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Austria 2025:

Austria's Competitiveness and Export Potentials in Selected Markets

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Research assistance: Astrid Czaloun, Irene Langer, Martha Steiner

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Österreichisches Institut für Wirtschaftsforschung
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Internal review: Peter Huber (WIFO), Mario Larch (University of Bayreuth) • Research assistance: Astrid Czaloun, Irene Langer, Martha Steiner

Abstract

Given the strong focus of Austria's trade relations on the Single European Market this study analyses the trade potentials for Austrian exporters in 55 selected economies outside the EU and EFTA. Specifically, the study examines the macroeconomic environments and medium-term growth prospects for selected regions by concentrating on a variety of relevant future import demand shaping characteristics. For the empirical assessment of Austrian export potentials in overseas economies, the analysis augments the standard gravity model for bilateral trade in goods and services with supply-side and competitiveness-enhancing (policy) measures available for all OECD members. In particular, the empirical model focuses on the export effects of R&D expenditures, the funding for tertiary education as well as sustainable energy consumption. Assuming that Austria could catch-up to the average of the Scandinavian countries (Denmark, Finland, Sweden) in these three indicators, the results from alternative scenario analyses suggest positive export effects from all these different supply-side affecting variables. In quantitative terms the largest export gains are identified for the Industrial Countries in Overseas followed by the BRICS economies. These findings are additionally supported by solid growth prospects for these country groups.

Content   Page

1. Motivation, new aspects and main findings of the study

Over the past decades, economic growth in Austria has been successfully stimulated by foreign trade activities. Even though trade relationships have become more diversified, Austria's international trade links are still highly concentrated among the Common European Market. As a consequence, Austria's exports were strongly hit by the European debt crisis. Since 2012, GDP growth in Austria has been below 1 percent p. a. and over the last two years Austria's economic development dynamics also lag behind the euro area and especially Germany. Furthermore, due to the strong concentration of the export activities on crisis-ridden EU markets, Austrian exports have not grown as strong as in the past since 2009. While intensified trade relations especially with new and fast growing neighbouring countries boosted Austrian exports since Austria's accession to the EU, recent (problematic) political and economic situations in these regions are among the reasons for the dampened Austrian export growth during the recent past (*Aiginger*, 2016A). Overall, Austria's foreign trade seems to be characterised by two structural weaknesses: Austrian exports are concentrated too strongly on low growing European (industrialised) markets as well as on stagnating (declining) product categories and types (*Tichy*, 2015).

Expanding the export radius for Austrian products may be an attractive opportunity to overcome the problems in the regional structure of Austria's foreign trade and additionally would allow for the exploitation of new export potentials. Between 2004 and 2015, Austria reduced its export share in the European market in favour of dynamic markets outside the EU, although in 2015 around three quarters of Austrian exports were still exported to the EU-28 and EFTA countries[1]). Albeit the regional diversification of Austrian exporters is increasing, a comparison to other small and open economies, such as Sweden, Denmark and Finland highlights that Austria's market position is still underrepresented in certain regions of the World.

Against this background, the aim of this study is to analyse the trade potentials for Austrian exporters in more dynamically developing economies and to identify potential future export opportunities. Specifically, the study examines the macroeconomic environments and medium-term growth prospects of selected country groups and analyses Austria's competitive position in these markets by applying a gravity model for trade in goods and – as far as possible – for services.

This study extends our knowledge on Austria's export potentials over the existing literature (see e. g. *Stankovsky – Wolfmayr*, 2003) by explicitly combining supply- and demand-side factors in the empirical analysis. In contrast to available studies, which simply compare import demand structures of potential target markets with the export structure of the Austrian economy (see e. g. *Aiginger et al.*, 2010, 2012), this study offers a) a more detailed analysis of

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[1]) *Ederer – Schiman* (2013) stress that the substantial improvement of Austria's trade balance between 2000 and 2005 can be mainly attributed to the intensified trade relations with extra-EU and non-OECD economies.

the macroeconomic development in selected export destinations and b) explicitly accounts for important supply and cost factors when estimating the export potential of the Austrian manufacturing and services industries. With regard to the (overall) topics of main interest for the "Österreich 2025" project, the supply-side augmented gravity models allow to provide new and policy-relevant evidence contributing to the overall storyline of the project.

The macroeconomic analysis concentrates on a variety of relevant importer-specific characteristics which are expected to shape future import demand of the countries and country groups considered. By analysing a large number of comparable host country characteristics, this study not only provides a status-quo description of the current import (demand) structure, but also allows to qualitatively assess potential future import developments in the economies considered. Based on certain importer characteristics, including e. g, the economies' shares in world GDP and their importance in Austria's total exports, this section provides an in-depth comparative analysis of future export potentials available to the Austrian economy. The comparison not only focuses on economic fundamentals but also discusses potential future political risks as well as opportunities. Taking the economic and non-economic findings from a qualitative comparison together, the study identifies the Industrial Countries in Overseas and the Western Balkans among other regions as most promising future markets for an engagement of Austrian exporting firms.

The quantitative estimation of trade potentials will make use of a (standard) gravity model for bilateral trade augmented by supply- and cost-side indicators available for all OECD member countries. Among these are characteristics which capture the educational system as well as energy and environmental innovation aspects which are expected to determine an economy's future competitiveness in virtually all markets around the world. The applied estimation approach further allows to benchmark Austria's current status to the OECD average in terms of the educational system, the research and development environment (R&D), and the environmental technologies available and to assess its relevance for increasing and/or sustaining trade potentials for the Austrian manufacturing and services industries. Based on previous research, we hypothesise that both a larger R&D intensity and more (public) funding for the educational system will positively contribute to an economy's international competiveness translating into – ceteris paribus – larger export flows. Furthermore, the empirical exercise tries to quantify the likely trade effects of implementing sustainable energy policies as required by the recently signed Paris agreement. The main findings from estimating the augmented gravity model are in line with the related literature and suggest positive trade effects due to an increase in the R&D intensity and/or more spending for tertiary education. In addition, an increase in sustainable energy consumption is also associated with larger export flows. This finding suggests that implementing environmental policies in order to reduce the pace of global warming does not necessarily go along with a reduction in the international competitiveness of economies.

With the obtained parameter estimates, we finally carry out counterfactual scenario analyses in which we assume Austria would catch-up to the Nordic average (Denmark, Finland, Sweden) in the above discussed supply-side characteristics. The results from this exercise suggest positive export effects from all three different supply-side policy variables. In quantitative terms and based on the counterfactual scenarios, the largest export gains could be identified for Industrial Countries in Overseas followed by the BRICS economies.

The remainder of the study is structured as follows. Section 2 describes the pre-selection of geographic target regions, section 3 reviews Austria's export position in these markets and gives a broad overview of the respective import structure of the chosen countries. The macroeconomic environment and medium-term growth prospects of selected country groups are summarised in section 4. Section 5 presents the empirical assessment of Austrian export potentials in selected economies in a gravity model framework. Besides, motivating the analysis and providing descriptive statistics, this section presents a benchmark comparison with the Nordic countries in terms of the selected competitiveness measures and discusses the main findings of the counterfactual analysis. Section 6 concludes.

2. Pre-selection of export destinations

Given the fact that Austria's international trade patterns are still highly concentrated among European Union (EU) member states, this study puts a specific focus on more dynamically developing economies outside the EU. In view of identifying export opportunities the analysis focuses on a reasonable number of selected target markets. Hence, interesting potential extra-EU export destinations were selected on the basis of two main analytical indicators: a minimum economic size, measured in terms of GDP based on PPP, and an already documented importance for Austrian exporters, captured by their percentage share in total Austrian exports. Although the overall evaluation and selection of target countries is mainly based on these two indicators other aspects are also considered and we further open the range of attractive export destinations for countries that shortly fail one of the two main targets.

Specifically, to account for the development of foreign demand within these potential markets the import dynamics in the recent years and also in a long-run perspective constitute a further criterion for selecting potentially attractive future export destinations. In general, the threshold levels of the different indicators are chosen arbitrarily but are carefully selected to comprise a representative sample across regions and to guarantee the inclusion of the most important countries in the world with stable economic and political developments. To capture the latter the study additionally makes use of the overall "Index of Economic Freedom" provided by the Heritage Foundation. Table 2.1 provides an overview of the underlying indicators for all potential target markets and reports the chosen threshold levels. For Austria's export share this threshold is defined such that, on average, at least 0.1 percent of total exports during the years from 2011 to 2014 are provided by Austrian firms. Column (2) of Table 2.1 shows that four economies (Uruguay, Panama, Bahrain and Montenegro) closely fail to reach this cut-off level. These countries, however, take strong positions in all other used indicators and are thus considered as potential export markets. Based on this export related cut-off point all selected target countries are ranked among the top 100 destinations for Austrian exporting firms and are among the top 70 outside the EU, as columns (5) and (6) report.

In terms of economic size the cut-off level is defined by an average share of at least 0.1 percent in total world GDP based on PPP for the years from 2011 to 2013. As Table 2.1 depicts six countries, belonging to the Western Balkans and extended Black Sea Region, fall below this threshold level. However, only Georgia and Armenia are classified as lower-middle income countries according to the World Bank classification and both countries seem promising with regard to their import dynamics. In order to examine the foreign demand potential of future export destinations we examine the long-run development of imports over the time period from 2004 to 2014 and also account for the import dynamics in recent years (2011 to 2014). The cut-off values of 10.0 percent in the long-run and 2.2 percent in the short-term view are based on the average median import development of all countries in the world over the respective time spans.

Table 2.1: Pre-selection of export destinations

	Region	Percentage shares in world GDP (PPP) 2011/13 >= 0.1%	Percentage shares in Austrian total exports 2011/14 >= 0.1%	Average percentage change of world imports		Rank in Austrian exports 2011/14		Freedom index world rank 2015
				2004/14 >=10.0%	2011/14 <=2.2%	total	extra-EU	
Australia	IND	1.0	0.6	8.2	-1.0	26	10	4
Canada	IND	1.4	0.7	5.4	0.7	24	8	6
Japan	IND	4.1	1.0	6.0	-1.7	20	5	20
New Zealand	IND	0.1	0.1	6.2	4.8	67	40	3
United States	IND	15.8	5.4	4.4	2.1	3	1	12
Albania	WB	0.0	0.1	8.6	-0.7	86	58	63
Bosnia and Herzegovina	WB	0.0	0.3	6.2	1.6	43	21	97
Macedonia	WB	0.0	0.1	9.4	5.3	66	39	53
Montenegro	WB	0.0	0.0	14.5	-2.3	87	59	66
Serbia	WB	0.1	0.4	25.7	1.0	33	15	90
Armenia	BSRE	0.0	0.1	12.5	2.0	79	51	52
Azerbaijan	BSRE	0.1	0.1	10.1	-2.0	68	41	85
Belarus	BSRE	0.1	0.2	9.6	-3.8	51	28	153
Georgia	BSRE	0.0	0.1	16.6	6.9	82	54	22
Turkey	BSRE	1.4	1.0	9.5	0.2	21	6	70
Ukraine	BSRE	0.3	0.5	6.5	-13.0	29	12	162
Kazakhstan	BSRE	0.4	0.2	14.2	31.5	48	25	69
Uzbekistan	BSRE	0.2	0.1	16.9	11.9	80	52	160
Brazil	BRICS	2.8	0.7	13.8	0.4	25	9	118
China	BRICS	17.6	2.5	13.3	4.1	11	3	139
India	BRICS	7.6	0.5	16.5	-0.3	27	11	128
Russia	BRICS	2.9	2.5	15.3	-1.1	10	2	143
South Africa	BRICS	0.6	0.4	7.7	-0.1	35	17	72
Argentina	LAM	0.8	0.1	11.5	-3.3	60	34	169
Chile	LAM	0.4	0.1	11.3	-1.1	57	32	7
Colombia	LAM	0.6	0.1	14.5	5.4	64	37	28
Mexico	LAM	2.0	0.4	7.3	4.5	37	18	59
Panama	LAM	0.1	0.0	14.2	6.9	96	67	68
Peru	LAM	0.4	0.1	15.8	3.7	74	46	47
Uruguay	LAM	0.1	0.0	17.9	6.0	93	64	43
Venezuela	LAM	0.4	0.1	12.9	-0.2	69	42	176
Hong Kong, China	SEAS	0.4	0.4	7.2	4.0	34	16	1
Indonesia	SEAS	2.6	0.2	14.4	0.1	49	26	105
Korea, Rep.	SEAS	1.6	0.7	8.9	0.1	23	7	29
Malaysia	SEAS	0.7	0.3	7.2	3.7	40	19	31
Singapore	SEAS	0.4	0.3	7.8	0.0	42	20	2
Taiwan	SEAS	1.0	0.3	5.5	-2.2	44	22	14
Thailand	SEAS	0.9	0.2	9.2	-0.2	46	23	75
Vietnam	SEAS	0.5	0.1	16.3	11.4	62	35	148
Bahrain	ME	0.1	0.0	12.4	9.3	100	70	18
Iran	ME	1.1	0.2	12.3	3.1	50	27	171
Israel	ME	0.2	0.2	5.8	-0.6	47	24	33
Jordan	ME	0.1	0.0	10.8	6.3	84	56	38
Kuwait	ME	0.3	0.1	9.4	7.4	55	31	74
Lebanon	ME	0.1	0.1	8.6	2.4	85	57	94
Oman	ME	0.1	0.1	13.0	7.5	78	50	56
Qatar	ME	0.3	0.1	17.6	10.9	71	43	32
Saudi Arabia	ME	1.5	0.5	14.3	9.4	31	13	77
United Arab Emirates	ME	0.6	0.5	13.7	7.7	32	14	25
Algeria	AFR	0.5	0.2	11.9	5.8	52	29	157
Egypt	AFR	0.9	0.2	18.2	3.1	53	30	124
Libya	AFR	0.1	0.1	8.9	31.7	76	48	.
Morocco	AFR	0.2	0.1	9.9	1.5	73	45	89
Nigeria	AFR	1.0	0.1	12.6	4.1	63	36	120
Tunisia	AFR	0.1	0.1	6.6	1.4	75	47	107
55 selected countries		76.8	23.2					
EU 28 and EFTA		17.4	73.7					

Source: UN COMTRADE, IMF, The Heritage Foundation. Extra-EU excludes the EU 28 and EFTA. IND....Industrial Countries Overseas; WB....Western Balkan Countries; BSRE....Black Sea Region extended; LAM....Latin America; SEAS....South East Asia; ME....Middle East; AFR....Africa.

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As Table 2.1 shows, import dynamics are very heterogeneous across the target countries and several countries, especially specific Asian and Latin American countries as well as countries belonging to the Western Balkans and the extended Black Sea Region, report only modest demand patterns and thus, fail to reach one of the two cut-off levels. In comparison, industrial economies like the USA, Canada and Japan are characterised by slow import demand dynamics over both time spans. This might indicate an even greater potential for less advanced economies and emerging markets, although weak growth prospects in some of these markets are also obvious from the Table and depicted in detail in the macroeconomic analysis in section 4.

In total, our pre-selection of target markets results in a sample comprising 55 countries which in the years 2011 to 2014 accounted for 23.2 percent of total exports and on average 76.8 percent of world GDP based on PPP (2011 to 2013). In contrast, almost three quarters of total exports of Austrian firms (73.7 percent) are delivered to other EU member states and EFTA economies and the EU and EFTA countries yield an average global GDP share of 17.4 percent (based on PPP). For the detailed analysis of the macroeconomic environment the target countries are grouped together into eight geographic and/or economic regions. The descriptive analysis tracing the development of Austria's foreign trade since 2004 (see section 3) also refers to these country groups in terms of a regional breakdown. In particular the eight regions include Industrial Countries in Overseas (IND), the Western Balkans (WB), the extended Black Sea Region (BSRE), the BRICS, specific countries from Latin America (LAM), selected South East Asian countries (SEAS), as well as selected economies from the Middle East (ME) and Africa (AFR).

