobiles per capita in the United States.

Whereas OECD country penetration rates are slightly higher than the penetration rates for the entire sample, the striking feature of Figure 3 is the increasing dispersion of the rates over time. From the 1990s onwards in particular, countries begin to use some technologies with equal intensity. Other technologies are used with very different intensities, resulting in penetration rates of less than 30 percent. With respect to the ICT technologies in the sample, personal computer, mobile phones and the internet, we find especially high penetration rates within the OECD country sample. The OECD penetration rate for internet use – with Sweden being the country from the sample with the highest take-up, amounts to 58 percent in the peak year 2002, while the penetration rate of the entire sample is only 21 percent. This shows a similar picture as in Figure 1.

Again the Nordic European countries and the United States are at the technology frontier for ICT technologies. In fact, these countries also had high TFP growth before the financial crisis – the period after the last data point of the CHAT sample. Again, this could be interpreted as meaning that paving the way for productivity-driving innovations by strengthening pre-conditional digitization technologies might be a very effective productivity policy.

Hence, the low penetration rate for non-OECD countries in ICT technologies might be a huge problem in the future. It is also possible, however, that penetration rates in Figure 3 are constantly biased downwards as more countries enter the sample over time. If that were to prove the case, we would underestimate technological convergence and overestimate the technological leader's advantage over the followers. In fact, the sample gradually increases from 49 countries (21 OECD countries) in 1900 to 147 countries (30 OECD countries) in 2000. In order to eliminate the possibility of a misinterpretation, we construct a penetration time-series index for OECD countries, non-OECD countries and the entire sample by the formula in equation (2). To build the mean penetration time series, we calculate the ratio between each technology i's use and this technology's use of the frontier country in the respective year. Then, for each country and year from 1900 on, we take the arithmetic mean of all technology ratios: dividing the mean of all technologies by I, the number of technologies used. Finally, we build the regional aggregates by taking the arithmetic mean of the corresponding country groups.

Figure 4 visualizes that, in fact, penetration rates increased constantly for the entire sample between the 1950s and the 1980s, but subsequently stagnated for non-OECD countries. During the same period, the average penetration rate of OECD countries increased from around 30 percent to 55 percent. This means that the group of OECD countries became highly homogeneous, whereas non-OECD countries were left behind with respect to technology diffusion. This result is especially interesting when compared to the results of Figure 3. Looking at the penetration rates with respect to the technology's peak use, we find a strong dispersion during the final years of the sample period.

The time-series index indicates a homogenisation of technology use between OECD countries – represented by the different penetration rates' increasing arithmetic mean towards the end of the sample period in Figure 3. Digitization technologies increase for OECD countries (e.g. 0.58 penetration for the use of internet) and decrease mean penetration rates for the entire sample (e.g. 0.21 penetration for the use of internet). This observation supports the interpretation that digitization offers strong potential – for intra industry trade for example – especially for developed economies. Developing countries, by contrast, still have to catch up with respect to the pre-conditions before being able to exploit productivity-enhancing innovations.

IS DIGITIZATION PRODUCTIVITY DRIVING PRODUCTIVITY ALREADY?

To a certain extent, the Digital Agenda Scoreboard database allows us to further test digitization's impact on productivity in recent years; despite the fact that the data is somewhat incomplete and unfortunately, no comparable numbers could be found about the United States. For our further analysis, we use the same 15 digital technologies categorized as in Figure 1: infrastructural pre-conditions, enterprises' as well as individuals' digital empowerment in line with Evangelista *et al.* (2014).

To test the productivity enhancement of digital technologies, we would like to check how different lags in the technology use indicator drive productivity progress today. To proxy recent productivity development,

$$(2) \qquad pen_t = \frac{\sum_i \frac{\left(\sum_{j=1}^{J-1} tech_{i,j,t}\right)/(N-1)}{tech_{i,front,t}}}{I}$$

Figure 4

Average penetration rates given fixed country composition
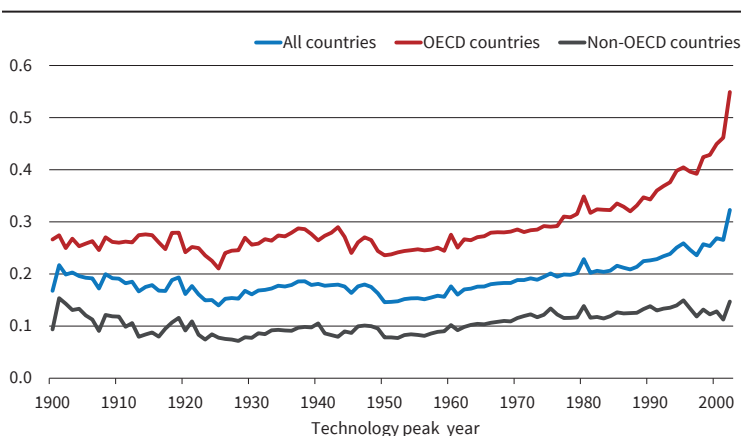
Source: CHAT database; Cologne Institute for Economc Research.　　© ifo Institute
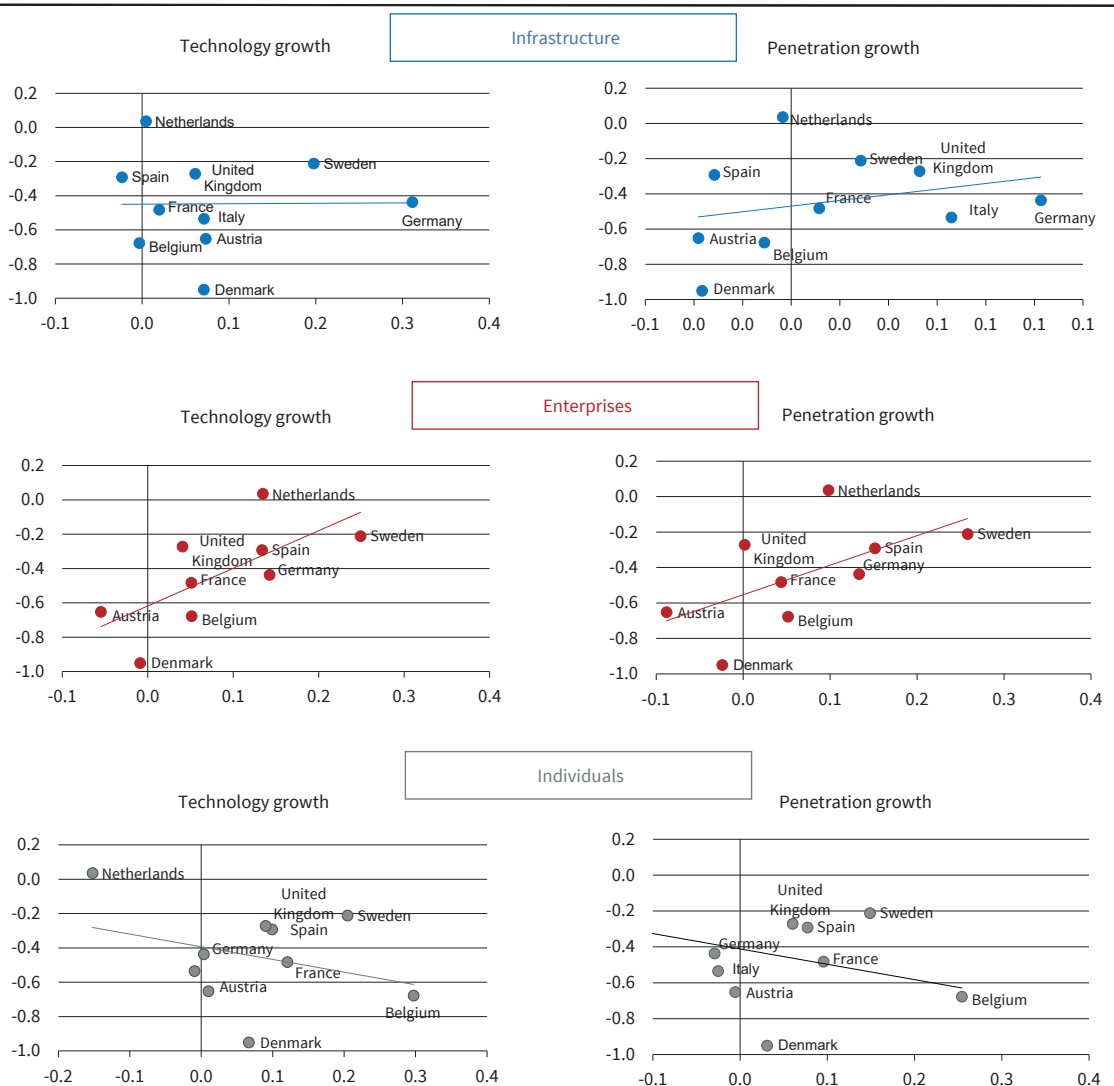
we take the arithmetic mean of the TFP contributions to GDP growth in 2013 and 2014. Constructing the lagged technology use indicator is more difficult. Unfortunately, the database does not contain entries for all technologies that allow for the different lag's consistent calculation of changes in technology use (absolute measure of technology intensification) and in technology penetration rates (relative measure of technology intensification). In order to construct an indicator with sufficient lead, we take the annual percentage change of technology use and penetration between 2008 or 2009. For those technologies where these data points are missing, we take the average annual percentage change in use and penetration (calculated as defined in formula (2) between the first two data points available.[1]

1   For the NGA broadband coverage, rural broadband coverage as well as 4G and advanced 3G coverage this is between 2011 and 2012; for mobile phone take-up between 2009 and 2010; for individual programming skills between 2009 and 2011; for individuals taking part in online consultations between 2011 and 2013; for enterprises using RFID for product identification between 2011 and 2014.

After taking the arithmetic mean of the five technologies' use and penetration rates in the three respective groups, we calculate the groups' yearly average percentage change in technology use and penetration in the first two data points available after 2008 against the average change in TFP in 2013 and 2014. We limit our analysis to the ten biggest EU-economies ranked by GDP – whereas enterprise technology data is missing for Italy.

Figure 5 demonstrates the results from this procedure in six graphs. It should be noted that in 2013 and 2014 Total Factor Productivity decreased in all countries apart from the Netherlands. Hence, all but the Dutch dots are located below the horizontal axis. Interestingly, the percentage change in the penetration rate's sign differs over the three groups: for the infrastructural and individual group some penetration rates increased and others decreased – in many cases indicating that technology frontier countries have lost their relative advantage by an absolute decrease in technology use. By contrast, the group of applied digitization technology use of enterprises experienced basically only positive percentage changes in the penetration
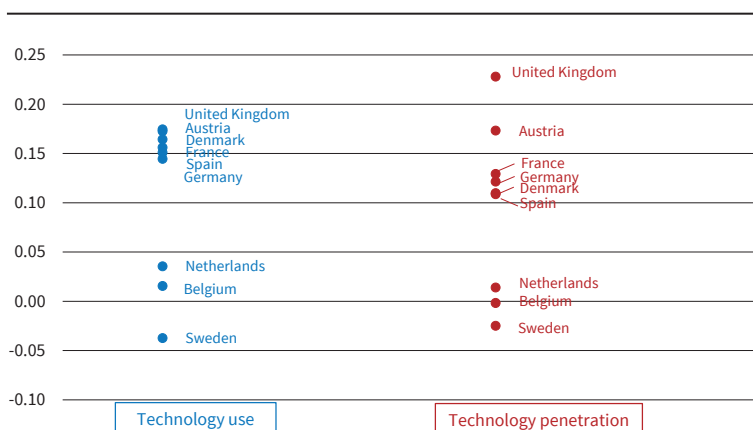
Figure 5

TFP growth 2013–2014 given percentage change in past technology use and penetration

Source: Digital Agenda Scoreboard; Cologne Institute for Economic Research.

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Figure 6

Country ranking by the enterprise's use and penetration of digital technologies

Source: Digital Agenda Scoreboard; Cologne Institute foe economic Research.

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logical progress, but in extraordinary times such as during the financial crisis, TFP apparently fails as a productivity measure.

Ongoing digitization constitutes another 'extraordinary time period' with regard to TFP's accuracy. On the one hand, we are possibly failing to measure enhanced productivity it with our strict national accounts statistics and need to change our measurement of both GDP and TFP. On the other hand, it is possible that current low TFP growth is driven by the fact that digitization is still lacking productivity-enhancing complementary innovations. Thus, we would expect productivity to increase in the future.

In order to scale down the TFP black box, we decide to zoom in on technology diffusion, and especially digitization's technology diffusion. We find that technology adoption rates today are far higher than historical technology adoption. Digitization technologies in particular are a driver of this process. With respect to technology penetration we find a strong increase in the dispersion of penetration rates between OECD and non-OECD countries over time. It is possible that non-OECD countries have improved their technology use over time; in relative terms, however, they have not. This particularly holds for digitization technologies such as internet use.

Focusing on digitization technologies in Europe, we find high penetration rates for the digitization infrastructure. Follow-up technologies, applied by enterprises and individuals are not totally diffused yet. Strikingly, a strong change in the diffusion of enterprises' digital empowerment seems to be productivity enhancing in the future. Although a sensible estimation of the digitization effect's size is beyond the scope of this paper, ranking countries by their intensity of digitization technology use does provide some insights: digitization is currently applied most dynamically in UK companies. No such effect can be found with respect to digitization's infrastructure, or to individual digital empowerment. Front-running enterprises need to step in and apply digitization technologies in order to trigger technological progress measurable on a large macro scale.

Thus, if digital innovations are in the pipeline, productivity policy should ensure that the pre-conditions for complementary innovations are in place. Enterprises will take their chances if infrastructural and regulatory obstacles are removed. Digitization is most probably the driving force behind future productivity progress.

rate, which also indicates a relative catch-up effect, with all countries except from Austria and Denmark intensifying their use of the respective technologies. The similarity between the graphs on the individual digitization technology use and penetration can be explained by the fact that the relative change in comparison with the technology frontier strongly overlap with the actual change in the technology use.

Strikingly, a strong correlation between the change in use and penetration several years ago with TFP growth in 2013 and 2014 can only be found for the enterprises' digital empowerment. Statistically, the correlation between enterprises' penetration of digitization technology, and later TFP, growth are significant at the 10 percent significance level. The enterprises' growth in digitization technology use yields even more significant results: The correlation between technology use and TFP growth is significant at the 5 percent level. For the infrastructural and individual group, the visual and econometrical analysis shows no such relationship. Again, this result strengthens our findings from above: infrastructure might be only a necessary condition for productivity growth – by itself, it does not trigger productivity. It might also be possible that changes in a country's infrastructure have productivity effects that kick in after a longer time lag. Unfortunately, the data does not allow comprehensive testing of this hypothesis.

As soon as enterprises start applying productivity enhancing technologies, an impact on TFP can be found; even at the macro-level. The limited data amount and quality, however, does not allow for a sensible estimation of this effect's size. Unfortunately, it is impossible to impute data in order to micro-econometrically test different lag levels due to structurally missing data in the past. The data available for several years is insufficient to reasonably apply imputing techniques on the technology level.

CONCLUSION

Measuring the level of technological progress is difficult. The most commonly applied measure is TFP. In general, this might be a reasonable approximation for techno-

REFERENCES

Andrews D. and C. Criscuolo (2013), *Knowledge-Based Capital, Innovation and Resource Allocation,* OECD Economics Department Working Paper 1046.

Ark van, B. (2014), *Total Factor Productivity: Lessons from the Past and Directions for the Future,* National Bank of Belgium Working Paper 271.

Ark van, B., M. O'Mahony and M. Timmer (2008), "The Productivity Gap between Europe and the United States: Trends and Causes", *Journal of Economic Perspectives* 22, 25–44.

Brasini S. and M. Freo (2012), "The Impact of Information and Communications Technology: An Insight at Micro-Level on One Italian Region", *Economics of Innovation and New Technology* 21, 107–123.

Comin D. and B. Hobijn (2004), "Cross-Country Technology Adoption: Making the Theories Face the Facts", *Journal of Monetary Economics* 51, 39–83.

Comin D. and B. Hobijn (2009), *The CHAT Dataset*, Harvard Business School Working Paper 10–35.

Demary, M. and M. Hüther (2015), "When Low Interest Rates Cause Low Inflation", *Intereconomics* 50, 350–355.

Diermeier, M. and M. Hüther (2015) „Mit dem großen Hebel für mehr Investitionen: ökonomische Bewertung des Juncker Plans", *Wirtschaftsdienst* 95, 334–341.

Ernst & Young (2011), *The Digitisation of Everything: How Organizations Must Adopt to Changing Consumer Behaviour,* London.

European Commission (2015), *Better Regulations for Innovation-Driven Investment at EU Level,* Commission Staff Working Document, Brussels.

Evangelista R., P. Guerrini and V. Meliciani (2014), "The Economic Impact of Digital Technologies in Europe", *Economics of Innovation and New Technology* 23, 802–824.

Fornefeld M., G. Delaunay and D. Elixmann (2008), *The Impact of Broadband on Growth and Productivity,* http://breitbandinitiative.de/wp/wp-content/uploads/2009/04/2008_micus-studie-broadbandeu_long.pdf.

Gordon R. (2012), *Is U.S Economic Growth Over? Faltering Innovation Confronts the Six Headwinds*, NBER Working Paper 18315.

Grömling M. (2016a), "Digitale Revolution – eine neue Herausforderung für die Volkswirtschaftlichen Gesamtrechnungen?", *Wirtschaftsdienst* 96, 135–139.

Grömling, M (2016b), "The Digital Revolution – New Challenges for National Accounting?", *World Economics* 17, 1–13.

Inklaar, R., M. O'Mahony and M. Timmer (2005), "ICT and Europe's Productivity Performance, Industry-Level Growth Account Comparison with the United States", *Review of Income and Wealth* 51, 505–536.

Jorgeson D., M. Ho and K. Stiroh (2004), "Will the US Productivity Resurgence Continue?", *Current Issues in Economics and Finance* 10(13), 1–7.

National Technical Assistance, Training Research and Evaluation Project (NTATREP, 2006), *Measuring Broadband's Economic Impact,* Final Report Prepared for the U.S. Department of Commerce, Economic Development Administration Project #99-07–1329.

OECD (2004), *The Economic Impact of ICT: Measurement, Evidence and Implications*, Paris.

Summers L. (2014a), "U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound", *Business Economics* 49, 65–73.

Summers L. (2014b), "Reflections on the 'New Secular Stagnation Hypothesis'", in: Teulings, C. and R. Baldwin (eds.), *Secular Stagnation: Facts, Causes and Cures*, CEPR Press, VOXeu.org.

Thompson, G. and C. Garbacz (2007), "Mobile, Fixed Line and Internet Effects on Global Productive Efficiency", *Information Economics and Policy* 19, 189–214.

The Conference Board (2016), *Total Economy Database.*

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Innovations to the ifo World Economic Survey

The ifo World Economic Survey (WES), a worldwide international economic survey, is well established at the ifo Institute and has been conducted for over 30 years. WES aims to provide an accurate picture of the current economic situation, as well as economic trends in over 100 key advanced, emerging or developing economies by polling over 1,000 economic experts on a quarterly basis. After its launch in 1981 no major methodological changes have been implemented, except for some slight adjustments in the WES questionnaire. As of 2017 there are three innovations: the balance statistics are applied in analogy to the Ifo Business Climate, regional aggregates are now constructed using real gross domestic product as weights, and the definition of regional aggregates is in accordance with the International Monetary Fund.

WES is an economic tendency survey, which uses qualitative information. Rather than indicating a numeric value (e.g. 2.5 percent) for the assessment of a macroeconomic variable (e.g. expected inflation rate), respondents can choose an answer out of the multiple-choice categories 'positive' (e.g. 'higher'), 'neutral' (e.g. 'about the same') or 'negative' (e.g. 'lower'). For each country covered by WES, the percentage shares of the three categories are calculated for each point in time. Because it is difficult to interpret the evolution of the three shares simultaneously, tendency survey results are normally converted into a single statistic. Following international practice, the Ifo Institute uses the so-called "balances" approach (OECD 2003).

BALANCES

The qualitative questions in the WES have three possible categories: 'good / better / higher' (+) for a positive assessment resp. improvement, 'satisfactory / about the same / no change' (=) for a neutral assessment, and 'bad / worse / lower' (−) for a negative assessment resp. deterioration. The individual replies are combined for each country as an arithmetic mean of all survey responses in the respective country. Thus, for the time t for each qualitative question and for each country i the respective percentage shares (+), (=) and (−) are calculated. The balance $B_{i,t}$ is the difference between (+)- and (−)-shares:

$$(1) \quad B_{i,t} = 100 \, \frac{(+_{i,t}) - (-_{i,t})}{n_{i,t}},$$

whereas $n_{i,t}$ reflects the number of respondents in country i in time t.