3. Austria's foreign trade relations with selected target markets

This chapter provides an overview of Austria's foreign trade relations over the last decade. In the light of moderate export development and related structural problems in Austria's foreign trade, the descriptive analysis examines Austria's export position in selected geographic target regions outside the EU. As far as possible, the analysis discusses recent developments in goods and services exports and provides an international comparison of the Austrian market position relative to typical reference countries such as Denmark, Finland, Sweden and Switzerland. Additionally, the chapter gives a broad overview of the respective import structure of the chosen countries, which allows identifying potential export opportunities of Austrian firms.

3.1 Importance of trade relations in terms of internationalisation

Since Austria's EU accession in 1995, the country has economically benefited from the ever deeper EU market integration. Specifically, the opening-up of Eastern Europe and the subsequent EU enlargement have boosted Austria's GDP growth and these new markets offered new opportunities for exports in its direct neighbourhood (*Breuss*, 2012). Thus, Austria benefited from the "near-globalisation" and till 2013 the economy grew faster than the euro area (except for the year 2010) as Figure 3.1 depicts.

Figure 3.1: Development of real GDP in Austria, Germany and the euro area, 2004 to 2017
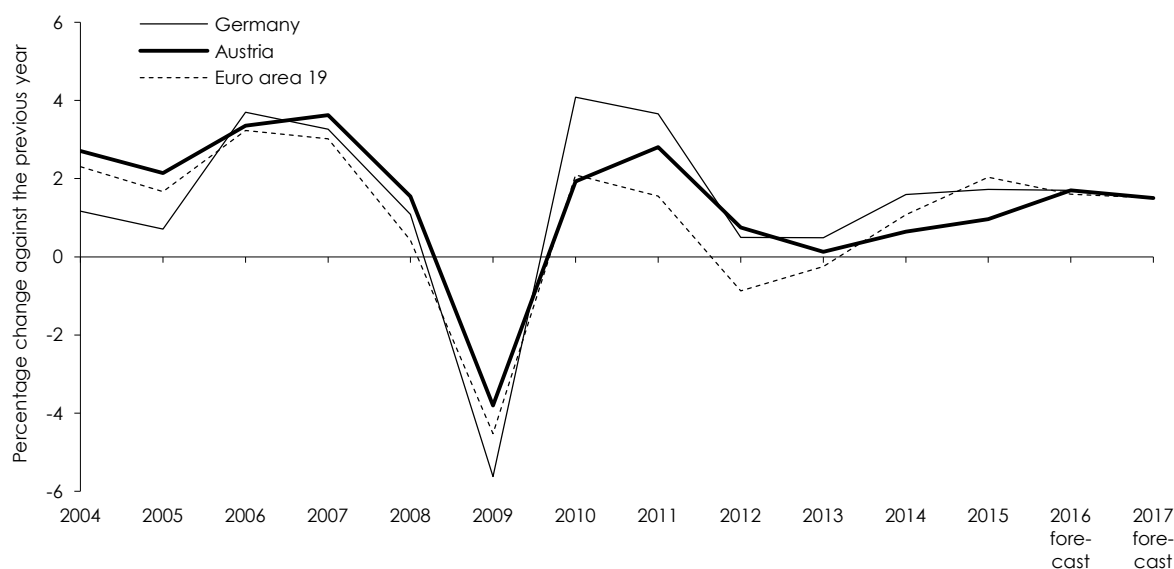
Source: Eurostat, WIFO calculations. – 2016 and 2017: WIFO Economic Outlook September 2016.

Before the trade deterioration in the wake of the economic crisis, Austria also hurried ahead of Germany concerning GDP growth, only in 2006 the German growth rate was slightly higher (0.3 percentage points). Between 2004 and 2009 the Austrian economy grew on average by 1.3 percent, thus GDP growth was 0.6 percentage points higher than in the euro area and 0.8 percentage points higher than in Germany. After the sharp decline in 2009, which was lowest for Austria (−3.8 percent), the German economy (2009: −5.6 percent) recovered strongest and showed the highest growth rates in the subsequent years 2010 and 2011. Thus, the economic crisis marked a structural break in the economic performance across countries (see *Eaton et al.*, 2016 for a detailed analysis on the forces acting on the global economy during the Great Recession and ensuing recovery). Specifically, over the last two years economic growth in Austria is under strain and fell behind Germany. While even in the years after the economic crisis up to 2014 the Austrian economy experienced higher growth rates than the euro area and thus maintained a bonus even during the crisis (see also *Aiginger*, 2009) it recently also lags behind the euro area. According to the forecasts from September 2016 (see Figure 3.1), the Austrian economy is expected to catch-up to the growth performance of both Germany and the euro area again in 2016.

Figure 3.2: Growth contributions of the demand components to Austria's real GDP, 2004 to 2017
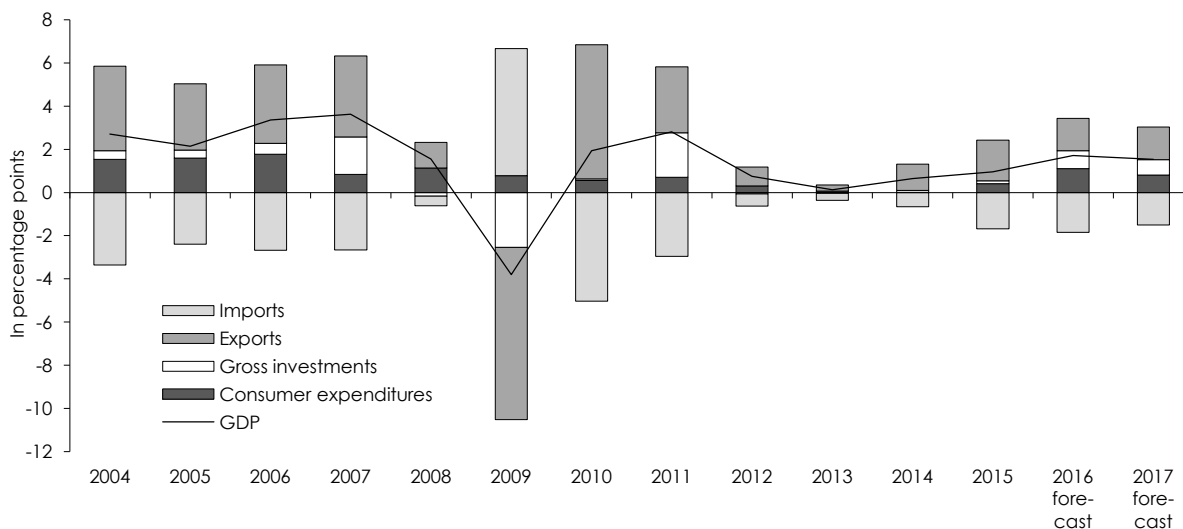
Source: WIFO calculations. − 2016 and 2017: WIFO Economic Outlook September 2016.

A breakdown of Austrian economic growth by its demand components illustrates the importance of Austria's foreign trade to overall GDP growth as the export of goods and services represents the most dynamic part (Figure 3.2). Over the last ten years (2004 to 2014), net exports contributed positively to Austria's overall GDP growth, except for 2009 the year of the global economic crisis (−2.1 percentage points). Consistently growth impulses throughout the entire period came from consumption although it has evolved less dynamic in the more

recent years and almost stagnated since 2012. The picture for investments is more differentiated. While positive contributions stimulated GDP growth till 2007 (by +1.7 percentage points), investments dampened Austria's GDP growth especially in 2009 (by −2.5 percentage points), and since 2012 investment is sluggish. According to the most recent GDP forecasts from September 2016, positive impulses of net exports are not expected for the years 2016 and 2017. In contrast and due to the income tax reform implemented, disposable household incomes are rising and thus private consumption will contribute strongly to economic growth over the forecast period 2016 (+1.1 percent) and 2017 (+0.8 percent).

Figure 3.3: Austria's trade balance with selected target regions, 2004 to 2015
As percent of GDP
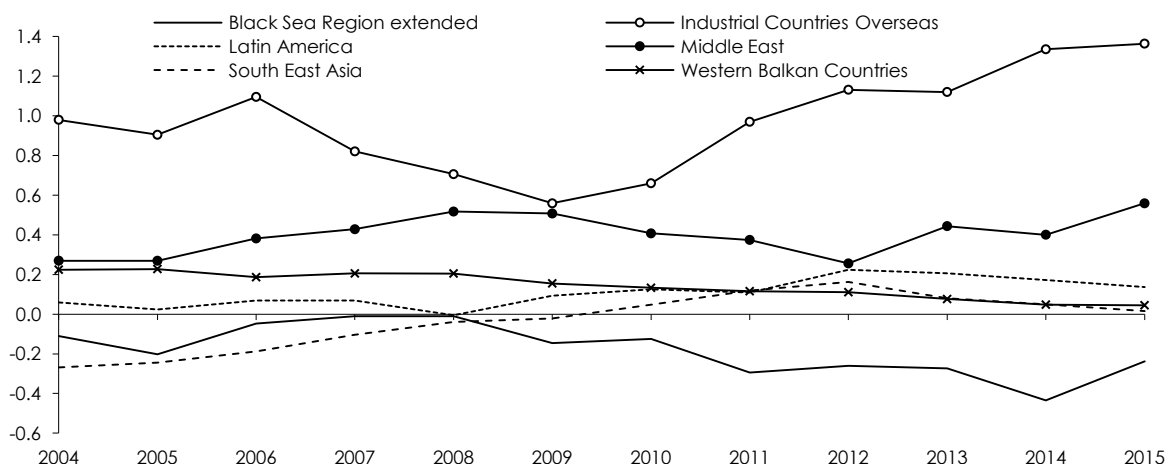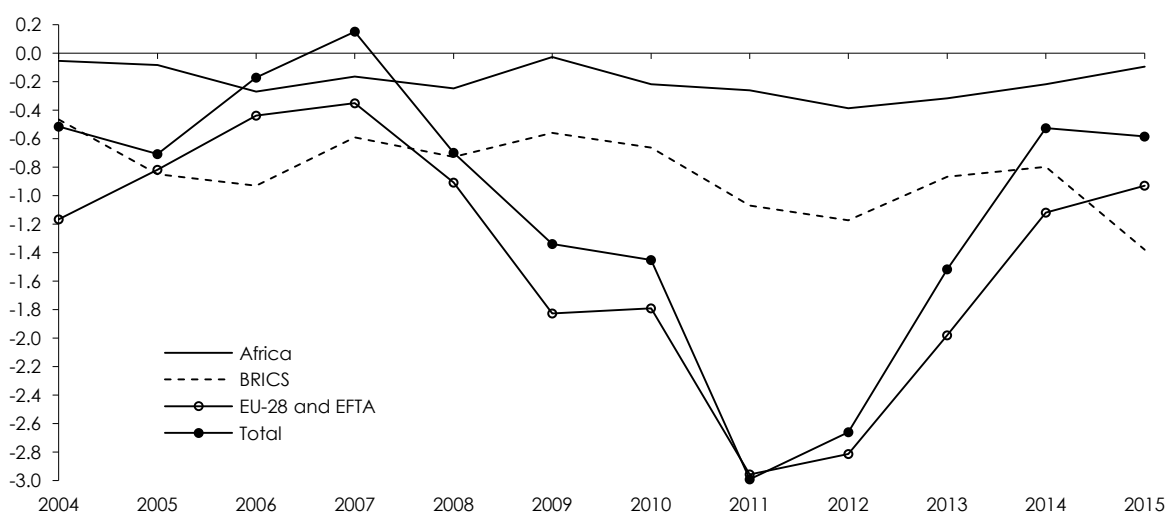
Source: Statistics Austria, WDS – WIFO Data System.

Figure 3.3 shows the developments of Austria's trade balance in percent of GDP with the selected target regions (see section 2). In the time period before the global economic crisis, Austria's deficit in the goods trade balance improved considerably. In 2007, the trade balance even turned into a surplus of € 425 million for the first time. The reduction in the trade deficit with the BRICS economies from € 2.5 billion in 2006 to € 1.7 billion in 2007 most importantly contributed to this improvement. Further important factors stemmed from the positive trade developments with Africa, South East Asia, the Middle East and the EU-28 and EFTA countries. Over the course of the economic crisis, the goods trade balance deteriorated from its peak in 2007 until it hit the bottom in 2011 with a deficit of € 9.2 billion, mainly induced by the sharp decline of the trade balance with the EU-28 and EFTA countries (€ −3.8 billion from 2010 to 2011). In contrast, the trade surplus with the Industrial Countries in Overseas improved by € 1 billion from 2010 to 2011. Since 2012, the goods trade balance shows a continuing trend to improve again and amounted to € −2.0 billion in 2015. The improvement was notably driven by the positive trend in the trade relations with the EU-28 member states, EFTA countries as well as the Industrial Countries in Overseas, while the trade balance with the BRICS deteriorated in 2015.

Overall, the positive goods trade balance with the Industrial Countries in Overseas, the Middle East and Latin America contributed significantly to an improvement of Austria's trade balance. Since 2010 exports to South East Asia exceeded imports from there and the trade balance turned into a surplus. In contrast, Austria's foreign trade relations with Africa, the extended Black Sea Region, BRICS as well as EU-28 and EFTA countries exhibit a continuing negative balance between 2004 and 2014. Over the forecast period 2016 and 2017 the negative trend in the overall trade balance is expected to remain.

Figure 3.4: Development of goods exports and export ratio, 2004 to 2015
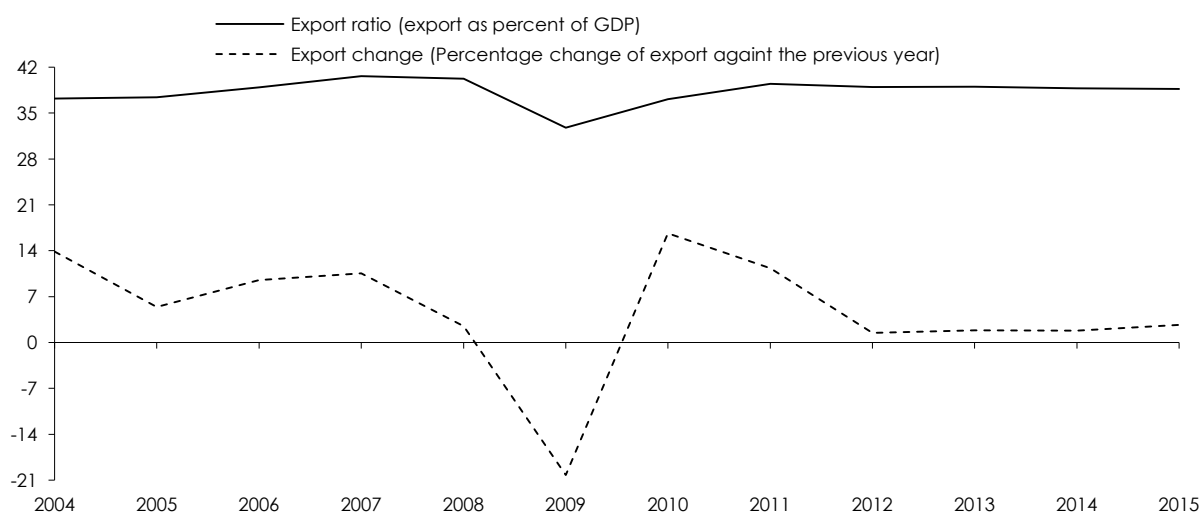
Source: Statistics Austria, WDS – WIFO Data System.

Over the period 2004 to 2015, Austria's goods exports grew by 3.5 percent p. a. on average. Especially during the pre-crisis period, exports developed very dynamically. With the onset of the global economic crisis, Austrian exports declined sharply in 2009 (by −20.2 percent) but recovered quickly already over the subsequent two years (2010: +16.7 percent; 2011: +11.3 percent). As a consequence of the European sovereign debt crisis, export growth was only moderate in the following years (2012 to 2015: on average 1.9 percent p. a.). While the intensified trade relations especially with the fast growing economies in the neighbourhood, like the Black Sea Region, the Western Balkans and Northern Africa, boosted Austrian exports in the past, the current political and economic situation in these regions can be mentioned as one reason for the dampened Austrian export growth since 2009 (*Aiginger*, 2016A). As Figure 3.4 shows the relation of export to GDP increased by 1.5 percentage points over the period 2004 to 2015, indicating a more dynamic development of exports as compared to overall economic growth. The decline of exports in course of the economic crisis in 2009 is also reflected in the export ratio, decreasing from 40.3 percent in 2008 to 32.8 percent in 2009. Despite an increase over the last few years reaching 38.7 percent in 2015, the pre-crisis level has not yet been reached again.