In case all experts give a positive assessment, then $(+_{i,t}) = 1$ and $(-_{i,t}) = 0$ and the balance is + 100 points; in case all experts have a negative opinion, then $(+_{i,t}) = 0$

and $(-_{i,t}) = 1$ and the balance is at − 100 points. As a result, the balance ranges from − 100 points and + 100 points. The mid-range lies at 0 points and is reached if the share of positive and negative answers is equal. The neutral category is ignored when balances are calculated.

An example for the calculation of balances

Out of 20 experts, five assess the economic situation of their country as good, eight as satisfactory and seven as bad. The positive replies (5) and the negative replies (7) are now netted (5 − 7 = −2), divided through the amount of all received responses (20) and multiplied by 100. The value of − 10 balance points reflects experts' assessment of the present situation in the country.

The calculation of the economic climate

When the Ifo Institute reports its WES results, the main focus lies on the so-called economic climate *(GSCL)* of a country i at time t. It is calculated as the geometric mean of the balance of the current economic situation *(GSON)* and the balance of the economic expectations for the next six months *(GSOF)*:

$$(2) \quad GSCL_{i,t} = \sqrt{(GSON_{i,t} + 200)(GSOF_{i,t} + 200)} \cdot$$

The economic climate also ranges between − 100 and + 100 points.

NO MORE INDEXATION

In the past the Ifo economic climate and its components – the current economic situation and the economic expectations for the next six months – were presented as an index with reference to a specified base year, i.e. 2005=100. This presentation, however, posed a number of problems. With the index it was impossible to make both a comparison of the level of the economic climate across countries and a statement about the level of the climate and its components at the time the survey was conducted. Comparisons had to be made with respect to the base year and were thus limited to the time series itself. A cross-sectional comparison at time t, which is the advantage of a uniform and international economic survey, was impossible.

These problems are illustrated in Figures 1a und 1b, which reflect the current situation, economic expectations and the economic climate in the euro area. While Figure 1a shows the indices, Figure 1b shows the balances. The individual movements in the time series are identical; but with the indexation the level shifts. Thus, the indexed expectations (yellow line in Figure 1) rose in the years 2013 and 2014 (grey shaded area) to over 100 index points and was nearly at the same level as the current economic situation (red line in Figure 1). The most obvious assumption is that the relative shares of both variables are identical and that the majority of experts assess the current situation as good, and their expectations are optimistic, due to an index value of
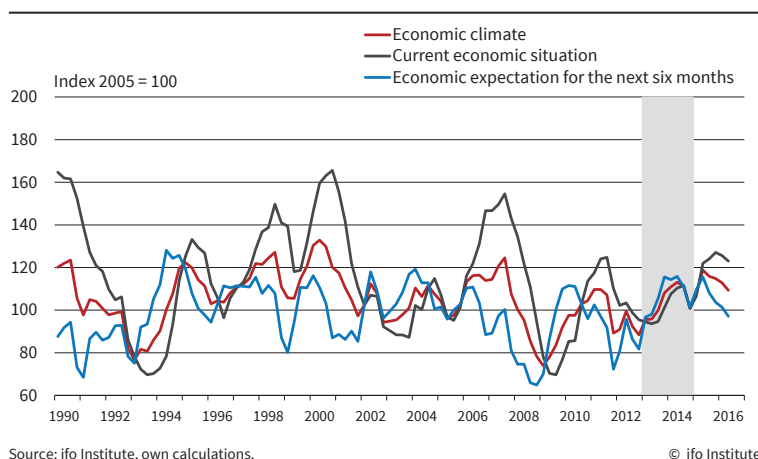
Johanna Garnitz
ifo Institute
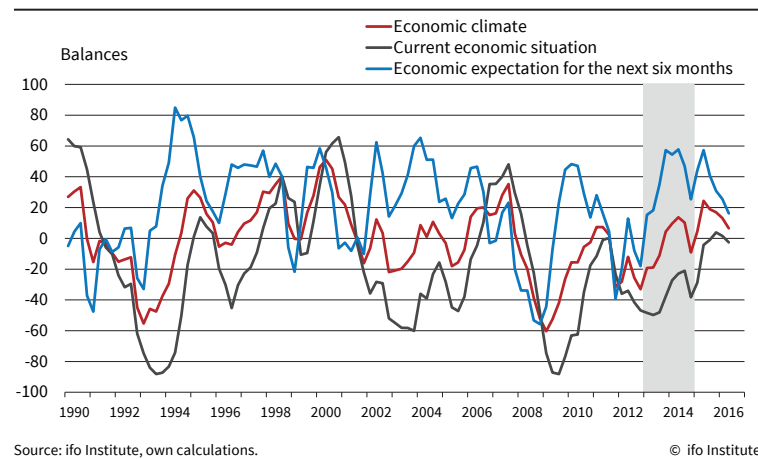
Timo Wollmershäuser
ifo Institute

Figure 1a

Euro area index value

Source: ifo Institute, own calculations.   © ifo Institute

Figure 1b

Euro area balances

Source: ifo Institute, own calculations.   © ifo Institute

terly year-on-year growth rate of real GDP. The trend was extracted using the Hodrick-Prescott filter with a smoothing parameter of lambda equal to 1600, which is commonly used for quarterly data. The criteria for including a country in the analysis were the availability of quarterly annual growth rates and a sufficient number of WES experts in the survey (at least 10). The analysis covers the period from the first quarter of 1989 to the fourth quarter of 2015, summing up to 2,469 observations in 56 countries shown as a scatter plot in Figure 2.

The WES balances show a positive correlation with the deviation of the GDP growth rate from its trend, which is significantly different from zero (black regression line in Figure 2). Thus, on average an improvement in the WES climate of a country goes along with an increase of a country's GDP growth rate. For a given trend growth rate, the estimated slope coefficient signals an increase in the GDP growth rate by 0.34 percentage points if the WES climate improves by 10 balance points. The intersection of the regression line with the vertical axis is at – 0.1 percentage

over 100 points. This assumption, however, is misleading. By observing the Figure 1b with balances, it becomes clear that at this time only expectations have positive balances and are far more positive than the current situation. While the current economic situation was assessed by the majority of experts as bad, economic expectations were on balance highly optimistic.

Thus the interpretation of balances is more intuitive. Therefore from the first release in 2017 the index values are dispensed and only balances are provided. By presenting the balances, the international uniform questionnaire offers the possibility for country comparisons.

THE ECONOMIC INTERPRETATION OF WES BALANCES

Another advantage of this presentation is that the balances can be economically interpreted. For this purpose, the economic climate of a country is compared to the country's de-trended quar-

points. However, as it is statistically not significantly different from zero, a WES balance of zero corresponds to a development whereby GDP grows with its trend rate. For positive WES balances, the GDP growth rate of an economy is above the trend growth rate, with negative balances below it.

Figure 2

Relationship between GDP growth and WES balances
All Countries

$$WR_{BIP} = -0.10_{(0.07)} + 0.034_{(0.003)} GSCL$$
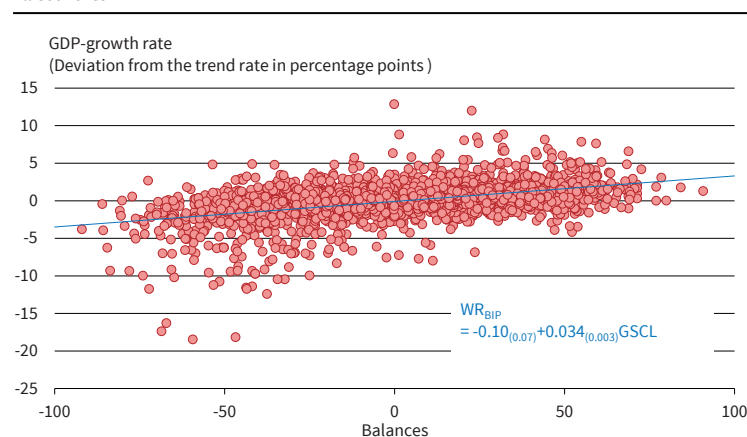
Note to the regression: GR_{GDP} reflects the de-trended growth rate.
The values in parenthesis contain the standard errors of the regression.

Source: National statistical offices; OECD; IMF; ifo Institute, own calculations.   © ifo Institute

WEIGHTING ACCORDING TO THE GROSS DOMESTIC PRODUCT BASED ON PURCHASING-POWER-PARITY

For the aggregation of WES-results to country groups (for example North America, Asia, euro area or OPEC countries), trade figures were used as country weights until now. To this end, the weighting factor w was calculated by using exports Ex und imports Im in US dollars of a country as a share of total world trade of n countries in a total group. The trade figures, which were published by the UN, were in general available after a period of two years $(t-2y)$:

$$(3) \quad w_{i,t} = \frac{Ex_{i,t-2y} + Im_{i,t-2y}}{\sum_{i=1}^{n}(Ex_{i,t-2y} + Im_{i,t-2y})}$$

From now on the weighting factors are calculated using the gross domestic product based on purchasing-power-parity of each country:

$$(4) \quad w_{i,t} = \frac{GDP_{i,t-2y}}{\sum_{i=1}^{n} GDP_{i,t-2y}}.$$

The database used for the gross domestic product based on purchasing-power-parity is the World Economic Outlook of the International Monetary Fund. In order to guarantee a uniform dating across countries, country weights are calculated using GDP data of the year prior to the previous year $(t-2y)$. With this adjustment, the Ifo Institute adopts the methodology for aggregation used in international organisations (see IMF, OECD). For Asia, for example, the comparison of both the new and old aggregation only shows small differences (Figure 3).

Figure 3

Economic climate for Asia applying old and new country weights
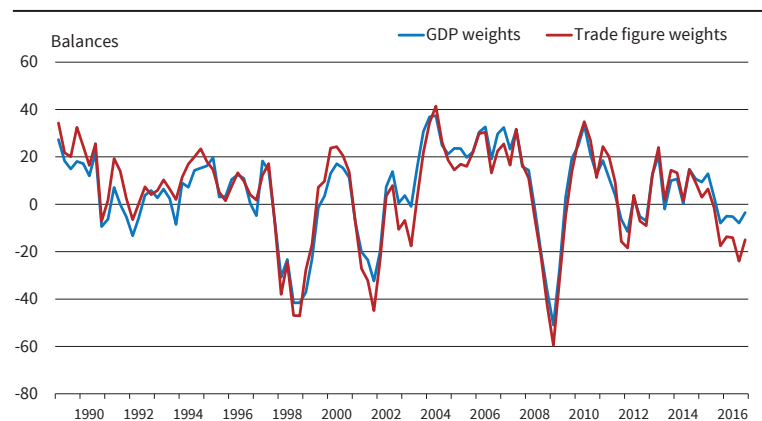
Source: ifo Institute, own calculations.   © ifo Institute

OTHER COUNTRY AGGREGATES

Finally, the regional aggregates have been revised. The classification according to country income-groups is no longer standard. Instead it is common practice to draw a distinction between advanced 'economies' and 'emerging and developing economies'. To select the new regional aggregates, the Ifo Institute closely followed the approach of the International Monetary Fund (see Table 1 for a summary).

By aligning the WES indicators with the definition of the International Monetary Fund, each country group can now be compared with the macroeconomic time series provided by the IMF (see Figure 4).

CHANGES IN THE QUESTIONNAIRE

Apart from the recurring questions about macroeconomic variables and their expected changes, the WES questionnaire also covers a number of semi-annual questions referring to certain topics. Those questions do not have a neutral answer category, or a symmetric middle respectively. Instead, the questions deal with the extent of an existing problem, for example how the supply of bank credit to firms is constrained by bank-specific factors. The possible multiple-choice responses are 'not constrained / moderately constrained / strongly constrained'. The time series reflects the unweighted shares of survey respondents indicating moderate and strong constraints; and thus gives a measure of the degree of credit constraints. The scale ranges from 0 to + 100. As for the questions related to economic problems, the previous three multiple-choice answers ('most important / important / not so important') will be reorganised as a yes/no question, whereas 'yes' stands for a current important problem and 'no' for no problem at present. The time series reflects the shares of 'yes' answers, so over time it is displayed if the intensity of a problem increases or decreases. The scale ranges from 0 (none of the survey respondents currently deems for example corruption as an economic problem) to 100 (every expert stated that this variable poses a problem to the economy).

Table 1
New aggregates in the WES

All countries								
Advanced economies			Emerging market and developing economies					
Euro	Major advanced economies G7	Other advanced economies	Commonwealth of Independent States (CIS)	Emerging and developing Asia	Emerging and developing Europe	Latin America	Middle East and North Africa	Sub-Saharan Africa
EU28			ASEAN5 (Indonesia, Malaysia, Philippines, Thailand, Vietnam)					

Source: ifo Institute.

Figure 4

Economic growth and Ifo Economic climate for emerging market and developing economies
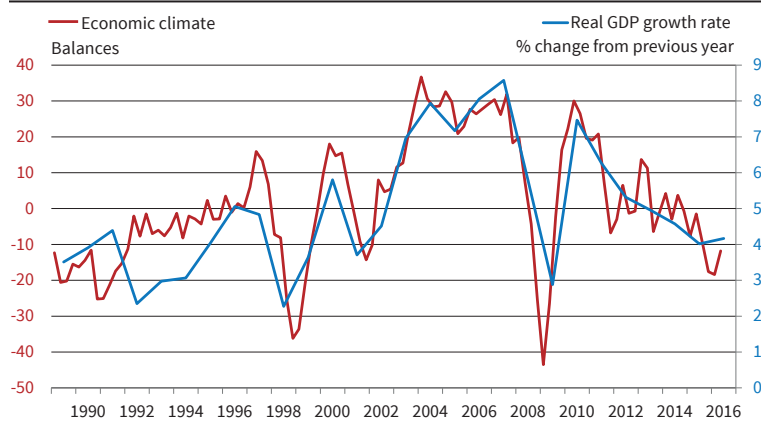
Source: IMF; ifo Institute, own calculations.   © ifo Institute

In addition, the list of problems has been adjusted. Variables for which there are official statistics in most of the countries, for example, *inflation, unemployment or public deficits,* are no longer included and are replaced by non-measurable variables such as a *lack of innovation, inadequate infrastructure, political instability, lack of credible central bank policy* and *widening income inequality.*

SUMMARY

The implementation of balances is an advantage to data users, as the WES results are now presented according to international standards. As a result, the data is more intuitive and easier to interpret. With a balance near zero, an economy or a region is growing at its trend rate. For positive WES balances, the GDP growth rate of an economy is above its trend growth rate, with negative balances below. The new regional aggregates, which are defined in accordance with the International Monetary Fund, and the new country weights render the WES indicators more user friendly, as their calculation is in line with the standards used by international organisations.

REFERENCES

OECD (2003), *Business Tendency Surveys: A Handbook – OECD,* http://www.oecd.org/std/leading-indicators/businesstendencysurvey-sahandbook.htm.

Panu Poutvaara
Beauty in Politics

INTRODUCTION

Good-looking people earn more money (Hamermesh and Biddle 1994), are treated better by other people (Langlois *et al.* 2000), and achieve higher status (Anderson *et al.* 2001). To test whether beauty provides an advantage also in politics, Niclas Berggren, Henrik Jordahl and I collected photos of more than 1,900 political candidates in Finnish elections. We then had the photos evaluated by respondents living outside of Finland and linked evaluations of beauty with electoral results. By collecting evaluations from people outside of Finland we avoid the risk that respondents' evaluations of a political candidate's beauty are influenced by existing opinions of the candidate or her party. In Berggren *et al.* (2010) we showed that good-looking candidates indeed have an electoral advantage, and that this relationship holds for both female and male political candidates. This relationship holds also if controlling for education or occupation.

In recent years, there has been a boom in research on candidate appearance and electoral success, and the finding that photo-based evaluations help to predict electoral outcomes has been confirmed around the world. Some researchers have collected evaluations of beauty or attractiveness, and others of perceived competence. The link between appearance and electoral success has been established in Australia (King and Leigh 2009), Brazil and Mexico (Lawson *et al.* 2010), Denmark (Laustsen 2014), Finland (Poutvaara *et al.* 2009; Berggren *et al.*, 2010), France (Antonakis and Dalgas 2009), Germany (Rosar *et al.* 2008), Ireland (Buckley *et al.* 2007), Japan (Rule *et al.* 2010), Switzerland (Lutz 2010), Britain (Banducci *et al.* 2008; Mattes and Milazzo 2014), and the United States (Todorov *et al.* 2005; Ballew and Todorov 2007; Olivola and Todorov 2010; Stockemer and Praino 2015). Poutvaara (2014) provides further references on the evidence showing that facial features predict success in politics, business and the military.

After the link between candidate appearance and electoral success was established, an important further question was whether that link is causal. Lenz and Lawson (2011) compared American voters who differed in terms of their political knowledge and in how much they watched television. As one would expect, they showed that the positive relationship between votes and an appealing appearance is most pronounced among voters with low political knowledge who also watch a lot of TV. Ahler *et al.* (2017) carried out a field experiment in which the treatment group received ballots that included candidate photographs, while the control group did not receive photographs. They found that voters in their treatment group were considerably more likely to vote for a candidate with an appearance advantage. These studies indicate a causal relationship between looks and electoral outcomes.

The political consequences of the role of beauty in politics depend on whether there are systematic differences in the looks of political candidates representing different parties. If such differences are at hand, they would tilt electoral outcomes towards the party or party bloc with better-looking candidates. Given the prominent role of politics in modern states, in terms of taxes, redistribution and public provision of various goods, this could have considerable economic consequences. In Berggren *et al.* (2017), we present a theory and provide an empirical analysis of the beauty differences between political parties on the left and on the right. Our main result is that conservative politicians look better and voters reward it. Our focus is on economically conservative politicians, representing parties that are less favorable towards redistribution. The rest of this article summarizes our findings and discusses their implications.

THEORY ON WHY CONSERVATIVE PARTIES HAVE BETTER-LOOKING CANDIDATES

Our theory suggests that politicians on the right look better and that voters on the right value beauty more in a low-information setting. We take as our starting point the beauty premium in the labor market – the well-established finding that beauty entails a higher income (Hamermesh and Biddle 1994). Since good-looking people earn more, they have less to gain and more to lose from redistribution. Fong (2001), and Alesina and Giuliano (2011) have shown that people with higher expected lifetime income are less likely to support redistribution. Together, these insights indicate that good-looking people are more likely to support political parties that embrace economic conservativism. A more general psychological mechanism could also play a role. Namely, as good-looking people are treated better, they are more likely to perceive the world as a just place, adopt conservative values and reject calls for radical change. A frequent reason for people to sympathize with the left is a perception of the world as unfair, and such feelings could be triggered by seeing that better-looking people are more successful, even though they do not appear very competent or hardworking.

In our theoretical model, there are two parties, L on the left and R on the right. We analyze voters' reactions to beauty within each party. Candidates thus compete against other candidates within the same party. The setting could be a proportional election with personal votes, or a party primary in which the party candidates for the general election are selected. Voters differ in their ideology. Candidates differ in their beauty and in their ideological congruence. Ideological congruence is modelled as a probability of the politician voting according to the party program if elected, instead of switching to supporting the other party's program. Such deviations may take alternative forms. An ideologically incongruent politician may switch to the

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other party during the electoral term, or stay in the party in which he or she was elected, but to refuse to follow its program. In European countries, incongruence would more likely be associated with changing party membership. In the United States, there have been several politicians, especially in the Senate, who have adopted a line differing from the party line.

We assume that informed voters observe a candidate's ideological congruence, but uninformed voters do not. Instead, uninformed voters use the candidate's beauty as a cue when forming an expectation on the candidate's ideological congruence. As beauty is associated with conservatism, the expected congruence of a politician running in party R increases in beauty, while the expected congruence of a politician running in party L decreases in beauty. At the same time as uninformed voters use beauty as a cue for ideology, both informed and uninformed voters may value beauty generally. Such a general appreciation of beauty could reflect a positive halo effect, of beautiful people being perceived more positively also in other dimensions. Some voters could also derive satisfaction from supporting good-looking candidates or watching them later in television. Voters could also expect that good-looking politicians are more effective in politics, either because they are more successful in persuading other politicians or are treated better by other politicians or the media. If the media tends to invite good-looking politicians, these have an advantage in getting their message through. This could be an argument to support them even for voters who do not care about beauty itself. As for the halo effect of good-looking people being perceived more positively, this could arise from hard-wired biological mechanisms. Already Darwin (1871) pointed out biological mechanisms behind the appreciation of beauty. In Berggren *et al.* (2010) we also show that evaluations of beauty, competence, intelligence, likability and trustworthiness are positively correlated.