Figure 3.5: Development of services exports (without travel) and export ratio, 2004 to 2015
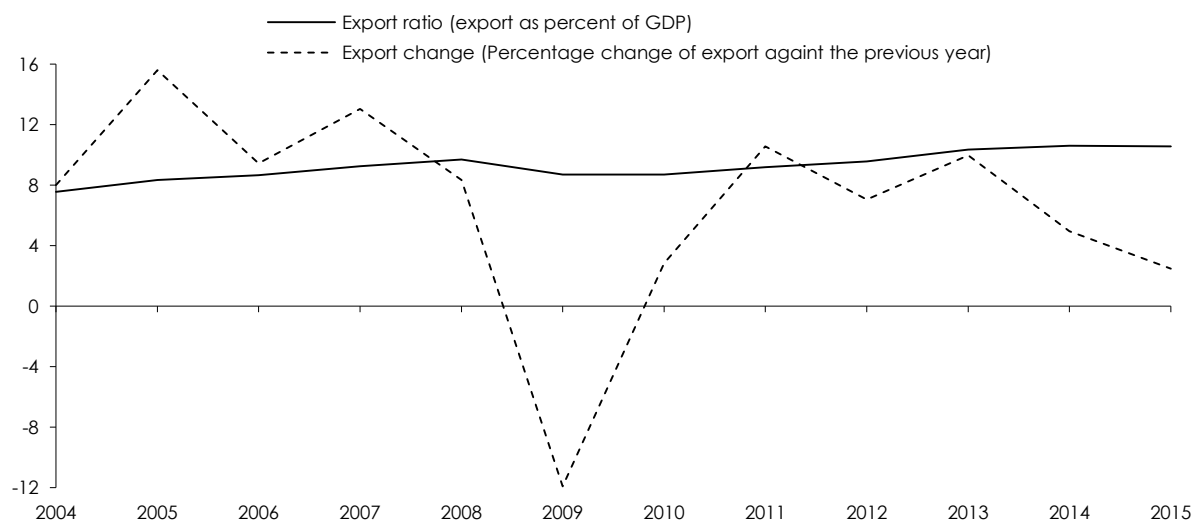
Source: OeNB.

In a similar manner Figure 3.5 shows the developments of Austrian services exports excluding the travel sector. Compared to goods exports, on average, services exports developed faster amounting to +6.3 percent p. a. between 2004 and 2015. After the sharp decline in 2009 (−11.9 percent), services exports grew dynamically by 6.4 percent in the post-crisis period (2009 to 2014). This lively development is also expressed in the export ratio. In the wake of the crisis, the services export to GDP ratio decreased from 9.7 percent in 2008 to 8.7 percent in

2009. Since 2010, the export ratio increased continuously to 10.6 percent in 2015 and thus exceeded its pre-crisis level. Overall, the services exports had been more resistant to the crisis than goods exports.

3.2 Development of Austria's foreign trade relations with selected target regions

Looking at Austria's goods export from a geographical angle, Figure 3.6 displays heterogeneous developments across the selected regions (see section 2). While total goods exports increased by 3.5 percent p. a. over the period 2004 to 2015 on average, exports to the European markets grew below average (+2.9 percent). In contrast, exports to extra-EU markets developed more dynamically. In particular, exports to Latin America (+11.5 percent) and the Middle East (+8.0 percent) reveal a flourishing development over the period 2004 to 2015. Whereas the observed growth pattern for the latter region slightly slowed down during the post crisis period (+6.4 percent), exports to Latin America (+12.9 percent) and South East Asia (+8.7 percent) still evolved very dynamically. Furthermore, Austria shifted some exports to the Industrial Countries in Overseas in the post-crisis period (+12.5 percent). Although exports to the BRICS countries grew dynamically (on average by +6.9 percent) over the full sample period from 2004 to 2015, these trade relationships have recently been hit by the economic downturn in these countries due to low energy prices. Furthermore, exports to Russia are negatively affected by the economic sanctions of the EU and Russia (*Christen et al.*, 2016; *Christen et al.*, 2015). In light of these economic developments exports to the BRICS grew only by 3.7 percent p. a. on average between 2009 and 2015.

Figure 3.6: Development of Austria's exports to selected target regions
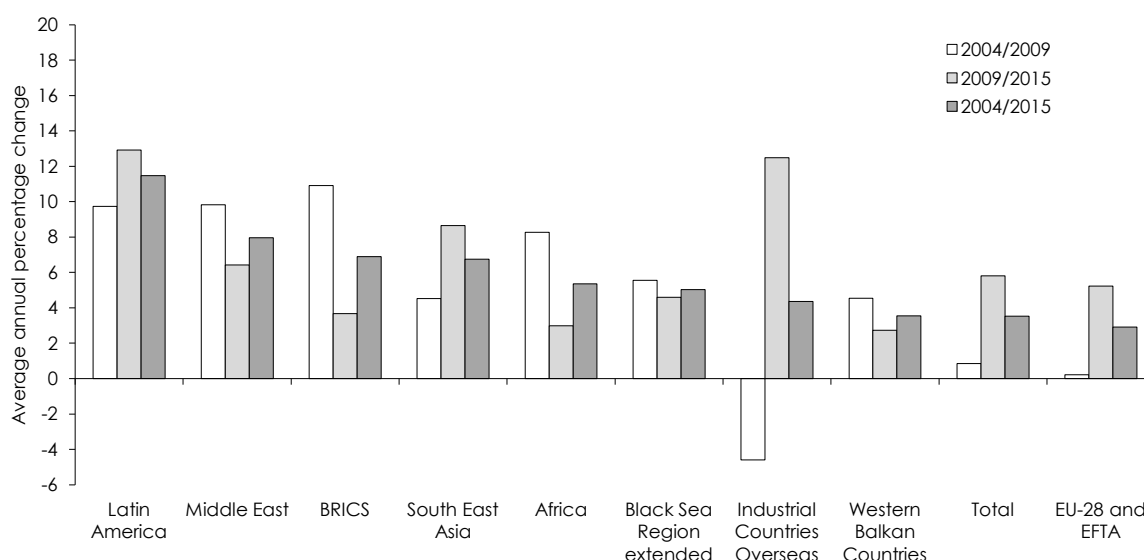
Source: Statistics Austria, WDS – WIFO Data System.

Similarly, exports to selected countries in Africa grew only modestly amounting to an annual average of 3.0 percent as a consequence of the political turmoil in many countries belonging to this region. Despite a strong overall development of Austrian goods exports to the extended Black Sea region (+5.0 percent) and to the Western Balkans (+3.6 percent) over the last 11 years, the export dynamics slowed down since 2009. Nevertheless, the regional breakdown of Austria's export patterns highlights the existence of flourishing export markets in extra-EU regions. An expansion of the export radius may therefore be considered as an attractive opportunity to exploit existing additional potentials for Austrian exporters.

Figure 3.7: Importance of selected export regions in Austria's goods exports
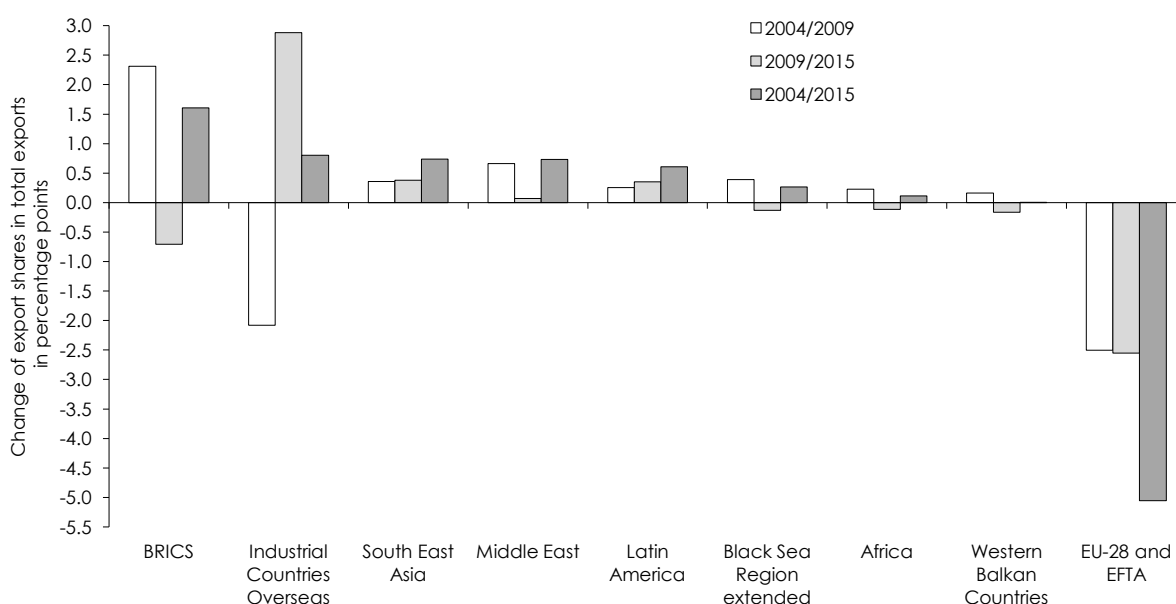
Source: Statistics Austria, WDS – WIFO Data System.

Over the period 2004 to 2015, Austria has been able to expand its export shares in markets outside the EU. Hence, Austria reduced its export share in the EU-28 and EFTA countries slightly from 80 percent in 2004 to 75 percent in 2015 although the Austrian exports are obviously still highly concentrated[2]). Interestingly, Figure 3.7 reports an increasing importance of the BRICS countries as export destination. In the period between 2004 and 2015, Austria's export share in this region increased by 1.6 percentage points, mostly driven by the flourishing export patterns in the period before the Great Recession, while the importance of the BRICS decreased over the period 2009 to 2015 (–0.7 percentage points). In particular, over the period 2009 to 2015 Austria' exports gained additional access in Latin America, South East

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[2]) Since the primary focus of this study is on more dynamically developing countries outside the EU, trade developments with the EU and EFTA countries are mentioned only briefly and are not reported in all of the following figures.

Asia and the Middle East, while export shares decreased in the extended Black Sea Region and Western Balkan Countries. A striking picture emerges for the Industrial Countries in Overseas. Over the period 2004 to 2015, Austria's position in this region increased by 0.8 percentage points, while in the pre-crisis period (2004/2008) Austria's export share decreased remarkably by 1.9 percentage points. However, in the post-crisis times this region gained significant importance and the export share rose by 1.3 percentage points (2012/2015). Contrary, selected African markets did not gain additional importance as export destinations (–0.11 percentage points) over the period 2009 to 2015.

Figure 3.8: Importance of selected export regions for goods exports in an international comparison, 2015
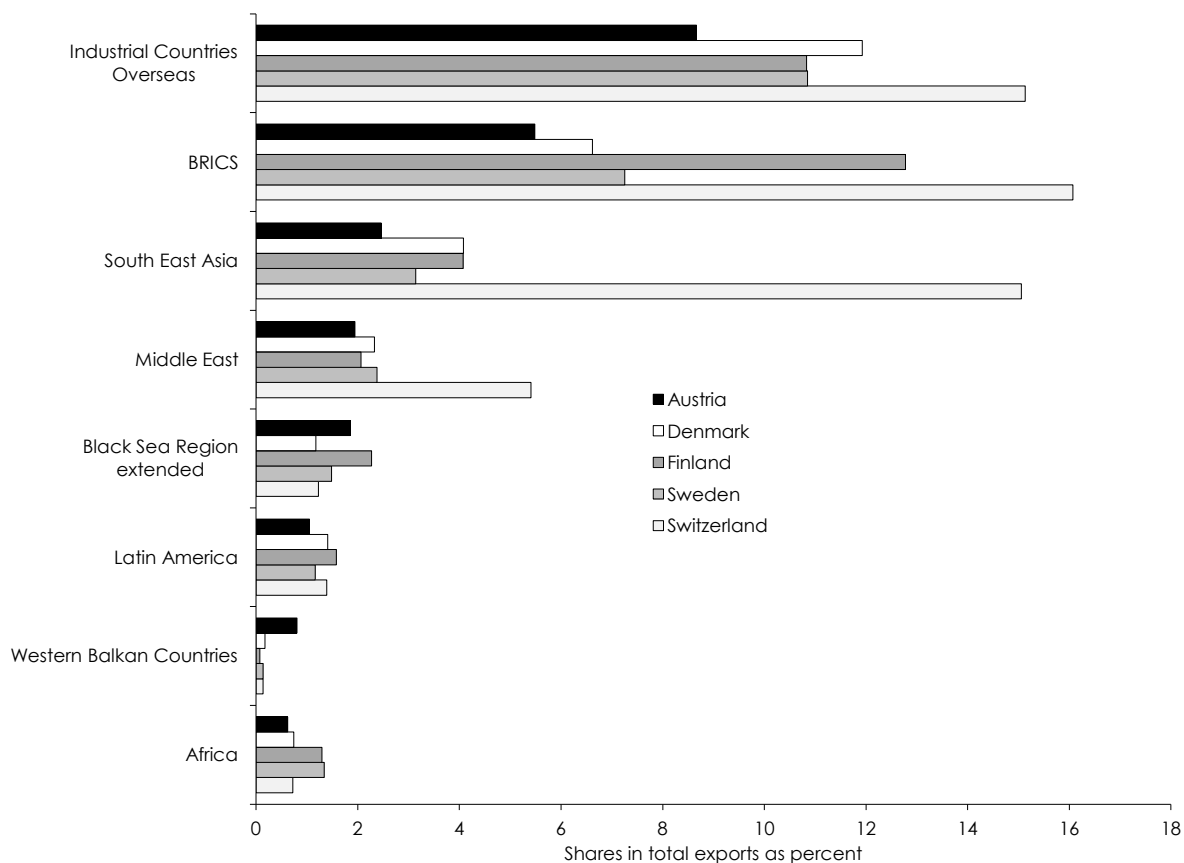
Source: IMF, Direction of Trade Statistics, WDS – WIFO Data System.

Figure 3.8 compares the importance of selected export destinations for Austria's goods exports with their importance for other small and open economies, such as Denmark, Finland, Sweden and Switzerland in 2015. Austria together with the reference countries show a strong focus on the EU-28 and EFTA countries whereby the concentration is with a share of around 76 percent highest for Austria. Concerning the position in the extra-EU region, Austria differs

from the other four countries in terms of a strong position in the Western Balkans (*Christen*, 2014). Given the geographical proximity as well as historically developed political, cultural and economic ties, Austria maintains close trade relations with the economies of this region. Similarly to Finland, Austria holds a dominant position in the extended Black Sea Region, while the Swiss economy is strongly diversified and leads the group of reference countries in Industrial Countries in Overseas, the BRICS countries, South East Asia and the Middle East. Austria's export shares in these regions lags behind in this comparison, which is not completely driven by structural factors, but may be partly characterised by the prevalence of small companies (SMEs) in Austria. As indicated by previous literature, SMEs tend to be more severely affected by tariff and non-tariff barriers to trade which translates to a reduced foreign market presence of such firms (e. g., *Oberhofer*, 2014).

Figure 3.9: Importance of selected export regions in Austria's services exports without travel
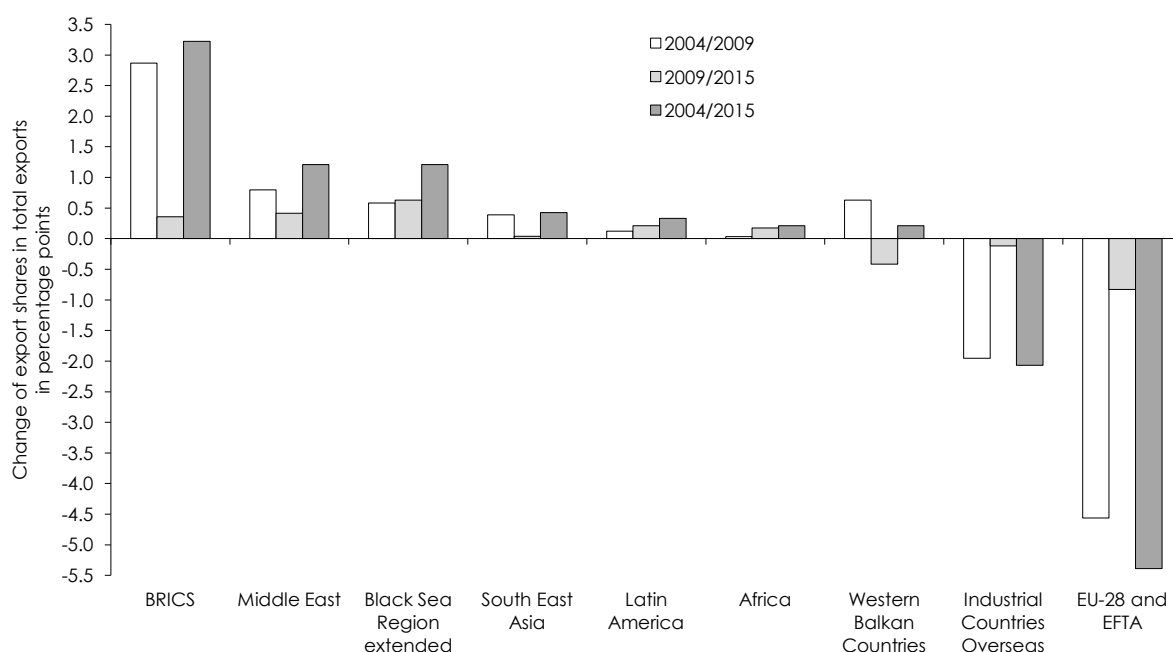
Source: OeNB.

Similarly to the patterns observed for goods trade, Austria's services exports (excluding travel) are also strongly concentrated on the EU-28 and EFTA economies with an export share of 81.4 percent in 2015, although the importance decreased considerably between 2004 and 2015. As already observed for goods exports, Figure 3.9 depicts an increasing demand for Austrian services in the BRICS countries, especially during the pre-crisis years. In particular, the export share in this region increased from 3.1 percent in 2004 to 6.3 percent in 2015. Surprisingly, Austria's position in services exports to the Middle East rose significantly to a share of 1.6 percent in 2015, while services exports to the Western Balkans increased only slightly.

Regarding recent diversification patterns between 2009 and 2015, Austria managed to increasingly gain market access in the Black Sea Region, Latin America and Africa. Nevertheless, the export shares in services trade are still negligible in the latter two regions in the year 2015 (0.35 percent and 0.31 percent, respectively). Interestingly, over the period 2004 to 2015 Industrial Countries in Overseas became less important for services exports.

The development of Austria's market shares in the selected target regions shows a declining trend. In total, Austria's market share in world goods exports declined by 0.37 percentage points between 2004 and 2015. In this period, the market position remained stable only in Latin America. Comparing the development of market shares in the period before and after the economic crisis, the development is very heterogeneous. While Austria even slightly gained world market shares in the Western Balkans in the pre-crisis period (+0.2 percentage points), Table 3.1 reports a considerable loss in market shares over the period 2009 to 2015 (−1.28 percentage points). Similarly, market share losses in the BRICS and the Black Sea Region over the period 2004 to 2015 are to a large extent attributable to the unfavourable developments since 2009. In contrast, Austria's market share position in the Industrial Countries in Overseas as well as the EU-28 and EFTA economies declined stronger in the years before the outbreak of the economic crisis. Specifically, Austria's market shares declined by 0.13 percentage points in the Industrial Countries in Overseas and by 0.77 percentage points in the EU-28 and EFTA countries between 2004 and 2009.

Among the selected regions, Austria's world market share was highest in the EU-28 and EFTA countries (4.85 percent) and in the Western Balkans (3.44 percent) in 2015. The strong market position in the latter underlines the historically close trade relations with the countries constituting the Western Balkans. In contrast, the market positions in South East Asia and Latin America are negligible, with a share of 0.16 percent and 0.24 percent in 2015, respectively, as documented in Table 3.1.

Table 3.1: Austria's world market shares of goods exports in selected regions, 2004 to 2015

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2004/2015
	As percent												Change in percentage points
EU 28 and EFTA	5.74	5.48	5.04	5.01	4.75	4.97	4.78	4.64	4.54	4.59	5.01	4.85	-0.90
West Balkans	4.55	6.41	5.19	4.77	4.46	4.72	4.42	4.28	4.00	3.84	3.54	3.44	-1.11
World	1.30	1.20	1.14	1.18	1.13	1.11	1.01	0.98	0.91	0.95	0.96	0.93	-0.37
Black Sea Region extendet	1.24	1.06	1.11	1.09	1.08	1.18	1.12	0.99	0.87	0.91	0.89	0.89	-0.35
Middle East	0.62	0.62	0.65	0.64	0.60	0.62	0.49	0.49	0.42	0.48	0.47	0.44	-0.19
Africa	0.65	0.60	0.60	0.66	0.55	0.56	0.48	0.41	0.42	0.46	0.42	0.41	-0.25
Industrial Countries Ov erseas	0.46	0.43	0.41	0.40	0.36	0.33	0.32	0.35	0.33	0.35	0.38	0.39	-0.07
BRICS	0.59	0.63	0.54	0.57	0.58	0.55	0.47	0.47	0.44	0.45	0.44	0.38	-0.22
Latin America	0.23	0.24	0.25	0.26	0.26	0.25	0.23	0.21	0.25	0.24	0.24	0.24	0.01
South East Asia	0.21	0.21	0.20	0.21	0.20	0.20	0.19	0.18	0.16	0.16	0.17	0.16	-0.05

Over the last 10 years Austria's overall position in the world market for goods exports declined slightly (–0.37 percentage points). Similar developments can be observed for Finland (–0.31 percentage points) and Denmark (–0.26 percentage points), while Sweden experienced the strongest loss in market shares (–0.49 percentage points). As Figure 3.10 also depicts, the position of Switzerland on the world market increased considerably between 2004 (1.35 percent) and 2015 (1.76 percent).

Figure 3.10: Austria's world market shares for goods exports in an international comparison, 2004 to 2015
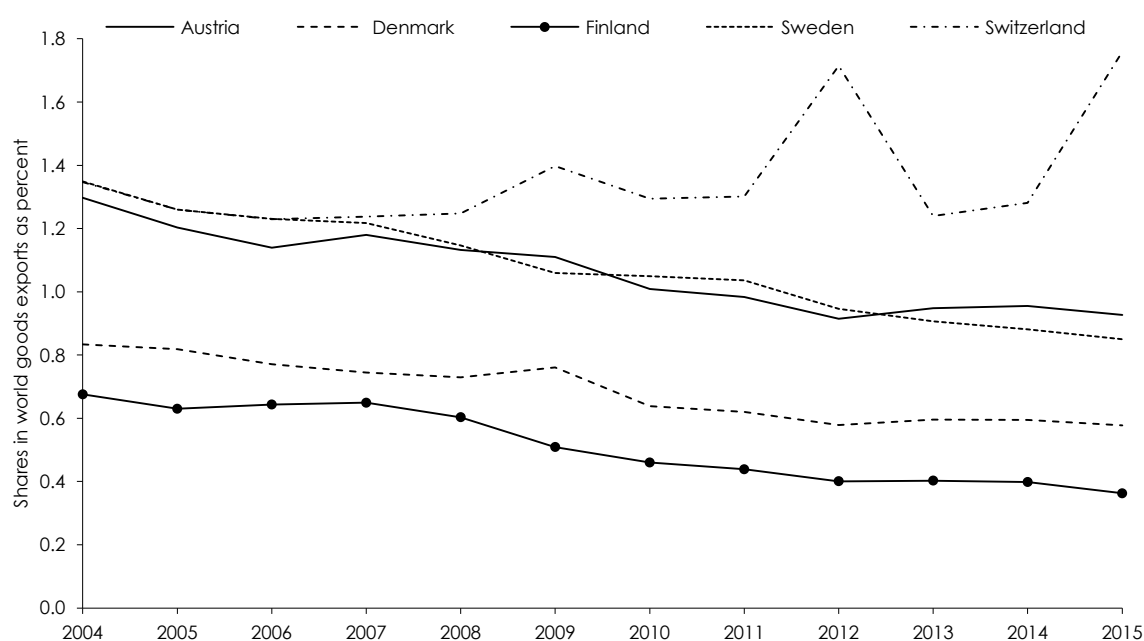
Figure 3.11 presents the change in market shares relative to the worldwide services exports (excluding travel). Similarly to goods exports Austria's position in the world market declined slightly since 2005. With a share of 1.12 percent in 2015, the position relative to worldwide services exports decreased by 0.17 percentage points since 2005. A similar decline in market share is observed for Switzerland (–0.26 percentage points), while Denmark (–0.44 percentage points) experienced the greatest loss.

Figure 3.11: Austria's world market shares for services exports (without travel) in an international comparison, 2005 to 2015
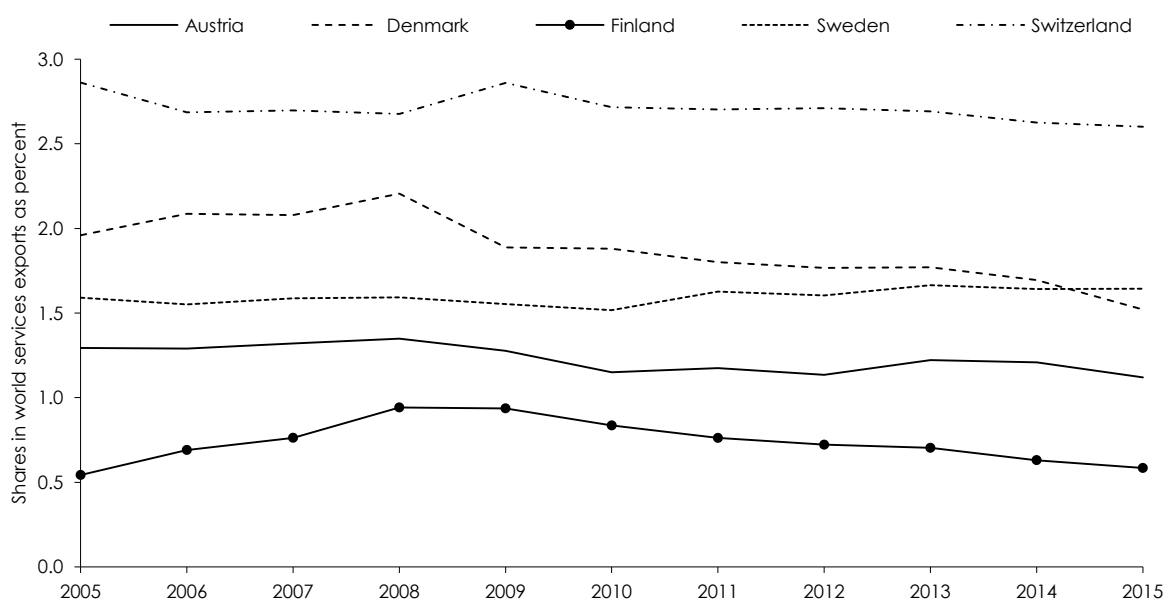
Source: UNCTAD.

3.3 The import structure of selected target markets vis-à-vis Austria's goods exports

The commodity structure of the imports of the selected target markets reveals particularly significant differences between world imports and imports from Austria. While many countries with a share in total imports of more than one third require consumer goods, imported commodities from Austria mainly cover capital or intermediate goods, which reflects the export strengths of Austrian firms in these industries. Although a certain inconsistency between the structure of import demand in the selected export destinations and the structure of Austrian exports needs to be taken into account, domestic exporters may benefit from higher demand for capital and intermediate goods. In particular, the share of capital goods imported from Austria increased in many export destinations and during the most recent years.

A detailed breakdown of imports of the selected target markets from Austria by main product groups based on the SITC-classification[3]) highlights that the majority of imports by the target countries are manufactured goods, especially machinery and transport equipment (SITC 7).

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[3]) The Standard International Trade Classification distinguishes 10 main categories of goods including a broad section of primary goods (SITC 0-4) and manufactured goods (SITC 5-9).

Table 3.2: Imports by commodities from Austria, ø2011/2014

		Food	Raw materials, mineral fuels	Chemicals	Manufact. goods	Machinery, transp. equip.	Consumer goods
				Percentage shares in total goods			
Africa	Algeria	7.5	26.8	14.1	19.2	29.8	2.6
	Egypt	6.1	13.5	14.7	42.2	19.4	4.1
	Morocco	4.0	16.1	11.3	22.3	34.5	11.7
	Nigeria	17.2	2.1	9.7	10.7	58.1	2.2
	Tunisia	4.0	28.7	11.5	25.8	25.9	4.0
BRICS	Brazil	4.7	0.9	22.7	22.6	43.8	5.2
	China	0.9	5.4	10.7	12.2	63.0	7.8
	India	1.4	7.2	8.6	26.3	39.0	17.5
	Russia	6.0	0.6	17.3	18.8	49.8	7.5
	South Africa	4.3	0.7	10.8	27.0	38.0	19.3
Black Sea Region extended	Armenia	6.1	1.1	5.8	15.5	13.7	57.8
	Azerbaijan	10.0	0.1	13.3	13.7	50.5	12.4
	Belarus	7.5	0.3	16.0	25.0	44.6	6.6
	Georgia	21.6	0.5	21.6	9.9	36.8	9.7
	Kazakhstan	7.0	0.2	33.7	20.4	28.9	9.8
	Turkey	5.8	7.5	17.5	23.1	39.8	6.4
	Ukraine	5.8	8.0	31.2	21.2	27.0	6.8
Industrial Countries Overseas	Australia	8.1	1.1	13.3	16.2	48.4	12.1
	Canada	1.2	0.7	13.1	19.2	40.1	25.7
	Japan	6.5	8.0	17.0	21.3	32.2	15.0
	New Zealand	6.2	0.1	14.6	12.4	57.3	9.3
	USA	5.9	0.7	16.9	14.6	49.7	12.1
Latin America	Argentina	3.9	0.7	17.5	22.9	48.7	6.2
	Chile	13.0	0.1	11.1	25.0	44.6	6.2
	Colombia	3.1	0.4	37.1	16.1	31.3	12.0
	Mexico	0.5	0.3	10.9	23.8	51.9	12.7
	Panama	13.3	0.3	12.8	27.8	20.6	25.3
	Peru	7.1	3.1	9.9	26.8	34.5	18.5
	Uruguay	1.5	0.1	29.4	17.9	38.6	12.5
	Venezuela	3.4	0.0	16.3	9.6	67.5	3.2
Middle East	Bahrain	20.8	19.5	12.8	15.7	24.3	7.0
	Iran	16.9	2.5	18.4	39.4	21.2	1.6
	Israel	10.9	13.7	16.1	28.4	21.2	9.6
	Jordan	17.7	11.9	20.4	26.2	15.1	8.7
	Kuwait	16.8	7.4	9.2	19.1	36.4	11.0
	Lebanon	12.0	1.0	32.0	27.7	19.6	7.7
	Oman	8.8	0.8	9.1	25.1	42.6	13.6
	Qatar	6.6	8.7	3.8	32.6	39.8	8.6
	Saudi Arabia	5.4	6.6	11.8	26.5	41.2	8.4
	United Arab Emirates	4.5	1.7	7.6	23.5	47.4	15.2

A detailed breakdown of imports of the selected target markets from Austria by main product groups based on the SITC-classification) highlights that the majority of imports by the target countries are manufactured goods, especially machinery and transport equipment (SITC 7).