We define the *beauty premium* as the rate at which a political candidate's vote share increases in his or her beauty. Our model predicts that as long as there are some uninformed voters, the beauty premium is larger for political candidates in party R. The reason is that uninformed conservative voters value beauty both in itself and as a cue for conservatism. Among uninformed voters in party L, beauty has two counteracting effects: a general valuation of beauty on the positive side, and a concern that beautiful candidates are more likely to sympathize with a conservative agenda on the negative side. Therefore, it is a priori unclear whether the overall beauty premium should be positive or negative among uninformed voters on the left. If all voters would be informed, then the beauty premium should be the same among politicians in party L and in party R, provided that their supporters value beauty in itself equally.

MEASURING BEAUTY

In order to test our hypothesis that politicians on the right look better than politicians on the left, we made use of the same data on Finnish politicians that we used in Berggren et al. (2010). In that survey, 2,513 respondents living outside of Finland were shown four randomly chosen photographs of Finnish political candidates, two of them men and two women. The respondents were from outside of Finland to ensure that the candidates were not recognized. Most respondents were from the United States (32 percent) or Sweden (31 percent), followed by France (9 percent), Germany (8 percent) and Denmark (5 percent).

Each respondent was shown one photograph at a time, and was also asked to indicate if he or she recognized the person in the photograph. None of the respondents living abroad recognized a candidate correctly. Our main question was:

What is your evaluation of the physical appearance or attractiveness of this person compared to the average among people living in your country of residence?

> Very unattractive (1)
> Below average (2)
> Average (3)
> Above average (4)
> Very handsome or beautiful (5)
> Cannot say/Prefer not to answer

For the data analysis, the replies were coded from 1 to 5, as indicated above. The survey included 1,356 facial photographs of candidates. The average number of evaluations per photo was nine. 684 photos were of women and 673 of men. 575 were from the 2003 parliamentary election and 782 from the 2004 municipal elections. Respondents were informed that they were evaluating political candidates, but were not given any other information about the photographs. Importantly, all photographs had been used by the political parties on their campaign posters, so these were the same photographs that voters had seen. We measured a candidate's beauty as his or her average evaluation among all respondents who did not abstain (abstention was rare when evaluating beauty).

We also collected photographs of all members of the European Parliament, and recruited 296 Mechanical Turk ('MTurk') respondents from the United States, each of them evaluating 99 photographs, using the same question. None of the respondents recognized any of the MEPs.

Beauty evaluations of American politicians were collected in a survey in which each of 19 respondents evaluated 301 candidates running in Senate elections from 2000 to 2008 and 248 candidates running in gubernatorial elections from 1995 to 2006. We used the same photos as Todorov et al. (2005) and Ballew and Todorov (2007), generously shared with us by Alexander Todorov. We excluded Barack Obama and all responses in which the respondents claimed to recognize the candidate.

Finally, for Australian politics we rely on data from King and Leigh (2009), who asked four Australian respondents to rate the physical attractiveness of 286 candidates in the 2004 election to the federal House of

Representatives. This data was generously provided by Andrew Leigh.

A BEAUTY GAP ON THREE CONTINENTS

We first confirmed our hypothesis that politicians on the right look better than politicians on the left in both municipal and parliamentary elections in Finland, for all candidates together and separately for both males and females, as shown in Table 1. This detailed table was presented in 2015 working paper version of our paper.

After establishing that politicians on the right are better looking in Finland, we proceeded to test this elsewhere. We confirmed that politicians on the right

Table 1

Average beauty evaluations of Finnish candidates

Election type	Municipal	Parliamentary
Candidates on the right	2.89 (0.71)	2.93 (0.62)
p-value of difference	0.000	0.000
Candidates on the left	2.59 (0.61)	2.70 (0.67)
Female candidates on the right	3.08 (0.79)	3.06 (0.67)
p-value of difference	0.000	0.000
Female candidates on the left	2.63 (0.67)	2.82 (0.74)
Male candidates on the right	2.68 (0.53)	2.78 (0.51)
p-value of difference	0.045	0.002
Male candidates on the left	2.56 (0.60)	2.56 (0.56)
Total No. of candidates	780	575

Notes: Candidates on the right belong to the National Coalition Party, and candidates on the left belong to the Social Democratic Party or to the Left Alliance (none of the respondents recognized any of the candidates). One observation is the average evaluation of one candidate. Standard deviations are in parentheses. P-values are from a t-test of equal means between candidates on the left and on the right.

Source: Berggren *et al.* (2015).

Table 2

	Beauty advantage (%)	Data source
Australia	32***	King and Leigh (2009)
European Union	25***	Own data
Finland	41***	Own data
United States	14**	Own data

Notes: 'Beauty advantage' is defined as the difference between the average beauty rating of politicians on the right and the left, expressed as a percentage share of the standard deviation of all politicians' beauty ratings. *** and ** denote statistical significance at the 1% and 5% levels in one-sided t-tests of the null hypothesis that politicians on the right do not look better than politicians on the left. Australia: candidates for the House of Representatives, with candidates on the right belonging to the Liberal Party of Australia and the National Party and 149 candidates on the left belonging to Australian Labor Party; European Union: Members of the European Parliament, with members of the Group of the European People's Party and Group of the Alliance of Liberals and Democrats for Europe (349 MEPs) being defined as belonging to the right and members of the Group of the Progressive Alliance of Socialists and Democrats in the European Parliament and Confederal Group of the European United Left - Nordic Green Left (219 MEPs) being defined as belonging to the left; Finland: candidates in municipal and parliamentary elections, with 465 candidates on the right belonging to the National Coalition Party and 891 candidates on the left belonging to the Social Democratic Party or to the Left Alliance; United States: candidates in Senate and gubernatorial elections, with 273 candidates on the right belonging to the Republican Party and candidates on the left belonging to the Democratic Party. Respondents evaluating Australian 272 candidates were Australian; respondents evaluating MEPs were American; respondents evaluating Finnish candidates were all non-Finns; and respondents evaluating American candidates were predominantly European.

Source: Berggren *et al.* (2017).

look better than politicians on the left not only in Finland, but also in the European Parliament, Australia and the Unites States, providing strong support for our hypothesis that conservative parties have better-looking candidates. Table 2 shows that parties on the right have a beauty advantage compared with parties on the left. The difference is smallest in the United States, with Republicans having on average 14 percent higher beauty ratings than Democrats. The beauty advantage for politicians on the right is considerably larger in Australia and Europe. Interestingly, conservative parties and parties on the left have traditionally been much wider apart than Democrats and Republicans, although the gap between Democrats and Republicans has dramatically widened in the past decade. Also, European and Australian parties traditionally have a stronger party discipline than in the American politics, which goes well together with a stronger difference between politicians representing parties on the left and on the right in Australia and Europe.

To further test whether political parties on the right have an advantage of being able to recruit their candidates from a pool of potential candidates who look better than those in the pool available to parties on the left, we used American National Longitudinal Study of Adolescent Health (Harris and Udry 2012). This survey includes interviewer evaluations of physical attractiveness and self-reported ideological position from very liberal (in the American sense of the term, i.e. left-oriented) to very conservative for 4,789 American youths. In line with our hypothesis, conservatism and beauty are positively correlated among men. These findings suggest that Republicans have had an advantage in recruiting good-looking politicians.

BEAUTY AS A CUE FOR IDEOLOGY

An important test of our hypothesis that voters use beauty as a cue for ideology comes from comparing the link between beauty and perceived ideology among politicians who belong, in reality, to the same bloc. We asked our respondents to evaluate, on the basis of photographs alone, which side each of the Finnish candidates represents. Table 3 shows that regardless of the true party of the

Table 3

Average beauty evaluations of Finnish candidates according to inferred ideolog

	Beauty	Observations
Candidates on the right inferred as right	2.96 (1.04)	1,658
p-value of difference	0.0001	
Candidates on the right inferred as left	2.82 (1.00)	1,401
Candidates on the left inferred as right	2.67 (0.98)	2,218
p-value of difference	0.0006	
Candidates on the left inferred as left	2.58 (0.96)	3,080

Notes: Standard deviations are in parentheses. Candidates on the right belong to the National Coalition Party. Candidates on the left belong to the Social Democratic Party or to the Left Alliance. One observation is one assessment of one candidate by one respondent. P-values are from one-sided t-tests of the null hypothesis that candidates on the right do not look better than candidates on the left. Respondents were all non-Finns.

Source: Berggren *et al.* (2015).

candidates, the average beauty of candidates classified as being on the right exceeds that of candidates classified as being on the left.

We also showed respondents photographs of either MEPs or US candidates and asked them to indicate on a scale from 1 to 10 where they expected each politician to be located on a left–right scale ranging from 1 (farthest to the left) to 10 (farthest to the right). These results, reported in detail in Berggren et al. (2017), showed that MEPs representing party blocs that we classify as left were placed to the left of MEPs representing party blocs that we classify as right. Correspondingly, Democrats were placed to the left of Republicans. We also regressed the politicians' inferred ideology on beauty evaluations from another pool of respondents, controlling for the gender and age of the politicians. It turned out that beautiful politicians, both in Europe and the United States, are placed farther to the right.

BEAUTY AND ELECTORAL SUCCESS

Let me now turn to the consequences of beauty for candidates in Finnish elections, competing against other candidates in the same party. Finland has a proportional electoral system in both municipal and parliamentary elections. Each voter has to vote for one candidate on a party list, which creates within-party competition among a large number of candidates. Seats are allocated using the D'Hondt method, in which the number of seats to each party list depends on the number of votes that all candidates on that list got together, relative to the number of votes that all other party lists got together. Within each party list, the seats are allocated in the order determined by the number of personal votes that the candidate got. Within-party competition in a proportional system allows us to study whether beauty matters more for candidates on the left or for candidates on the right.

Berggren *et al.* (2010 and 2017) measure a candidate's electoral success in Finland by the number of votes for that candidate, relative to the average number of votes for all candidates on the same list. Formally, denote the number of personal votes for candidate *i* on list *j* by p_i, and by v_j the sum of personal votes for all

candidates on list *j*, divided by number of candidates on list *j*. The relative success for candidate *i* on list *j* is given by:

$$(1) \ Relative \ success_{i,j} = \left(\frac{p_i}{v_j}\right) * 100.$$

An increase in the relative success by x means that the candidate's number of votes increased by x percent, relative to the average number of votes for all candidates on the same list. This measure controls for differences in party popularity, in district sizes and in the number of candidates that a party has in a district. Therefore, it can be used for all parties and in all districts, independently of differences in size or party popularity.

Municipal elections can be characterized as low-information elections as only a few candidates are 'career politicians' with a history of active campaigning and public visibility. The parliamentary election, instead, can be characterized as high-information election. Many parliamentary candidates have been active in municipal politics, and being a member of parliament is a full-time job. Also, campaigning is much more intense and features frequent media appearances.