Table 3.2/continued

		Food	Raw materials, mineral fuels	Chemicals	Manufact. goods	Machinery, transp. equip.	Consumer goods
		Percentage shares in total goods					
South East Asia	Hong Kong	1.6	0.4	3.5	34.8	40.2	19.5
	Indonesia	0.9	3.8	5.2	21.1	64.8	4.1
	South Korea	5.5	6.7	10.7	15.8	53.9	7.3
	Malaysia	0.7	0.3	3.8	9.1	82.1	4.1
	Taiwan	1.6	3.9	10.0	29.5	49.1	5.9
	Singapore	0.8	0.1	2.6	5.9	82.2	8.5
	Thailand	1.6	1.3	12.8	39.2	37.7	7.5
	Vietnam	5.3	3.6	27.7	18.4	36.6	8.4
Western Balkan Countries	Albania	24.7	2.9	7.7	10.9	30.1	23.7
	Bosnia and Herzegovina	13.1	5.1	18.2	34.6	19.1	10.0
	Macedonia	28.0	1.7	15.7	27.8	18.4	8.3
	Montenegro	42.1	3.6	11.2	10.7	22.8	9.6
	Serbia	6.0	6.8	23.7	21.3	30.3	11.9

Source: UN COMTRADE.

However, the export shares in this sector vary considerably across regions and are particularly large in South East Asian countries (around 40 percent to 80 percent). Interestingly the Western Balkans strongly demand manufactured products (SITC 6) and chemicals (SITC 5) beside machinery and transport equipment. In general and in line with the specialisation on manufactured goods in the Austrian export economy, the import shares of food and raw materials are negligible across the selected target markets. Noteworthy importance with a share of around 25 percent to 40 percent of total imports from Austria arise only in the imports of food and live animals (SITC 0) by Montenegro, Macedonia and Albania as well as in imports of raw materials by Algeria and Tunisia.

The import structure diverges only slightly from the Austrian export structure: The two most important commodity groups for the domestic export economy, machinery and transport equipment and chemical products, account for a similar import share across the selected target markets while the share of manufactured goods is slightly below to that for exports. In 2015 machinery and transport equipment accounted for almost 40 percent of total exports while chemicals accounted for around 14 percent and manufactured products for roughly 22 percent. Primary products account for 22 percent of total exports; the most exported products within this category are agri-food exports (SITC 0, 1, 4 with a share of 7 percent).

4. Macroeconomic environment and medium-term growth prospects

This section analyses the growth prospects of export destinations outside the EU for the Austrian goods market. In particular, we focus on the macroeconomic performance in the pre-selected countries by additionally taking into account further aspects like business environment, educational quality, infrastructural facilities and demographic and regulatory environment. The analysis of the macroeconomic performance is mainly based on the recent World Economic Outlook by the IMF from October 2016 (*IMF*, 2016A). The following matrix gives a quick overview on the evaluation of the country groups concerning their medium-term growth prospects, their potentials and their risks (Table 4.1).

Table 4.1: Overview on the macroeconomic evaluation of the country groups

	Medium term growth prospects	Potentials	Risks
Industrial Countries Overseas	Solid	◦ Diversified consumer and investment goods demand ◦ Infrastructure programmes foster investment	◦ Financial stability risks ◦ Reliance on commodity exports ◦ Inequality
Western Balkan Countries	Solid	◦ Catching-up stimulates consumer demand ◦ Need for infrastructure projects	◦ Internal and external imbalances ◦ Open economies showing a small degree of resilience ◦ High unemployment rate
Black Sea Region Extended	Muted	◦ Capital goods investment (to increase labour productivity)	◦ Political and geopolitical risks ◦ Capital flow volatility ◦ Low export diversity
BRICS	Uncertain	◦ Growing consumer market ◦ Capital goods investment (to increase labour productivity and to narrow the infrastructure gap)	◦ Chinese re-structuring ◦ Reliance on commodity exports ◦ Infrastructure bottlenecks ◦ Geopolitical risks
Latin America	Moderate	◦ Capital goods investment (to boost labour productivity) ◦ Solid financial market conditions	◦ Reliance on commodity exports ◦ Infrastructure bottlenecks ◦ Capital flow volatility
South East Asia	Buoyant	◦ Growing consumer market (backed by solid real household income growth) ◦ Capital goods investment (in order to boost labour productivity)	◦ Adverse feedback from re-structuring of the Chinese economy ◦ Increasing financial risks due to high leverage and high foreign currency debt ◦ Geopolitical risks
Middle East	Uncertain	◦ Sanctions relief with Iran	◦ Geopolitical risks ◦ Reliance on commodity exports
North Africa and Nigeria	Uncertain	◦ Growing consumer market ◦ Need for production facilities	◦ Political instability ◦ Reliance on commodity exports ◦ High unemployment rate

4.1 Industrial Countries in Overseas: big import market, but only moderate growth perspectives

Australia, Canada, Japan, New Zealand, United States

Despite their far distance from Austria, Industrial Countries in Overseas bear a considerable potential for Austrian exports. The USA are actually already the second biggest trading partner of Austria (after Germany). Even if the degree of openness of the five evaluated countries is relatively low (especially of the USA), they represent an important global import market because of both, their economic size and their huge and relatively wealthy population. According to the *WTO* (2015), they belong to the leading importers in world merchandise trade (USA rank 1, Japan rank 4, Canada rank 10, Australia rank 23). They are characterised by diversified economies and operate on the global research frontier with an import structure well-matching the Austrian export structure. Because of their overall macroeconomic stability and the high household incomes, the consumer markets are well developed. According to GDP per capita (measured in PPP) the countries belong to the world richest economies. Nevertheless, there are considerable socio-economic gaps in the population, which pose a problem and are a challenge for the future.

Short- and medium-term economic outlook remains solid

The economies of Australia and New Zealand are growing robust in 2016. The positive development is expected to continue in the medium term. In its recent Economic Outlook (October 2016) the IMF projects annual average growth rates from 2½ percent to 3 percent (Table 4.2). In New Zealand and Australia the agricultural sector plays an important role, especially in the export sector. Thus, the countries are vulnerable to volatilities in the diary prices and the recent price decline weighted on their economies. Industrial capital equipment and intermediate goods are mainly imported.

Canada relies on commodity production and exports. In 2016 the Canadian economy will expand with only 1.2 percent, mainly because of the weak business investment triggered by the recent drop in oil prices. The low oil price weighed on revenues and economic growth. Also investment in the energy sector is dampened by the weak oil price (*IMF*, 2015A; *Bank of Canada*, 2016). With this drag tapering off, economic growth is expected to accelerate in the medium term to growth rates of around 2 percent.

In 2016 the economy in the USA will grow at a rate of 1.6 percent. The IMF expects an ongoing moderate growth in the medium term 2016-2021 (1.9 percent). The outlook is mainly supported by private consumer expenditures induced by improved balance sheets, growing personal income and steady job creation. The situation on the labour market is sound and the unemployment rate is projected to stay around 5 percent until 2021.

The Japanese economy still suffers from weak internal and external demand. In 2016 GDP growth will be below 1 percent. In the medium term average growth is expected to stay in

this range. Consumer demand will recover, but the announced raise in the consumption tax by 2 percentage points in 2017 may be a dampening factor for private expenditures again. The rebound in commodity prices and the ongoing accommodative monetary policy conditions will boost inflation. The rate is expected to rise from –0.2 percent in 2016 to 1.0 percent in the medium term. In the long run, Japan is facing problems due to its rapid aging population, affecting the future labour force and therefore potential growth and fiscal sustainability. While in 2010 the median age in the population was 45 years, it is projected to rise to 53 years in 2050 (*UN*, 2013).

Table 4.2: Industrial Countries in Overseas – Key indicators

Macroeconomic Indicators

	GDP, volume		GDP per capita		Consumer prices		Unemployment rate		Current account balance		General government gross debt	
	Annual rate in %		*Level, in PPP*		*Annual rate in %*		*In %*		*% of GDP*		*% of GDP*	
	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021
Australia	+ 2.9	+ 2.9	48,806	54,023	+ 1.3	+ 2.4	5.7	5.5	– 3.5	– 4.0	40.9	41.7
Canada	+ 1.2	+ 1.9	46,240	50,507	+ 1.6	+ 2.0	7.0	6.9	– 3.7	– 2.8	92.1	86.5
Japan	+ 0.5	+ 0.5	38,894	42,719	– 0.2	+ 1.0	3.2	3.2	+ 3.7	+ 3.3	250.4	254.2
New Zealand	+ 2.8	+ 2.6	37,108	41,867	+ 0.7	+ 1.9	5.3	5.4	– 3.0	– 3.9	29.9	25.8
United States	+ 1.6	+ 1.9	57,294	63,745	+ 1.2	+ 2.4	4.9	4.9	– 2.5	– 2.7	108.2	108.1

Business environment and human development

	Ease of Doing Business Ranking	Human Development Index
	Rank 2017 [1]	*Rank 2015 [2]*
Australia	15	2
Canada	22	9
Japan	34	20
New Zealand	1	9
United States	8	8

Source: IMF, World Bank, UNDP. – [1]) Out of 190 countries. – [2]) Out of 188 countries.

Financial stability risks arise from increasing house prices and household debt

Recent developments on the housing markets may bear a risk for the macroeconomic stability in certain Industrial Countries in Overseas. In New Zealand, Canada, Australia and – to a lesser extent – in the USA, real house prices have increased significantly in the recent years. In Japan real house prices increased only moderately. According to the OECD[4]) in Canada, Australia and New Zealand house prices are overvalued, making the economies vulnerable to the risk of price corrections. Along with the house prices household debt to GDP ratios have risen in Australia and Canada and are currently above the OECD average (*IMF*, 2015B).

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[4]) http://www.oecd.org/eco/outlook/focusonhouseprices.htm.

Superior conditions for living and doing business as risk factors

All five countries are characterised by a stable political environment and a well developed infrastructure. The workforce is well educated and the countries are close to the global frontier in doing business. New Zealand, the United States, Australia and Canada are ranked in the top 14 in the overall Ease of Doing Business Ranking. Japan is ranked 34. Hence, similar business practice as compared to Austria facilitates international trading.

The countries enjoy a high standard of living. According to the Human Development Index by the UN (*UNDP*, 2015) all countries are ranked in the top 20. However, inequality issues need to be addressed in these countries (*Carey*, 2015) as lower rankings in terms of the Inequality-adjusted HDI reveal. Specifically in Japan, the USA, New Zealand and Australia poverty rates among older persons are above the OECD average (*UN*, 2013).

Expected investment activity in Industrial Countries in Overseas

From a sectoral perspective, Austria mainly exports machinery and transport equipment. This matches the growing investment activity in Industrial Countries in Overseas, amplified by recent infrastructure programmes. The government of Canada announced a long-term infrastructure plan, including community and transport infrastructure. The "New Building Canada Plan" is the largest long-term infrastructure plan in Canadian history, budgeting about CA$ 80 billion for public infrastructure over a period of 10 years[5]). To a lesser extent, the government of Australia has foreseen an infrastructure investment programme for 2015/2016.

Additionally, Industrial Countries in Overseas are expected to invest more in new technologies like green infrastructure and cleaner production. Expenditures in renewable energy, like solar power plants and wind farms are an important topic in the future, as delivering on international climate change commitments requires the implementation of a number of new projects in the countries.

Summary and implication for Austrian export potentials

Medium-term growth in Industrial Countries in Overseas is forecasted to be solid, with positive impulses coming from Australia and New Zealand. The countries are characterised by well developed economies with a diversified consumer and investment goods demand. Public infrastructure programmes as well as the countries' increasing efforts for green investment projects are expected to play a role in the future. Despite the countries' relative high wealth, inequality and the aging society are risks, which may affect future consumer expenditures. Further uncertainties are seen in the reliance on commodity exports (Canada, New Zealand and Australia). Moreover, financial stability risks emerge from increasing house prices and high household debt.

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[5]) http://www.infrastructure.gc.ca/plan/nbcp-npcc-eng.html.

4.2 Western Balkans: still catching-up

Albania, Bosnia and Herzegovina, Macedonia, Montenegro, Serbia

Due to their geographic proximity and historical ties Austria's foreign trade relations are closely intertwined with these countries (*Christen*, 2014). In 2015 Austrian goods exports to Albania (+20 percent) and Serbia (+10.5 percent) increased considerably. The Western Balkans are small and nowadays relatively open economies, with the EU as main trading and investment partner. While Albania, Macedonia, Montenegro and Serbia are EU candidate countries, Bosnia and Herzegovina has the status of a potential candidate country. In this context the countries were offered Stabilisation and Association Agreements (SAA)[6]. The trade part of the SAA establishes a free trade area between the EU and the individual country.

The countries underwent substantial political and economic transitions over the last decades. After dissolving from socialist regimes and settling militant conflicts in the 1990s, their economies started a catching-up process. They opened to foreign trade and implemented structural changes.

Table 4.3: Western Balkans – Key indicators

Macroeconomic Indicators

| | GDP, volume | | GDP per capita | | Consumer prices | | Unemployment rate | | Current account balance | | General government gross debt | |
| | Annual rate in % | | Level, in PPP | | Annual rate in % | | In % | | % of GDP | | % of GDP | |
	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021
Albania	+ 3.4	+ 4.0	11,861	14,371	+ 1.1	+ 2.8	16.9	16.1	− 13.3	− 12.1	72.2	61.2
Bosnia and Herzegovina	+ 3.0	+ 3.8	11,034	13,256	− 0.7	+ 1.5	25.4	24.8	− 5.1	− 5.3	44.1	40.9
Macedonia	+ 2.2	+ 3.6	14,530	17,253	+ 0.1	+ 1.6	25.4	23.8	− 1.8	− 2.7	40.2	42.7
Montenegro	+ 5.1	+ 3.5	17,035	20,083	+ 0.5	+ 1.7	17.7	17.6	− 10.3	− 9.7	75.5	82.1
Serbia	+ 2.5	+ 3.6	14,226	16,843	+ 1.3	+ 3.7	18.6	17.8	− 4.2	− 3.8	76.8	70.1

Business environment and human development

| | Ease of Doing Business Ranking | Human Development Index |
	Rank 2017 [1]	Rank 2015 [2]
Albania	58	85
Bosnia and Herzegovina	81	85
Macedonia	10	81
Montenegro	51	49
Serbia	47	66

Source: IMF, World Bank, UNDP, ILO. – [1]) Out of 190 countries. – [2])Out of 188 countries.

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[6]) http://ec.europa.eu/enlargement/policy/glossary/terms/saa_en.htm.

Short- and medium-term economic outlook is sound

With growth rates between 2.5 percent and 5.1 percent in 2016 the economies grew faster than the EU and the euro area. The upswing mainly rests on a new investment cycle, while consumer demand remained subdued, influenced by the unsatisfactory personal income situation (*European Commission*, 2016).

According to the IMF Economic Outlook from October 2016, the upswing in the Western Balkans will continue with medium-term growth rates of more than 3 percent (Table 4.3). In Serbia the outlook is supported by planned structural reforms like restructuring state-owned enterprises and reforming the public administration, which should revitalise the investment and export activity (*European Commission*, 2016). Also in Albania and Montenegro planned investment expenditures and infrastructure programmes are expected to boost economic growth. In Montenegro the outlook is supported by the construction of an important highway project (Bar Boljare). During 2015–2019 the total value added of the project is estimated to be at around 1½ percent of non-highway GDP (*IMF*, 2016B). While investment and exports are seen as the driving forces for the medium-term growth in Macedonia, in Bosnia and Herzegovina private and public consumption are the key drivers for stable growth (*Adarov et al.*, 2016).

But there are some risks, too. Both, public and private indebtedness are high. In addition the countries are suffering from high external imbalances. Current account deficits are high, especially in Montenegro and Albania. Recently deficits narrowed due to the fall in oil and commodity prices. These price developments dampened consumer price inflation as well.

Unemployment is high

Although the good cyclical stance has lead to an increase in employment, the region still faces substantial problems on the labour market. Unemployment is high (close to 20 percent), especially among the youth, where rates are exceeding 40 percent. According to the IMF, in the medium term only minor improvements are expected.

The countries of the Western Balkan are characterised by a relatively well educated population. Considering the Human Development Index of the UN (*UNDP*, 2015), Montenegro ranks on place 49 and is belonging to the group of the very high developed countries. The other countries are ranked between place 66 (Serbia) and 85 (Albania and Bosnia and Herzegovina) and are included in the group of the high developed countries. Inequality in education is relatively low. Primary, secondary and to a certain extend tertiary education are free and mainly state-run (*Koczan*, 2016). In the Doing Business Ranking the countries are ranked between place 12 (Macedonia) and 97 (Albania).

Need for catching-up

After the transition the Western Balkan Countries started a catching-up process with the other European countries. But still, there are substantial gaps in income and standard of living. GDP per capita (adjusted for PPP) is still very low, around 70 percent of those of the New Member States and 35 percent of the other EU member countries. Among the Western Balkan Countries, GDP per capita in PPP is especially low in Bosnia and Herzegovina and Macedonia. Also in the medium term GDP per capita (measured in PPP) is expected to remain low, with 80 percent of those in the New Member States and close to 40 percent of those in the rest of the EU (Figure 4.1). Compared to the past catching-up process of the New Member States to the advanced EU countries, the Western Balkans performance is weak (*Murgasova et al.*, 2015).

In the Western Balkans huge gaps in the transport and energy infrastructure exist compared to other European countries (*Holzner et al.*, 2015). The density of railway network is low, especially in Bosnia and Herzegovina, Albania and Montenegro. The motorway density is below the European average, albeit in certain countries motorway construction was improved in the last decade[7]). Given the scarcity in certain infrastructure, the need of new investment is high, and a realisation would boost the cyclical development and the employment in the region.

Figure 4.1: GDP at PPP per capita, EU-28 = 100
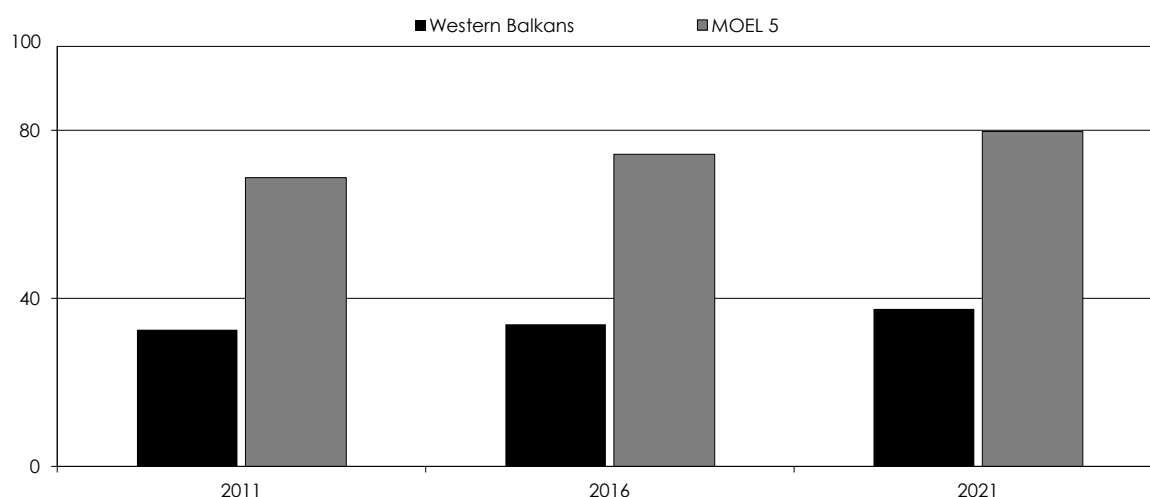
Source: IMF, WEO October 2016, WIFO calculations. Western Balkans: Albania, Bosnia and Herzegovina, Macedonia, Montenegro, Serbia. MOEL 5: Czech Republic, Hungary, Poland, Slovakia, Slovenia.

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[7]) Considering the established motorway routes in relation to the area of the country, Albania, and to a lesser extent Serbia, show a substantial expansion of their modern road networks in the last decade (*Holzner et al.*, 2015).

Summary and implication for Austrian export potentials

Economic growth is expected to stay robust in the medium term and the ongoing catching-up process leaves a future potential for both, private investment and consumption expenditures. In most of the considered countries there is also the need for infrastructure investment in the medium term. If the countries are going to narrow the gaps in terms of living standards and infrastructure in the future, this may bear a certain potential for the Austrian export market.

But there are some risks, too. The Western Balkans are proving only a small degree of resilience. Because of their openness, the economies are vulnerable to external shocks emanating from the rest of Europe. A lower demand from the EU countries dampens foreign trade. The debt crisis in Southern European countries poses a risk through the strong ties in the financial sector. Moreover, poverty, unemployment and imbalances are problems which have to be solved in the countries in order to achieve long-term macroeconomic stability. The countries are characterised by both internal and external imbalances, current account deficits and public debts are high. Also high corporate indebtedness may hinder future private investment.

4.3 Black Sea Region extended: battered by adverse external and internal shocks

Armenia, Azerbaijan, Belarus, Georgia, Turkey, Ukraine, Kazakhstan, Uzbekistan

Economic growth has slowed markedly in the extended Black Sea Region, owing to a wave of adverse external shocks; in particular declining commodity prices, the slowdown in Russia, increased geopolitical turmoil, to name a few, have lessened growth prospects and raised vulnerabilities in the region as a whole. Surges in public spending in turn have helped to attenuate the immediate adverse impact on economic activity, supported additionally by weak exchange rates which promoted competitiveness and helped to maintain some fiscal space. Though, weak exchange rates have also increased the pressure on inflation rates and it raised financial investors' sensitivity towards hidden financial system risks in the region's countries. In oil-importing countries of the region, any boost to private household consumption has been attenuated by falling remittance flows from Russia – an important source of income with large shares of GDP (*Kryshko*, 2015). Public balances have worsened markedly across the region not least since some countercyclical fiscal policies have been deployed to support economic activity especially in those countries that faced exceptionally sharp decelerations in growth rates. The low oil price brought about a fall in oil revenues which in turn depressed fiscal balances additionally. In oil-exporting countries, fiscal breakeven oil prices exceed current oil prices which dampen the scope for a near-term relief of public finances (see for instance *IMF,* 2015C, 2016C and *Husain et al.,* 2015).

In a similar vein, external balances have worsened too and financing costs have escalated. Exchange rates either depreciated or were devalued, which in turn created upward inflationary pressures and limited room for monetary easing. Although currency weakening and fiscal easing have helped to attenuate the effect of the adverse and mostly external shocks, financial sector vulnerabilities have increased – in particular due to the countries' highly dollarised loan-books – and in some cases they were exacerbated additionally by elevated political uncertainty.

Table 4.4: Black Sea Region extended – Key indicators

Macroeconomic Indicators

	GDP, volume		GDP per capita		Consumer prices		Unemployment rate		Current account balance		General govern- ment gross debt	
	Annual rate in %		*Level, in PPP*		*Annual rate in %*		*In %*		*% of GDP*		*% of GDP*	
	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021
Armenia	+ 3.2	+ 3.8	8,881	10,622	− 0.5	+ 3.7	17.9	17.5	− 2.5	− 3.8	50.6	50.2
Azerbaijan	− 2.4	+ 2.4	17,688	19,730	+ 10.2	+ 4.9	6.0	6.0	+ 0.7	+ 8.7	39.6	34.7
Belarus	− 3.0	+ 0.8	17,497	19,265	+ 12.7	+ 9.8	1.5	1.5	− 4.9	− 4.1	54.9	65.0
Georgia	+ 3.4	+ 5.0	10,100	12,615	+ 2.6	+ 3.2	11.8	11.9	− 12.1	− 10.3	42.1	46.6
Turkey	+ 3.3	+ 3.3	21,147	24,174	+ 8.4	+ 6.9	10.2	10.0	− 4.4	− 5.5	31.7	29.1
Ukraine	+ 1.5	+ 3.4	8,230	9,747	+ 15.1	+ 7.2	9.0	8.3	− 1.5	− 2.1	92.7	79.3
Kazakhstan	− 0.8	+ 2.2	25,669	27,523	+ 13.1	+ 8.3	5.0	5.0	− 2.2	+ 2.0	21.4	23.4
Uzbekistan	+ 6.0	+ 6.0	6,453	7,959	+ 8.4	+ 9.8	10.1	10.0	+ 0.1	+ 0.3	15.1	11.9

Business environment and human development

	Ease of Doing Business Ranking	Human Development Index
	Rank 2017 [1]	*Rank 2015 [2]*
Armenia	38	85
Azerbaijan	65	78
Belarus	37	50
Georgia	16	76
Turkey	69	72
Ukraine	80	81
Kazakhstan	35	56
Uzbekistan	87	114

Source: IMF, World Bank, UNDP, ILO. – [1]) Out of 190 countries. – [2]) Out of 188 countries.

Short- and medium-term economic outlook

Growth is expected to pick up only gradually in the short term as the growth impediments from the adverse external environment are likely to fade out only slowly. In oil-exporting countries, declining oil production and continuous dis-investment in the oil and gas industries weigh on economic activity. Private demand is expected to remain weak due to low confidence resulting in turn from excessive financial market volatilities and overall high uncertainty.

In oil-importing countries, growth is projected to be moderate in the short term though better than in oil-exporting countries. Despite the advantageous commodity price environment – from the point of view of oil importers – the positive effect of falling oil prices on economic activity has been confined since actual domestic fuel prices have declined only slightly which in turn is a consequence of low competition and excessive currency weakening. Falling exports to Russia, contractions in foreign direct investment, as well as subdued prices for commodity export goods other than oil and gas (copper, aluminium, cotton) are also depressing on the outlook.

Medium-term growth is projected to fare better for the region as a whole, mainly on account of a pick-up of economic activity in Russia (*IMF*, 2015D, 2015E). Still medium-term growth prospects are clouded due to structural impediments to sustainable growth: The extended Black Sea Region has been lagging behind most other emerging market economies in export diversity, the quality of education and financial deepness, while the business environment and control of corruption are also weak in many countries (*IMF*, 2016D, 2016F).

Although growth expectations for the region as whole are diminished in the short term, vast country-specific differences remain in shaping economic dynamics of the region.

Risks - heightened uncertainty weighs on short-term prospects

Short-term outlook is comprised by risks which are tilted to the downside in most of the Black Sea Region countries. Economic activity in the region has taken hold and risks to the outlook have risen. Despite the fact that the sources of the recent downside risks remain rather unchanged, they have in turn become more pronounced owing to a tightening in financial conditions and elevated geopolitical turmoil across the region:

- Tighter global financial conditions and excess capital flow volatility in particular, would adversely affect most of the countries' financial systems. In fact, increased market volatility may result in rising borrowing costs and a pick-up in capital outflows, particularly affecting those countries with high fiscal financing needs. In addition, further turmoil in European financial markets may push up pressures on European banks to cut exposures to many countries of the Black Sea Region. While foreign banks still own the major part of the region's banking systems, dependency on parent funding has declined significantly since local lending is now primarily financed by local deposits in many countries. This in turn is expected to dampen the impact of lower foreign bank flows on the real economy although the risk for negative spillover effects from foreign capital markets remains elevated.
- The further source of risk is related to the sharp increase in migration flows and uncertainties alike due to geopolitical turmoil of some countries in the Middle East: Even though the impact is likely to be limited to a few countries this risk is likely to be non-trivial. Migration risk is non-negligible for Turkey, where refugee flows may accelerate in the short term. Against the background that the Balkan route is now closed, migrants may try to

search for alternative routes which could in turn also affect countries of the Caucasus region (*Atoyan et al.*, 2016).

- Increasing political risks: In a number of countries the political environment has been characterised by elevated turmoil and instabilities (notably Ukraine). Some countries in turn have experienced the rise of populist parties in recent elections fuelled by anti-establishment sentiment that may entail some macroeconomic policy reversals. Other countries in turn face elections in the short term which raises the risks of political instability.

Summary and implication for Austrian export potentials

The sharp deceleration of economic growth in the extended Black Sea Region and the projected slow rebound imply that Austrian exports to the region are likely to remain subdued in the near term. The countries of the region offer potentials for Austrian exports in both the consumer goods market as well as those for investment goods. The prospects for the latter are particularly driven by commodity prices; high or accelerating commodity prices motivate producers in commodity exporting countries to expand their productive capacities which in turn implies a pick-up in capital investment.

As regards medium-term growth perspectives, the high dependency on commodity exports and enduring political stability are likely to remain challenges. Over the medium term, a return to pre-crisis growth rates hinges crucially on reducing geopolitical risks, achieving political order. These risks in turn also characterise the perspectives surrounding Austrian exports to the region.

4.4   BRICS ahead of a period of moderate growth rates

Brazil, Russia, India, China, South Africa

Jim O'Neil coined the term "BRIC" in the year 2001, which is an acronym for – originally – four rapidly growing countries (Brazil, Russia, India, China and later South Africa). Since then BRICS members have increasingly attracted investors' attention due to the huge economic growth potential emerging market economies generally carry with. However, after years of buoyant growth, the BRICS countries are beginning to show signs of structural weaknesses. In fact, they are in the midst of severe economic and political woes. The growth slowdown is due to a mixture of both cyclical as well as structural factors. Depressed export dynamics due to weak global consumption, plunging commodity prices and a host of country-specific economic and political turmoil have pushed two of the BRICS members – Russia and Brazil – into recession and triggered one of the most extensive exodus of investors out of emerging markets over more than two decades (*IMF*, 2016F, 2016E).

The economic prospects of the BRICS are now uncertain and their efforts taken to create a bloc challenging the power of the Group of Seven[8]) – the largest industrial economies – have been viewed with great scepticism.

Table 4.5: BRICS – Key indicators

Macroeconomic Indicators

	GDP, volume		GDP per capita		Consumer prices		Unemployment rate		Current account balance		General govern-ment gross debt	
	Annual rate in %		*Level, in PPP*		*Annual rate in %*		*In %*		*% of GDP*		*% of GDP*	
	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021
Brazil	− 3.3	+ 1.6	15,211	16,574	+ 9.0	+ 4.8	11.2	10.6	− 0.8	− 1.4	78.3	88.0
China	+ 6.6	+ 6.0	15,424	19,545	+ 2.1	+ 2.7	4.1	4.1	+ 2.4	+ 1.2	46.3	54.1
India	+ 7.6	+ 7.8	6,658	8,618	+ 5.5	+ 5.1	3.4	3.3	− 1.4	− 2.1	68.5	63.4
Russia	− 0.8	+ 1.4	26,109	29,092	+ 7.2	+ 4.3	5.8	5.6	+ 3.0	+ 4.1	17.1	18.6
South Africa	+ 0.1	+ 1.8	13,179	14,051	+ 6.4	+ 5.6	26.3	27.6	− 3.3	− 3.6	51.7	55.1

Business environment and human development

	Ease of Doing Business Ranking	Human Development Index
	Rank 2017 [1]	*Rank 2015 [2]*
Brazil	123	75
China	78	90
India	130	130
Russia	40	50
South Africa	74	116

Source: IMF, World Bank, UNDP, ILO. – [1]) Out of 190 countries. – [2]) Out of 188 countries.

Since 2011, three major factors that initially fuelled growth in the BRICS economies have all reversed: (1) Commodity prices have dropped down to levels that are comparable to those of a decade ago. (2) The growth rate of world trade has fallen from around 7 percent annually in the years before the crisis to 1.5 percent in 2015. (3) Growth in China – the main driver in the group – has dropped markedly. China is now at risk of stalling as authorities have been trying to transform the country's export- and credit-driven economy into a more sustainable model relying on higher domestic absorption and a reduction of excessive debt levels.

But these cyclical factors are not the only headwinds buffeting the BRICS countries. They also face deep structural impediments to growth involving excessive debt levels combined with foreign currency denominated debt and demographic challenges.

Politics are also creating impairments to economic growth. For instance, Russia's oil-fuelled economy, already hit by descending prices, has also been affected by Western-led sanctions

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[8]) USA, United Kingdom, Canada, Japan, France, Germany and Italy.

for its Ukraine interventions. Brazil's political situation is trapped under an expanding corruption scandal. Uncertainties whether the Communist Party in China is able to overcome the local problems of corruption and financial turmoil are high. South Africa is yet another country of the group facing political headwinds.