Table 4 shows the regression results. The unreported dummies are *Young*, which denotes an age under 30, and *Old*, which denotes an age over 60, together with dummies for education. For both the municipal and the parliamentary elections, we report three specifications that differ in controls for education and in whether we interact the variables with unreported coefficients (age and education) with *Right*.

In line with our theory, Table 4 shows that the beauty premium on the right is about twice as big as the beauty premium on the left in low-information municipal elections, but about the same in parliamentary high-information elections. This result is robust to adding various controls. Importantly, we also find that there is a positive beauty premium on the left in municipal elections, suggesting that the general valuation of beauty has a stronger effect than its use as a cue for ideology. In municipal elections, a beauty increase of one standard deviation attracts about 8–9 percent more votes for the average non-incumbent candidate on the left, and 19–22 percent more votes for the average non-incumbent candidate on the right.

EXPERIMENTAL EVIDENCE

Does the higher beauty premium on the right reflect a causal mechanism, in line with what our theory suggests? To test this, we carried out an experimental election. We used 100 randomly selected photographs of candidates on the left from the Finnish elections and matched them with 100 photographs of candidates on the right. The matching was random subject to the constraints that the candidates should be of the same gen-

Table 4
Beauty premia of non-incumbent candidates in real elections

	Municipal Non-incumbents (1)	Municipal Non-incumbents (2)	Municipal Non-incumbents (3)	Parliamentary Non-incumbents (4)	Parliamentary Non-incumbents (5)	Parliamentary Non-incumbents (6)
Beauty	9.14***	8.36***	8.40**	15.92***	15.55***	13.50***
	(2.57)	(2.43)	(2.54)	(3.76)	(3.73)	(3.88)
Beauty × Right	9.76**	13.44***	11.22***	1.57	2.47	4.93
	(3.39)	(2.46)	(2.59)	(7.20)	(7.29)	(7.50)
Male dummy	− 20.05	− 19.06	− 18.13	5.01	5.41	6.79
	(10.95)	(10.95)	(9.94)	(6.12)	(6.24)	(5.35)
Male dummy × Right	25.00	26.88	21.32	2.22	1.55	0.93
	(19.53)	(19.13)	(21.39)	(12.47)	(12.67)	(11.61)
Age dummies	Yes	Yes	Yes	Yes	Yes	Yes
Education dummies	No	No	Yes	No	No	Yes
Unreported dummies interacted with Right	No	Yes	Yes	No	Yes	Yes
List fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of candidates	686	686	686	489	489	489
R-squared	0.02	0.02	0.03	0.06	0.06	0.07

Notes: The dependent variable is Relative success in the Finnish 2004 municipal and 2003 parliamentary election. Non-incumbent candidates do not serve in the office to which they are candidates. Candidates on the right belong to the National Coalition Party. Candidates on the left belong to the Social Democratic Party or to the Left Alliance. The education dummies are Comprehensive school or less (at most 10 years of schooling); Upper-secondary education (corresponds to 12 years of schooling); Vocational education (10–12 years of schooling); and University education (with a degree). Robust standard errors clustered at the list level are in parentheses. *** and ** denote statistical significance at the 1% and 5% levels. Respondents were all non-Finns.

Source: Berggren *et al.* (2017).

Table 5
Electoral success for candidates on the right in an experimental election

Respondent category:	Left	Right
Share of races won by candidate on the right	0.60**	0.72***
Average vote share of candidate on the right	0.57***	0.66***

Notes: A voter-respondent is on the right (left) if the answer to a question about whether redistribution in his or her country should be increased was 'somewhat against' or 'strongly against' ('somewhat in favor' or 'strongly in favor'). *** and ** denote statistical significance at the 1% and 5% level. For the average vote share the significance levels refer to p-values from one-sided t-tests of the null hypothesis that the vote share does not exceed 0.5. For the share of races won by the candidate on the right the significance levels refer to p-values from one-sided binomial tests of the null hypothesis that the probability of the right candidate winning is not larger than 0.5 in each pairwise election. Number of respondents on the right (left): 15 (21). Respondents were all non-Finns.

Source: Berggren *et al.* (2017).

Table 6
Beauty in an experimental election

	(1) Vote for the first candidate	(2) Vote for the first candidate
Beauty gap between the first and second candidate	0.22***	0.19***
	(0.01)	(0.01)
Right respondent × Beauty gap		0.06***
		(0.02)
Right respondent		− 0.002
		(0.02)
Constant	0.49***	0.49***
	(0.01)	(0.01)
R-squared	0.14	0.14
Observations	2,668	2,668

Notes: The first (second) candidate refers to the candidate whose photograph was placed to the left (right) on the survey page. The dependent variable is a dummy=1 for voting for the candidate placed first. The beauty gap is the average beauty score of the first candidate minus the average beauty score of the second candidate. Robust standard errors are in parentheses. *** denotes statistical significance at the 1% level. According to F-tests, neither of the constants differs from 0.5 at the 10% significance level. The sample includes respondents who are either classified as being ideologically on the left or on the right. "Abstain from voting" responses are excluded. Respondents were all non-Finns.

Source: Berggren *et al.* (2017).

der, of similar age and from the same type of election (municipal or parliamentary). The parts were shown to 41 respondents living outside of Finland who were asked in each pair, which person they would vote for, or if they would rather abstain if having to choose between voting for one of the persons based on the photographs alone, or abstaining.

We found that candidates on the right looked better in 61 of the 100 randomly matched pairs. Table 5 shows that the candidates on the right are also the more successful in this experimental election. This holds independently of the respondents' own ideology, measured by their answer to the question of whether they support a suggestion to increase redistribution in their country of residence. As shown in Table 5, candidates on the right von 60 percent of the races in experimental elections among respondents on the left, and 72 percent of the races among respondents on the right. As for the vote share difference, candidates on the right collected 57 percent of voters from respondents on the left and 66 percent of votes from respondents on the right. So with both measures, the beauty premium is larger among respondents on the right, in line with our theory.

We also tested whether respondents on the right react more strongly to beauty differences. Table 6 shows that they do. In it, we present regression results that show the probability of voting for the candidate whose photograph happened to be placed first. The first column shows that the candidate vote shares respond strongly to the beauty gaps. The second column shows that this holds for both respondents who are themselves on the left and for respondents who are themselves on the right, but that the difference is larger for respondents on the right.

CONCLUSION

To sum up, Berggren *et al.* (2017) show that politicians on the right are more beautiful than politicians on the left in Europe, the United States and Australia, that voters use beauty as a cue for candidate ideology, and that non-incumbent candidates on the right benefit more from beauty in low-information elections. Together with the previously established finding that good-looking candidates are more likely to win elections (see Todorov *et al.* 2005; Berggren *et al.* 2010), this implies that political parties on the right are bound to benefit from the role of beauty in politics. Since elections are often decided by a close margin, beauty can have major economic consequences by favoring the preferred policies of the right in terms of taxation, income transfers and public goods provision over the often quite different preferred policies of the left.

Our analysis is positive, but a lot of debate surrounding our findings and media requests relate to normative aspects. Is it a problem that voters reward beauty? Are voters mistaken when doing so? Our take is that voters have the right to decide whom to vote for, and at a fundamental level it would be inappropriate for researchers to tell people to discard a criterion that they have chosen to use. Yet, research on various behavioral biases can help people to overcome those. So, we hope that voters would spend a moment pondering about their susceptibility to appearances (as well as to easy rhetoric), and whether this may lead them to overlook more important criteria when making their choices. The finding that candidate appearance plays the biggest role among uninformed voters also suggests a way forward to those citizens worried about other people being persuaded by appearances. Making voters more informed would reduce the role of appearances, in addition to, hopefully, resulting also more directly in better policies. When alternative facts and other smoke and mirrors threaten to undermine even established democracies, the case for promoting informed debate based on facts, rather than alternatives to facts, goes well beyond its effects on the role of beauty in politics.

FURTHER READING

Berggren *et al.* (2017) generated wide media coverage, ranging to short mentions to analytical articles and can be read here (open access): http://www.sciencedirect.com/science/article/pii/S0047272716302201.

The following is link to an article in The Atlantic: https://www.theatlantic.com/politics/archive/2017/01/conservatives-liberals-trump/512987/

The following is link to an article in Washington Post: https://www.washingtonpost.com/news/wonk/wp/2017/01/10/conservatives-really-are-better-looking-research-says/

REFERENCES

Ahler, D.J., J. Citrin, M.C. Dougal and G.S. Lenz (2017), "Face Value? Experimental Evidence That Candidate Appearance Influences Electoral Choice", *Political Behavior* 39, 77–102.

Alesina, A. and P. Giuliano (2011), "Preferences for Redistribution", in: Benhabib, J., A. Bisin and M.O. Jackson (eds.), *Handbook of Social Economics*, Amsterdam: Elsevier.

Anderson, C., O.P. John, D. Keltner and A.M. Kring (2001), "Who Attains Social Status? Effects of Personality and Physical Attractiveness in Social Groups", *Journal of Personality and Social Psychology* 81, 116–132.

Antonakis, J. and O. Dalgas (2009), "Predicting Elections: Child's Play!", *Science* 323, 1183.

Ballew II, C.C. and A. Todorov (2007), "Predicting Political Elections from Rapid and Unreflective Face Judgments", *Proceedings of the National Academy of Sciences of the United States of America* 104, 17948–17953.

Banducci, S.A., J.A. Karp, M. Thrasher and C. Rallings (2008), "Ballot Photographs as Cues in Low-Information Elections", *Political Psychology* 29, 903–917.

Berggren, N., H. Jordahl and P. Poutvaara (2010), "The Looks of a Winner: Beauty and Electoral Success", *Journal of Public Economics* 94, 8–15.

Berggren, N., H. Jordahl and P. Poutvaara (2015), *The Right Look: Conservative Politicians Look Better and Voters Reward It*, Discussion Papers in Economics 24882, University of Munich, Department of Economics.

Berggren, N., H. Jordahl and P. Poutvaara (2017), "The Right Look: Conservative Politicians Look Better and Voters Reward It", *Journal of Public Economics* 146, 79–86.

Buckley, F., N. Collins and T. Reidy (2007), "Ballot Paper Photographs and Low-Information Elections in Ireland", *Politics* 27, 174–181.

Darwin, C. (1871), *The Descent of Man and Selection in Relation to Sex,* London: John Murray.

Fong, C. (2001), "Social Preferences, Self-interest, and the Demand for Redistribution", *Journal of Public Economics* 82, 225–246.

Hamermesh, D.S. and J.E. Biddle (1994), "Beauty and the Labor Market", *American Economic Review* 84, 1174–1194.

Harris, K.M. and J.R. Udry (2012), *National Longitudinal Study of Adolescent Health (Add Health), 1994–2008*, ICPSR21600-v9, Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2012-05-08, doi:10.3886/ICPSR21600.v9.

King, A. and A. Leigh (2009), "Beautiful Politicians", *Kyklos* 62, 579–593.

Langlois, J.H., L. Kalakanis, A.J. Rubenstein, A. Larson, M. Hallamm and M. Smoot (2000), "Maxims or Myths of Beauty? A Meta-Analytic and Theoretical Review", *Psychological Bulletin* 126, 390–423.

Laustsen, L. (2014), "Decomposing the Relationship between Candidates' Facial Appearance and Electoral Success", *Political Behavior* 36, 777–791.

Lawson, C., G.S. Lenz, A. Baker and M. Myers (2010), "Looking Like a Winner: Candidate Appearance and Electoral Success in New Democracies", *World Politics* 62, 561–593.

Lenz, G.S. and C. Lawson (2011), "Looking the Part: Television Leads Less Informed Citizens to Vote Based on Candidates' Appearance", *American Journal of Political Science* 55, 574–589.

Lutz, G. (2010), "The Electoral Success of Beauties and Beasts", *Swiss Political Science Review* 16, 457–480.

Mattes, K. and C. Milazzo (2014), "Pretty Faces, Marginal Races: Predicting Election Outcomes Using Trait Assessments of British Parliamentary Candidates", *Electoral Studies* 34, 177–189.

Olivola, C.Y. and A. Todorov (2010), "Elected in 100 Milliseconds: Appearance-Based Trait Inferences and Voting", *Journal of Nonverbal Behavior* 34, 83–110.

Poutvaara, P. (2014), "Facial Appearance and Leadership: An Overview and Challenges for New Research", *Leadership Quarterly* 25, 801-804.

Poutvaara, P. H. Jordahl and N. Berggren (2009), "Faces of Politicians: Babyfacedness Predicts Inferred Competence but Not Electoral Success", *Journal of Experimental Social Psychology* 45, 1132–1135.

Rosar, U., M. Klein and T. Beckers (2008), "The Frog Pond Beauty Contest: Physical Attractiveness and Electoral Success of the Constituency Candidates at the North Rhine-Westphalia State Election 2005", European Journal of Political Research 47, 64–79.

Rule, N.O., N. Ambady, R.B. Adams Jr., H. Ozono, S. Nakashima, S. Yoshikawa and M. Watabe (2010), "Polling the Face: Prediction and Consensus across Cultures", *Journal of Personality and Social Psychology* 98, 1–15.

Stockemer, D. and R. Praino (2015), "Blinded by Beauty? Physical Attractiveness and Candidate Selection in the U.S. House of Representatives", *Social Science Quarterly* 96, 430–443.

Todorov, A., A.N. Mandisodza, A. Goren and C.C. Hall (2005), "Inferences of Competence from Faces Predict Election Outcomes", *Science* 308, 1623–1626.

Chang Woon Nam*

World Economic Outlook for 2017 and 2018

According to the latest IMF world economic outlook,[1] global growth for 2016 is estimated to reach 3.1 percent, while it will continue to increase to 3.4 percent in 2017 and 3.6 percent in 2018. The projected growth rate for advanced economies amounts to 1.9 percent and to 2.0 percent for 2017 and 2018 respectively. Yet this forecast appears to be rather uncertain in light of the potential changes in the policy stance of the United States under the new Trump administration and its global spillovers. The primary force that will boost the overall global outlook over the period of 2017/18, however, is the anticipated rapid growth in emerging market and developing economies – see Table 1. This area's growth is estimated to be 4.1 percent in 2016 and is forecast to reach 4.5 percent for 2017, while IMF projects a further increase in growth to 4.8 percent in 2018.

Apart from the uncertainty related to the extent to which future policy stimulus will affect economic development in the United States or China, the IMF also sees some potential risks that could seriously impede short-term global economic performances. These risks include, for example: (a) a rapid shift toward protectionism; and (b) a sharp and strong tightening in global financial conditions that could interact with balance sheet weakness in some Eurozone members and emerging countries. In addition, terrorism and geopolitical tensions like civil war and domestic conflict in the Middle East and Africa and the worsening refugee and migration problems worldwide may also negatively affect global market sentiment and economic confidence.

Table 1
Overview of the World Economic Outlook projections (%)

	2015	2016[a]	2017[b]	2018[b]
World output	3.2	3.1	3.4	3.6
Advanced economies	2.1	1.6	1.9	2.0
US	2.6	1.6	2.3	2.5
Euro area	2.0	1.7	1.6	1.6
Germany	1.5	1.7	1.5	1.5
France	1.3	1.3	1.3	1.6
Italy	0.7	0.9	0.7	0.8
Spain	3.2	3.2	2.3	2.1
Japan	1.2	0.9	0.8	0.5
UK	2.2	2.0	1.5	1.4
Canada	0.9	1.3	1.9	2.0
Other advanced economies	2.0	1.9	2.2	2.4
Emerging market and developing economies	4.1	4.1	4.5	4.8
Commonwealth of Independent States	− 2.8	− 0.1	1.5	1.8
Russia	− 3.7	− 0.6	1.1	1.2
Excluding Russia	− 0.5	1.1	2.5	3.3
Emerging and developing Asia	6.7	6.3	6.4	6.3
China	6.9	6.7	6.5	6.0
India	7.6	6.6	7.2	7.7
ASEAN5[c]	4.8	4.8	4.9	5.2
Emerging and developing Europe	3.7	2.9	3.1	3.2
Latin America and the Caribbean	0.1	− 0.7	1.2	2.1
Brazil	− 3.8	− 3.5	0.2	1.5
Mexico	2.6	2.2	1.7	2.0
Middle East, North Africa, Afghanistan and Pakistan	2.5	3.8	3.1	3.5
Saudi Arabia	4.1	1.4	0.4	2.3
Sub-Saharan Africa	3.4	1.6	2.8	3.7
Nigeria	2.7	− 1.5	0.8	2.3
South Africa	1.3	0.3	0.8	1.6

Note: [a] Estimates; [b] Projections; [c] Indonesia, Malaysia, Philippines, Thailand and Vietnam.
Source: IMF.

Financial conditions in the euro area

## Nominal interest rates ᵃ
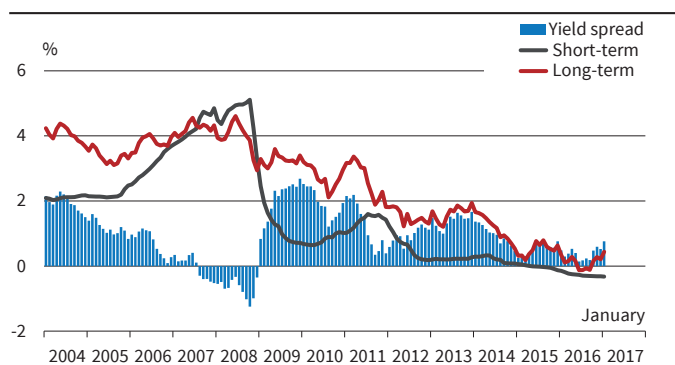
ᵃ Weighted averages (GDP weights).
Source: European Central Bank.   © ifo Institute

In the three-month period from November 2016 to January 2017 short-term interest rates slightly decreased: the three-month EURIBOR rate stood -0.33% in January 2017 compared to 0.31% in November 2016. Yet the ten-year bond yields increased from 0.28% to 0.44% in the same period. The yield spread reached 0.76% in January 2017, up from 0.59% in November 2016.

Stock market Indices
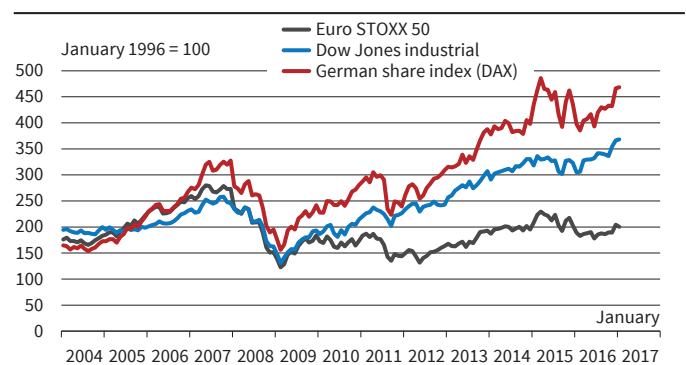
Source: Deutsche Börse; Dow Jones; STOXX; Datastream.   © ifo Institute

The German stock index DAX increased in January 2017, averaging 11,535 points compared to 10,649 points in November 2016. The Euro STOXX also grew from 3,052 to 3,231 in the same period of time. The Dow Jones International increased also, averaging 19,864 points in January 2017, compared to 19,124 points in November 2016.
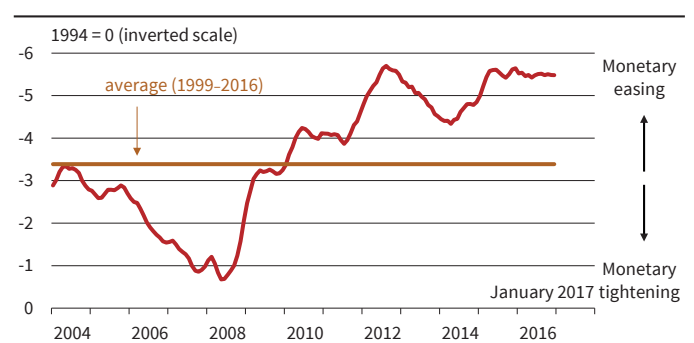
Change in M3 ᵃ
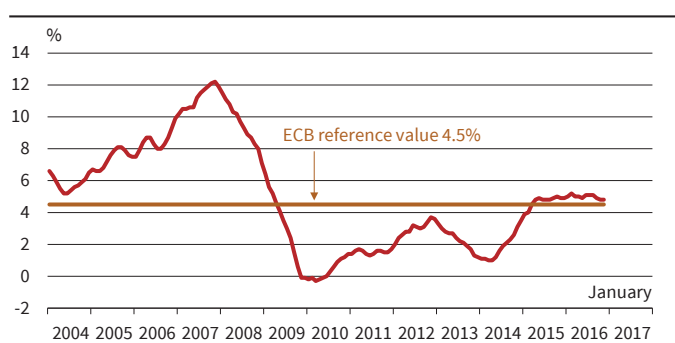
ᵃ Annual percentage change (3-month moving average).
Source: European Central Bank.   © ifo Institute

The annual growth rate of M3 increased to 5.0% in December 2016, from 4.8% in November 2016. The three-month average of the annual growth rate of M3 over the period from October 2016 to December 2016 reached 4.8%.