Infrastructure bottlenecks restrain potential output growth

Infrastructure is presumably a key factor which is currently constraining the growth potential of the BRICS countries. India's tremendous power blackout in the year 2012 is a good reminder of the critical role of the quality of a country's infrastructure in economic development. The condition of the overall infrastructure in India and China explains in part the poor performance of India's manufacturing sector relative to the Chinese one.

In a similar vein, Brazil has witnessed power failures of its own in recent years, of which one knocked out the electricity supply to eleven federal states. In addition to this, the transportation of commodities and finished goods is impaired by the low quality of railways, roads and ports.

The 2012 annual report of the International Finance Corporation (*IFC*, 2012), a member of the World Bank Group, estimates that emerging market economies in general will require more than US$ 1 trillion as infrastructure investment annually. Moreover, the report identified underdeveloped infrastructure in India as the country's top priority.

The BRICS Development Bank

The New Development Bank (NDB) – previously referred to as the BRICS Development Bank – is a multinational development bank established by the BRICS countries. According to the "*Agreement on the NDB*"[9]), "the Bank shall support public or private projects through loans, guarantees, equity participation and other financial instruments." Moreover, the NDB "shall cooperate with international organisations and other financial entities, and provide technical assistance for projects to be supported by the Bank".

The bank aims to contribute to BRICS countries' development plans established nationally through projects that are socially, environmentally and economically sustainable. In this respect, the main objectives of the NDB can be summarised as follows: (1) Promote infrastructure investment and sustainable development projects with a significant impact in member countries. (2) Establish an extensive network of global partnerships with other multilateral development institutions and national development banks. (3) Build a balanced project portfolio giving a proper respect to their geographic location, financing requirements and other factors.

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[9]) http://www.ndb.int/download/Agreement%20on%20the%20New%20Development%20Bank.pdf.

Subdued medium-term growth prospects

From the current point of view, across BRICS economies, growth prospects through 2020 and beyond will be lower and more divergent than in the BRICS emergence period. This slowdown is primarily driven by China. Yet in the short term, all of the BRICS economies will continue facing significant cyclical and structural impediments to economic growth. China's constraints are primarily structural because of domestic and external imbalances. Economic growth in India could be unleashed by the government's recently proposed reform agenda. Cyclical forces associated with depressed oil prices and elevated geopolitical tensions are weighing on Russia's economic prospects in the near term. Brazil's economy has similarly been hit by the cyclical factor of falling commodity prices. The current economic recession has been exacerbated by structural factors, including deficiencies in infrastructure and burdensome taxation as well as business regulations. As regards South Africa, the recent slump in commodity prices has been a drag on the recent growth performance. In addition to that, the country's burdensome regulatory environment as well as personal security issues are often pointed to as structural impairments to higher potential growth rates.

Efforts to overcome the growth constraints in the BRICS economies will become particularly important, given that commodity prices are expected to remain at moderate levels for a protracted period and there is little sign of a strong pick-up in demand coming from advanced economies in the near future. Over the medium term these economies are likely to not grow at the rate they did before the global financial crisis.

Summary and implication for Austrian export potentials

From the current point of view, across BRICS economies, growth prospects through 2020 and beyond will be lower and more divergent than in the BRICS emergence period. The key drivers of growth are likely to differ across the BRICS countries. The rebalancing of the Chinese economy towards more consumption and services rather than capital investment and exports offers opportunities for Austrian exporters especially in the consumption goods sector. The BRICS countries other than China in turn offer opportunities for Austrian exporters in the area of investment goods and machinery and equipment investment goods in particular.

4.5 Latin America: adjusting to lower commodity prices

Argentina, Chile, Colombia, Mexico, Panama, Peru, Uruguay, Venezuela

The global economic environment has been favourable for Latin American economies for a long time; however, currently it is fading. Indeed, lower growth in key emerging market economies, in particular in China, and steady increases in US interest rates combined exert downward pressure on commodity prices, cause appreciation pressure of the US-dollar worldwide, and lessen the flow of capital to the region. All this affects many countries of the region adversely, although they were able to deal with deteriorating external conditions

without – compared with historical episodes – rendering output growth volatility exuberant. However, steady downward revisions of growth rates could be a symptom of potential output growth being lower than expected. Despite the fact that a few countries have initiated the process for structural reforms to increase productivity and competitiveness, it is clear that the recent growth slowdown has rendered this reform plans more challenging, and, in some cases, already brought it to a halt.

Table 4.6: Latin America – Key indicators

Macroeconomic Indicators

| | GDP, volume | | GDP per capita | | Consumer prices | | Unemployment rate | | Current account balance | | General government gross debt | |
| | Annual rate in % | | Level, in PPP | | Annual rate in % | | In % | | % of GDP | | % of GDP | |
	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021
Argentina	− 1.8	+ 3.0	20,171	22,484	.	+ 15.5	9.2	7.6	− 2.3	− 3.8	51.8	50.1
Chile	+ 1.7	+ 2.9	23,969	26,879	+ 4.0	+ 3.0	7.0	6.9	− 1.9	− 2.6	20.4	25.5
Colombia	+ 2.2	+ 3.8	14,162	16,303	+ 7.6	+ 3.2	9.7	9.0	− 5.2	− 3.7	47.5	43.6
Mexico	+ 2.1	+ 2.7	18,865	21,195	+ 2.8	+ 3.1	4.1	3.8	− 2.7	− 2.9	56.0	54.9
Panama	+ 5.2	+ 6.1	22,788	27,453	+ 0.7	+ 1.9	5.1	5.1	− 5.5	− 3.4	39.0	35.3
Peru	+ 3.7	+ 3.6	13,019	15,060	+ 3.6	+ 2.5	6.0	6.0	− 3.8	− 2.6	26.3	25.9
Uruguay	+ 0.1	+ 2.8	21,570	24,675	+ 10.2	+ 7.3	7.9	7.8	− 2.9	− 3.3	63.7	65.1
Venezuela	− 10.0	− 1.7	15,103	14,399	+ 480.0	+ 3130.0	18.1	26.1	− 3.4	+ 0.3	32.8	24.9

Business environment and human development

| | Ease of Doing Business Ranking | Human Development Index |
	Rank 2017 [1]	Rank 2015 [2]
Argentina	116	40
Chile	57	42
Colombia	53	97
Mexico	47	74
Panama	70	60
Peru	54	84
Uruguay	90	52
Venezuela	187	71

Source: IMF, World Bank, UNDP. – [1]) Out of 190 countries. – [2]) Out of 188 countries.

The slowdown is expected to continue in the short term - albeit with cross-country heterogeneity

After high growth rates until 2011/12 the region as a whole expanded only modestly in 2016. The economic slack should continue at least in the short term. With this in mind, the (average) growth rate of Latin American countries is likely to be lower than that of industrialised countries for the first time since a decade. Looking into more details, real economic activity in Latin American economies has been decelerating steadily since 2010. Concomitantly, this occurred in tandem with the Chinese economy experiencing a significant deceleration of

economic activity. Additionally, pressure from financial markets has risen to differing degrees across countries depending in each case on the economic fundamentals. At the same time, key country-specific vulnerabilities continued weighing on growth in Latin American economies. The deceleration reflects underlying weaknesses and frictions in both aggregate supply and demand, in the context of an inferior external environment. Obviously, this broad picture does not characterise the situation in every single country. In fact net-commodity importers – as for instance Panama – continue benefiting from improved terms-of-trade and a strengthening US economy.

Domestic headwinds depress short-term growth perspectives

The main shock that has been driving the business cycle in Latin American economies recently is external. Still, however, domestic factors have also played a role in various countries. Some countries are trapped in a net of distortionary policy interventions and a weak macroeconomic framework, of which Venezuela is an extreme case. Distortions at the microeconomic level combined with unsustainable macroeconomic policies have led to sizable imbalances, including hyperinflation, a deep contraction in real economic activity, and a widening fiscal deficit. Recent political turbulence contributes additionally to the depressed growth perspectives. In Argentina, inflation is expected to stay high owing to the monetisation of the public deficit.

In general, the domestic headwinds prevailing currently are likely to stay beyond the short term. The extent to which distortive domestic policies dampen real economic activity is expected to weigh strongly on potential output.

Investment slack and potential growth

Traditionally, gross fixed capital formation has tended to be lower in Latin America than in other regions of the developed and developing world. Nonetheless, Latin American countries have been closing the investment gap with other regions, with the exception of certain economies that have grown at exceptionally high rates in the last 15 years, such as China and India (*Manuelito – Jiménez*, 2013; *Ros*, 2015).

The narrowing of the region's countries investment gap relative to other regions of the world observed in the last decade was primarily due to rising private investment. So far, public investment constitutes only a minor share of the total investment volume. This is partly due to adjustment policies carried out in the 1990s within the application of the Washington Consensus in Latin America, which resulted in extensive privatisations and focus on curbing fiscal spending. One reflection of this stylised fact is that the region's infrastructure spending is too low to boost economic, environmental and social development. Hence Latin America continues to have a severe infrastructure shortfall in various sectors as for instance transport, energy, telecommunications, water and sanitation (*ECLAC*, 2015; *Calderón – Servén*, 2010;

Fanelli, 2013; *Lucioni*, 2009). The shortcomings are especially striking when the region is compared with certain developing countries (*Cipoletta Tomassian*, 2011).

A brief review of investment plans in Latin American countries such as Mexico and Peru shows that the infrastructure gap attains increasingly more attention. As a percentage of GDP, planned investment volumes are higher than the investment projects carried out in earlier periods. However, considering the current economic slack and the deterioration in public finances, it is uncertain how far these ambitious public investment projects will be implemented. Moreover, a review of the current infrastructure investment plans of the Latin American countries suggests that, despite the greater focus now on infrastructure in national planning, the public resources set aside for this remain low relative to those recommended as being essential to meet current and future infrastructure demand.

Summary and implication for Austrian export potentials

A buoyant external economic environment coupled with prudent policies promoted economic activity in many Latin American countries during the last decade. The dampened outlook for commodity prices has triggered a re-evaluation of the region's growth potential. In particular, depressed raw material prices act as a disincentive for investment on capital accumulation in commodity producing sectors with adverse effects on potential output growth and hence on medium-term growth perspectives. Bottlenecks in private investment as well as in infrastructure investment depress medium-term growth perspectives additionally. Against this background, Latin American economies face major challenges in the years ahead. The region needs to foster potential output growth, for both economic and political reasons. The task that most Latin American countries face is implementing a growth strategy that is less vulnerable to global conditions and based on improvements in productivity.

The deceleration of economic growth in the region and the projected slow rebound imply that Austrian exports to the region are likely to remain subdued in the near term. The countries of the region offer potentials for Austrian exports especially for investment goods. The prospects for that are particularly driven by commodity prices and their potential to accrue revenues in net-commodity exporting countries of the region which in turn create fiscal space to promote public infrastructure investment.

4.6   South East Asia: sluggish exports and robust domestic demand

Hong Kong, Indonesia, Republic of Korea, Malaysia, Singapore, Taiwan, Thailand and Vietnam

Although economic growth decelerated somehow recently in some South East Asian countries, the region as a whole remains a dynamic area. While external demand flattened, domestic demand was a key driver of economic activity despite weaker growth of private investment in a few countries. Private consumption has been relatively strong, supported by

robust growth in disposable income which was in turn supported by depressed commodity prices.

Net exports and current account balances in general improved across most South East Asian economies which were underpinned by favourable terms-of-trade conditions which were in turn supported by lower commodity prices. The improvement in the region as a whole masks considerable differences across the countries.

Table 4.7: South East Asia – Key indicators

Macroeconomic Indicators

	GDP, volume		GDP per capita		Consumer prices		Unemployment rate		Current account balance		General govern- ment gross debt	
	Annual rate in %		*Level, in PPP*		*Annual rate in %*		*In %*		*% of GDP*		*% of GDP*	
	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021
Hong Kong, China	+ 1.4	+ 2.8	58,095	65,969	+ 2.5	+ 2.8	3.2	3.0	+ 2.8	+ 3.2	0.1	0.0
Indonesia	+ 4.9	+ 5.7	11,699	14,214	+ 3.7	+ 4.2	5.6	5.5	− 2.3	− 2.3	27.5	29.7
Korea, Rep.	+ 2.7	+ 3.0	37,948	43,898	+ 1.0	+ 2.0	3.6	3.3	+ 7.2	+ 5.5	38.9	37.6
Malaysia	+ 4.3	+ 4.8	27,234	31,896	+ 2.1	+ 3.0	3.2	3.2	+ 1.2	+ 1.5	56.6	52.3
Singapore	+ 1.7	+ 2.6	87,082	97,574	− 0.3	+ 1.7	2.0	2.0	+ 19.3	+ 17.4	106.4	102.6
Taiwan	+ 1.0	+ 2.2	47,790	53,943	+ 1.1	+ 1.6	3.9	3.9	+ 15.0	+ 14.0	35.7	30.2
Thailand	+ 3.2	+ 3.1	16,835	19,707	+ 0.3	+ 2.0	0.8	0.7	+ 9.7	+ 4.7	43.6	45.2
Vietnam	+ 6.1	+ 6.2	6,422	8,012	+ 2.0	+ 3.9	2.4	2.4	+ 0.4	+ 0.4	62.0	66.6

Business environment and human development

	Ease of Doing Business Ranking	Human Development Index
	Rank 2017 [1]	*Rank 2015 [2]*
Hong Kong, China	4	12
Indonesia	91	110
Korea, Rep.	5	17
Malaysia	23	62
Singapore	2	11
Taiwan	11	.
Thailand	46	93
Vietnam	82	116

Source: IMF, World Bank, UNDP. – [1]) Out of 190 countries. – [2]) Out of 188 countries.

Short and medium-term economic outlook: growth is likely to slide further in the short term

Growth in South East Asian countries is expected to decelerate slightly implying that the developments these countries experienced up to now will continue to be uneven, which in fact reflects the group's overall heterogeneity. In a number of economies (among others Korea), though, the turning of the housing and credit cycles and the increase in lending rates and spreads in conjunction with expected tighter global liquidity conditions are likely to exert some downward pressure on domestic demand. Headwinds from the subdued global

recovery, a tightening of financial conditions, and high debt levels are depressing growth prospects of all countries in the region.

Against this background – although South East Asian economies are projected to remain among the global growth leaders – expected growth rates are below the rates of recent years, before global as well as local financial conditions tightened and concerns about global economic activity and world trade came to the forefront (*IMF*, *2015E, 2016A*). The contribution of net exports to growth is expected to be subdued since global growth is likely to remain sluggish as weak investment growth in major economies and commodity exporters depresses the demand for the region's exports.

In the medium term, though, with improved global economic prospects and less headwinds from the re-structuring of the Chinese economy, growth in South East Asian countries is expected to accelerate again.

Across the short as well as medium term, domestic demand is likely to remain resilient and hence continue being the key driver for growth. It is supported by strong labour markets and continuous growth of disposable income. Real incomes are being boosted additionally by low commodity prices and in turn low inflation. However, even though credit growth is still robust, domestic absorption in the region will be partly undermined by high household and corporate indebtedness, especially once financial market conditions continue to tighten. Heightened volatility in financial markets has already caused a decline in risk appetite and deteriorated business and consumer sentiment in many economies.

Uncertainties surrounding the economic outlook: downside risks are elevated

Downside risks still dominate the economic environment and have remained at elevated levels compared to previous years. The key risk factors for the short and medium term are along various dimensions:

(1)   The Chinese risk factor: potentially adverse spillover effects from rebalancing

Chinese authorities are proceeding with an economic rebalancing as they restructure the economy towards more consumption and services rather than capital investment and exports (compare section 4.4) with the aspiration of rendering economic growth more sustainable over the medium term and increasing the resilience of the economy towards adverse shocks. This will likely come along with advantageous cross-country effects for the region as a whole. In the short term, though, non-linearities emerging from the re-balancing cause some turbulence for China as well as for the other countries of the region. These adverse spillovers could be sizable, especially as China now accounts for a major part of regional growth and is a key trading partner of nearly all South East Asian economies. The negative spillover effects could in fact be substantial for a number of countries, especially for those which are trapped in tight regional supply chains (see for instance *De Backer – Mrioudot*, 2013 and *Veenendaal et al.*, 2015).