Monetary conditions index

Note: MCI index is calculated as a (smoothed) weighted average of real short-term interest rates (nominal rate minus core inflation rate HCPI) and the real effective exchange rate of the euro.
Source: European Central Bank; calculations by the ifo Institute.   © ifo Institute

Between April 2010 and July 2011 the monetary conditions index remained rather stable. This index then continued its fast upward trend since August 2011 and reached its peak in July 2012, signalling greater monetary easing. In particular, this was the result of decreasing real short-term interest rates. In December 2016 the index continued to slightly decline while some minor fluctuations have been observed in last months on a high level, comparable to that of July 2012.

EU survey results

Gross domestic product in constant 2010 prices
Percentage change over previous year
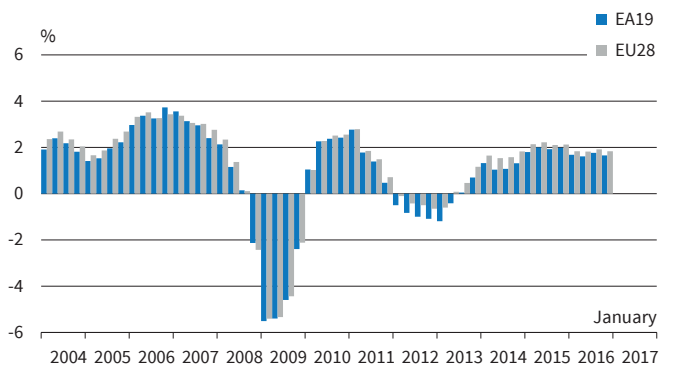
Source: Eurostat. © ifo Institute

According to the Eurostat estimates, GDP grew by 0.4% in the euro area (EA19) and by 0.5% in the EU28 during the fourth quarter of 2016, compared to the previous quarter. In the third quarter of 2016 the GDP grew also by 0.4% and 0.5%, respectively. Compared to the fourth quarter of 2015, i.e. year over year, seasonally adjusted GDP rose by 1.7% in the EA19 and by 1.8% in the EU28 in the fourth quarter of 2016.

EU28 economic sentiment indicator
Seasonally adjusted

Source: European Commission. © ifo Institute

In January 2017 the Economic Sentiment Indicator (ESI) remained broadly stable in the euro area (+ 0.1 points to 107.9), and decreased in the EU (– 0.4 points to 108.5). In both the EU28 and the EA19 the ESI stands above its long-term average.

EU28 industrial and consumer confidence indicators
Percentage balances, seasonally adjusted
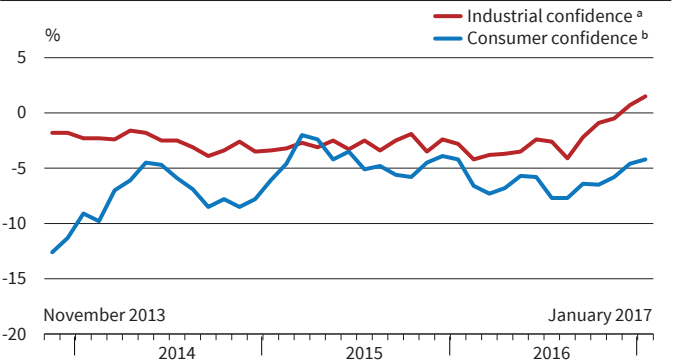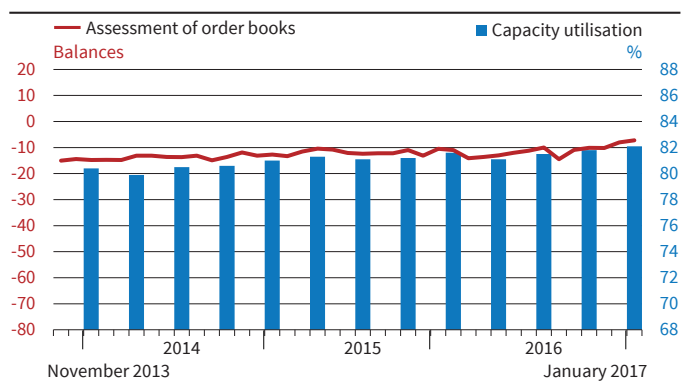

Source: European Commision. © ifo Institute

a   The industrial confidence indicator is an average of responses (balances) to the questions on production expectations, order-books and stocks (the latter with inverted sign).
b   New consumer confidence indicators, calculated as an arithmetic average of the following questions: financial and general economic situation (over the next 12 months), unemployment expectations (over the next 12 months) and savings (over the next 12 months). Seasonally adjusted data.

In January 2017, the *industrial confidence indicator* increased by 0.8 in both the EU28 and the euro area (EA19). The *consumer confidence indicator* also increased by 0.3 in the EU28 and by 0.2 in the EA19.

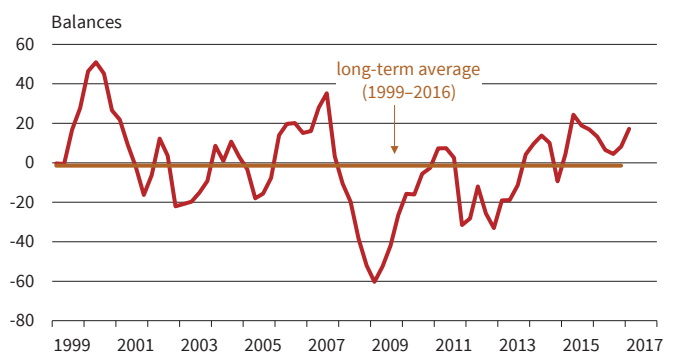### EU28 capacity utilisation and order books in the manufacturing industry

Source: European Commission. © ifo Institute

Managers' assessment of *order books* reached – 7.2 in January 2017, compared to – 8.0 in December 2016. In November 2016 the indicator had amounted to – 10.2. *Capacity utilisation* reached 82.1 in the first quarter of 2017, up from 81.8 in the fourth quarter of 2016.
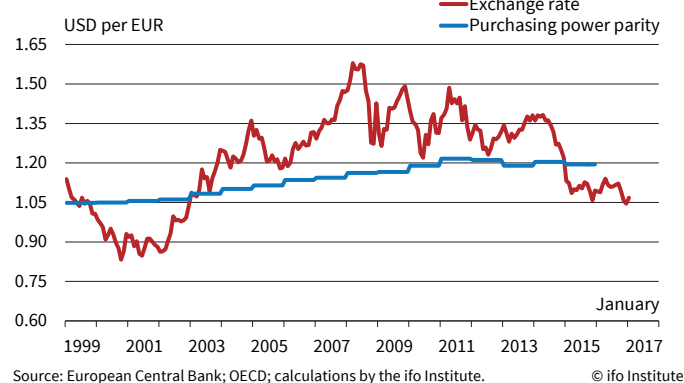
Euro area indicators

ifo Economic Climate for the Euro Area

Balances

long-term average
(1999–2016)

Source: ifo World Economic Survey (WES) I/2017.   © ifo Institute

The ifo Economic Climate for the euro area (EA19) improved to 17.2 balance points in the first quarter of 2017, from 8.2 balance points in the fourth quarter of 2016. Expectations are far more positive than last quarter. The experts surveyed also assessed their current economic situation more favourably. The economic recovery is gathering impetus.

Exchange rate of the Euro and PPPs

USD per EUR

— Exchange rate
— Purchasing power parity

January

Source: European Central Bank; OECD; calculations by the ifo Institute.   © ifo Institute

The exchange rate of the euro against the US dollar averaged approximately 1.06 $/€ between November 2016 and January 2017. (In October 2016 the rate had amounted to around 1.09 $/€.)

Unemployment rate

%

— EA19
— EU28

October 2013

Source: Eurostat.   © ifo Institute
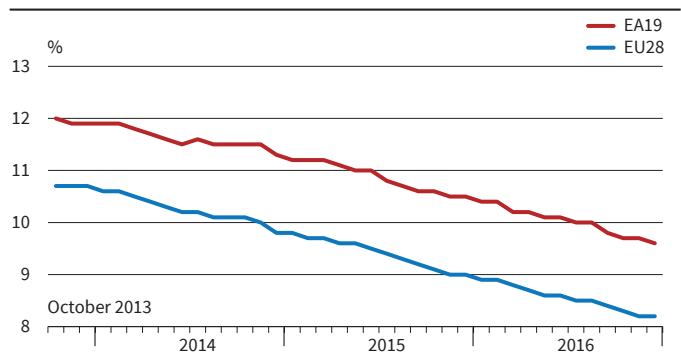
Euro area (EA19) unemployment (seasonally adjusted) amounted to 9.6% in December 2016, down from 9.7% in November 2016. EU28 unemployment rate was 8.2% in December 2016, stable compared to that of November 2016. In December 2016 the lowest unemployment rate was recorded in the Czech Republic (3.5%) and Germany (3.9%), while the rate was highest in Greece (23.0%) and Spain (18.4%).

Inflation rate (HICP)
Percentage change over previous year

%

— Core inflation [a]
— Total

October 2013
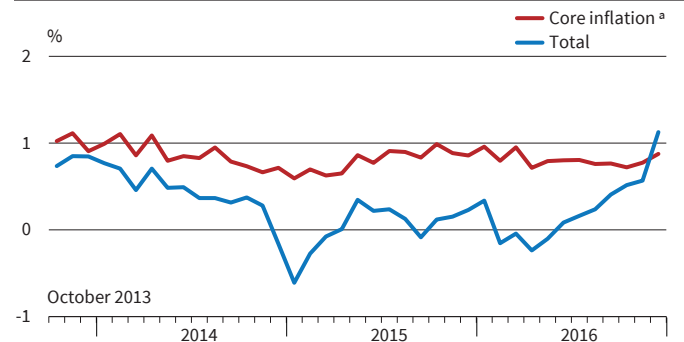
[a] Total excl. energy and unprocessed food
Source: Eurostat.   © ifo Institute

Euro area annual inflation (HICP) was 1.8% in January 2017, up from 1.1% in December 2016. A year earlier the rate had amounted to 0.3%. Year-on-year EA19 core inflation (excluding energy and unprocessed foods) amounted to 0.9% in December 2016, up from 0.8% in November 2016.