(2)   The leverage and foreign currency debt as risk factors

The turning of the financial cycle amid excessive debt levels comprises an important element of risk to the growth prospects in South East Asian countries. These risks can materialise along various dimensions:

Global dimension: An unexpected tightening in global liquidity could promote capital outflows from South East Asian economies. The empirical findings in *Ananchotikul – Zhang* (2014) and *Cho – Rhee* (2013) indicate that government bond yield, equity price and exchange rate volatilities are strongly affected by changes in the global risk environment. Second round effects could augment the initial global financial tightening: the exchange rate depreciation in response to tighter global financial conditions could raise NPLs (Non Performing Loans) as debt servicing costs increase amid high levels of foreign currency debt which all together comprises a risk both for banks as well as non-financial corporations in South East Asian countries.

Domestic dimension: Tighter domestic monetary policy conditions, particularly if central banks react to inflationary spikes from adverse supply shocks, could severely undermine corporations' and households' balance sheets. Asset quality would likely deteriorate in response which would in turn trigger excess credit supply and demand retrenches followed by a negative repercussion on growth via macrofinancial linkages. The drop in real activity would then in turn again weigh on creditworthiness by means of typical financial accelerator effects.

(3)   Other risk factors: trade disruptions and geopolitics

A series of other risk factors pose both upward as well as downward risks. Country-specific political disruptions as well as elevated international geopolitical tensions could likely impair trade, which could be amplified by the high trade interconnectivity among the countries of the region. Country-specific political tensions could also arise as a consequence of high levels of inequality (see for instance *Aghion et al.*, 1999 and *Dabla-Norris et al.*, 2015) and weak policy frameworks.

On the other hand, trade agreements, in contrast, could offer an opportunity to growth owing to more buoyant trade flows. For example, the implementation of the Trans-Pacific Partnership (TPP) could bring benefits to TPP member countries as well as non-member countries of the region alike. The TPP covers a broad range, such as government procurement, intellectual property, services industries, and other non-tariff issues as well as tariff reductions themselves. As concerns tariff reductions they are expected to be substantial and are likely to boost overall productivity in South East Asian countries. However, the recently emerged political tendency to increased trade protectionism weighs heavily on the prospects surrounding the expansionary effects from international trade agreements.

Summary and implication for Austrian export potentials

The short- and medium-term growth prospects of South East Asian countries are buoyant though slightly lower than in recent years. In nearly all countries of the region, the key drivers for economic growth are domestic demand and private consumption in particular. This offers opportunities for Austrian exporters in particular in the sector for consumer goods. The potential for Austrian goods exports beyond satisfying private household demand in South East Asian countries is moderate and if anything confined to capital investment goods in order to boost local labour productivity which is still at rather low levels.

4.7 Middle East: region faces tough road ahead

Bahrain, Iran, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, United Arab Emirates

The overall situation in the countries of the Middle East has taken a turn for the worse. Depressed oil prices, security dislocations, and the global economic slack weigh on short- and medium-term growth perspectives of the region's economies. Regional turmoil arising from the conflicts in Iraq, Libya, Syria, and Yemen heighten uncertainty for the region as a whole. The countries in the region continue facing difficulties in promoting more sustainable and more evenly shared prosperity and remain being plagued by structural bottlenecks, social disintegration, weak institutional structures, low quality of public services and massive security dislocations in Syria and Iraq. The conflicts in these countries come along with significant spillover effects on neighbouring countries. Concomitantly, low oil prices exert additional challenges especially for oil exporters. Against this background, growth projections have been revised down repeatedly within the last few years. However, the growth figures are masked by a wide gap between the high-income countries of the Gulf Co-operation Council (GCC) on the one hand and the developing countries of the region on the other. The agreement of the UN Security Council's five permanent members (China, France, Russia, United Kingdom, USA) plus Germany ("P5+1") with Iran (JCPOA[10])) in turn is likely to support economic activity in the region and beyond in the medium term.

Short-term prospects

The short-term projections for the countries in the Middle East are dominated by geopolitical developments. The baseline scenarios considered by international organisations as for instance the *IMF* (2016A) or *World Bank* (2016) for short-term growth expectations assume that the security situation in the region will improve only slowly. Security concerns will dampen economic perspectives not only in countries where turmoil takes place, but in turn also in

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[10]) The Joint Comprehensive Plan of Action (JCPOA) is an agreement that was decided upon between Iran, the "P5+1" and the EU on July 14, 2015.

neighbouring countries where security disruptions are likely to discourage private investment and hence exert downward pressure on domestic demand.

Table 4.8: Middle East – Key indicators

Macroeconomic Indicators

	GDP, volume		GDP per capita		Consumer prices		Unemployment rate		Current account balance		General govern-ment gross debt	
	Annual rate in %		Level, in PPP		Annual rate in %		In %		% of GDP		% of GDP	
	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021
Bahrain	+ 2.1	+ 1.9	50,303	53,430	+ 3.6	+ 3.0	1.3	1.3	− 4.7	− 2.8	75.2	92.0
Iran	+ 4.5	+ 4.2	18,136	21,220	+ 7.4	+ 5.9	11.3	10.9	+ 4.2	+ 3.3	14.9	14.3
Israel	+ 2.8	+ 2.9	34,834	38,709	− 0.6	+ 1.7	5.2	5.2	+ 3.1	+ 2.4	65.8	69.2
Jordan	+ 2.8	+ 3.8	11,125	12,749	− 0.5	+ 2.5	13.2	13.5	− 9.0	− 7.0	94.4	86.1
Kuwait	+ 2.5	+ 2.8	71,264	76,004	+ 3.4	+ 3.6	2.1	2.1	+ 3.6	+ 8.9	18.3	29.8
Lebanon	+ 1.0	+ 2.7	18,524	20,763	− 0.7	+ 2.0	7.3	7.5	− 20.4	− 20.2	143.9	155.7
Oman	+ 1.8	+ 2.4	43,737	46,040	+ 1.1	+ 2.9	6.4	6.4	− 21.3	− 12.9	21.8	29.0
Qatar	+ 2.6	+ 2.8	129,727	142,134	+ 3.0	+ 2.5	0.3	0.3	− 1.8	+ 0.5	54.9	74.9
Saudi Arabia	+ 1.2	+ 2.3	54,078	58,340	+ 4.0	+ 2.6	5.7	5.7	− 6.6	− 1.5	14.1	27.9
United Arab Emirates	+ 2.3	+ 3.2	67,696	72,582	+ 3.6	+ 3.3	3.6	3.5	+ 1.1	+ 2.5	19.0	18.0

Business environment and human development

	Ease of Doing Business Ranking	Human Development Index
	Rank 2017 [1]	Rank 2015 [2]
Bahrain	63	45
Iran	120	69
Israel	52	18
Jordan	118	80
Kuwait	102	48
Lebanon	126	67
Oman	66	52
Qatar	83	32
Saudi Arabia	94	39
United Arab Emirates	26	41

Source: IMF, World Bank, UNDP, ILO. – [1]) Out of 190 countries. – [2]) Out of 188 countries.

A mixture of civil turmoil and refugee inflows, a wave of terrorist attacks, depressed oil prices, and subdued global economic activity is expected to keep average growth in the region at moderate rates. Growth in oil exporters will be dominated by persistently depressed oil prices. These countries have to absorb a large terms-of-trade shock and face elevated fiscal and external vulnerabilities.

Economic prospects in the group of oil importers are also expected to remain subdued in the short term. Growth is expected to rebound on improving global demand, strengthening confidence and the assumed gradual stabilisation of security. Additionally, economic growth will be underpinned by public investment (Jordan, Israel) and additional consumption

demand from a large refugee population (Lebanon). While benefiting from lower oil prices on the one hand, they face drawbacks from depressed perspectives from oil-exporting countries in the region via trade linkages on the other hand.

Challenges and Opportunities for medium-term outlook

Enduring stability and prosperity in many Middle East countries are likely to remain "overarching" challenges for a long time. Medium-term growth projections for the region are crucially affected by two important factors: (1) sanctions relief with Iran; and (2) risk of continuing geopolitical tensions.

(1)   Sanctions relief with Iran

One factor that is likely to play a role for the medium-term growth prospects of the region refers to the improved conditions in Iran due to the sanctions relief. The Joint Comprehensive Plan of Action (JCPOA) is an agreement that was decided upon between Iran, "P5+1" and the EU on July 14, 2015. It will provide relief from sanctions in four areas: (1) export and transportation of hydrocarbon and hydrocarbon-related products; (2) access to foreign financial assets; (3) banking and other transactions and financial services, including restored access to the international payment system (SWIFT); and (4) the trade of goods and services in the automotive and air transportation sector, and associated foreign investment (see for instance *Katzman*, 2015).

Assessing the quantitative effects of the sanctions relief is subject to high uncertainty because of a lack of comparable historical precedents. *Ianchovichina et al.* (2016) estimate that gains from the embargo removal are likely to be the largest for Iran, resulting in a welfare gain of about US$ 18 billion to the Iranian economy, which corresponds to an increase in per capita welfare of 3.7 percent. Almost half of these gains (1.7 percent or approximately US$ 8.2 billion) stem from the lifting of the EU oil embargo, while the improved status for cross-border trade and the drop in trade costs result in additional gains of US$ 2.0 billion and US$ 7.5 billion, respectively.

(2)   Risk of continuing geopolitical tensions

Apparently the most important factor characterising medium-term growth perspectives in the Middle East region stems from geopolitical risks. Conflicts are spreading and becoming more intense and have increasingly been domestic, rather than interstate, in nature.

Geopolitical turmoil can affect economic activity through multiple channels. Conflicts reduce the stock of human and physical capital through a displacement of people, casualties and destruction of plants, buildings and infrastructure, thus reducing potential output and its growth rates alike. They can perturb established production chains and trade routes. They induce uncertainty, thus undermining confidence.

IMF (2015F) attempts to quantify the economic costs of conflicts with a particular focus on the ME region[11]). The empirical analysis confirms that violent conflicts significantly negative affect the macroeconomic performance. For example, countries that are involved in a conflict during the past five years are estimated to have suffered an average output decline of over 2 percentage points each year as a result. In addition to that the analysis shows that even countries that have not experienced conflicts of their own tend to be left with lower GDP growth if any of their neighbouring countries experience violent conflicts.

Summary and implication for Austrian export potentials

While economic dynamics in the Middle East are expected to improve slightly, they will remain broadly stable in the short term as the main causes relevant for the current low growth rates are far from abating. Oil prices are expected to remain at moderate levels over the next few years, thereby putting a drag on the region's economic growth perspectives, particularly in oil-exporting countries.

Considering medium-term growth perspectives, enduring stability and prosperity in many Middle East countries are likely to remain challenges for a long time. Over the medium term, a return to "pre-crisis-trend-growth" of around 5 percent hinges crucially on reducing geopolitical risks and achieving political order. An increase in intra-regional trade and capital flows, especially foreign direct investment, to oil-importing countries would boost growth prospects further and support economic convergence in the region.

The current economic slack in the Middle East and the projected slow rebound imply that Austrian exports to the region are likely to remain subdued in the near term. The countries of the region offer potentials for Austrian exports in both the consumer goods market as well as for investment goods. The prospects for the latter are particularly driven by the improved trade prospects with the Iranian economy.

4.8   North Africa and Nigeria: a growing consumer goods market with risks

Algeria, Egypt, Libya, Morocco, Nigeria, Tunisia

North African countries are in close range to the European market and show strong trade and financial links with Europe. African countries are sometimes referred to as growing market for consumer goods with high potential for the European export market. See *Allafi − Koch* (2015) for a detailed analysis of the African market[12]) for the potential of German goods exports.

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[11]) Other studies have followed different approaches to quantify the economic impact of conflicts. Some have focused on individual conflict cases, comparing post-conflict outturns against pre-crisis projections and/or counterfactuals (*Meyersson,* 2015), or against comparable regions (*Abadie − Gardeazabal,* 2003).

[12]) The study covers South Africa, Nigeria, Algeria, Egypt, Tunisia, Morocco and Libya.

Aftermaths of the Arab Spring

Regarding the macroeconomic development, the performance of those African countries analysed was heterogeneous over the last years. While Nigeria showed strong GDP growth rates in the last decade, North African economies struggled with the aftermaths of the Arab Spring. The political uprising starting early 2011 in Tunisia, reshaped the economic, political and security environment of North African countries. While Egypt, Tunisia and Libya were highly affected by facing political regime changes, Morocco and Algeria underwent less political turmoil. In Libya the political situation is still strongly unstable. Most countries in the region faced economic fallouts from the uprising of 2011, with only mild impacts in Algeria and Morocco. Besides losses in production, also tourists and foreign investors failed to appear. In Tunisia and Libya GDP fell in 2011, in Libya even dramatically. In the following years Tunisia and Egypt successfully managed the transition. With ongoing political and social stabilisation economic growth picked up again. Also tourism industries slowly recovered. But like all countries in the region, Tunisia and Egypt are facing negative spillovers from ongoing regional conflicts in neighbouring countries like Syria, Libya and Iraq. They are affecting the whole region's confidence and overall security situation. Refugees are weighing on the labour market and social spending. Incorporating these effects makes the economic outlook very uncertain for the whole region.

Table 4.9: North Africa and Nigeria – Key indicators

Macroeconomic Indicators

| | GDP, volume | | GDP per capita | | Consumer prices | | Unemployment rate | | Current account balance | | General govern-ment gross debt | |
| | Annual rate in % | | Level, in PPP | | Annual rate in % | | In % | | % of GDP | | % of GDP | |
	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2016 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021	2016	ø 2017 /2021
Algeria	+ 3.6	+ 3.0	14,950	16,474	+ 5.9	+ 4.2	9.9	11.7	− 15.1	− 9.0	13.0	27.5
Egypt	+ 3.8	+ 5.2	12,137	14,015	+ 10.2	+ 10.9	12.7	9.7	− 5.8	− 3.5	94.6	85.3
Libya	− 3.3	+ 9.7	14,236	20,084	+ 14.2	+ 10.1	20.6	20.6	− 47.4	− 27.0	101.8	105.7
Morocco	+ 1.8	+ 4.6	8,360	9,964	+ 1.3	+ 1.7	10.2	9.2	− 1.2	− 1.5	64.4	61.5
Nigeria	− 1.7	+ 2.5	5,930	6,198	+ 15.4	+ 15.2	6.3	6.8	− 0.7	− 0.3	14.6	17.2
Tunisia	+ 1.5	+ 3.8	11,657	13,457	+ 3.7	+ 3.7	14.0	12.2	− 8.0	− 5.4	59.0	55.2

Business environment and human development

| | Ease of Doing Business Ranking | Human Development Index |
	Rank 2017 [1]	Rank 2015 [2]
Algeria	156	83
Egypt	122	108
Libya	188	94
Morocco	68	126
Nigeria	169	152
Tunisia	77	96

Source: IMF, World Bank, UNDP. – [1]) Out of 190 countries. – [2]) Out of 188 countries.

Solid short- and medium-term economic outlook

According to the IMF Economic Outlook from October 2016, growth in North Africa and Nigeria is projected to be robust, albeit with country-specific differences (Table 4.9). For Morocco and Egypt medium-term growth rates of around 5 percent are expected. Morocco's economy, which is heavily based on agriculture, is picking up after drought and crop failures in 2014. As in the whole region, tourism is an important economic sector in Morocco and Egypt. The contribution of travel and tourism to GDP is substantial. In 2014 they were well above the global average (*WTTC,* 2015). The tourist industry is highly sensible to the security situation and the overall confidence in the region. Travel and tourism is an important contributor to Tunisia's GDP, affecting also the transport industries and the domestic agricultural output.

The fall in oil prices in 2014 and 2015 dragged down growth in oil-exporting countries like Algeria, Libya and Nigeria. The countries GDPs are dependent on oil and gas production and exports. Thus, the economies are very sensitive to oil price shocks, which are further affecting public revenues and foreign exchange. With solid growth in non-hydrocarbon sectors, like agricultural and services sectors, the Algerian economy is expected to grow with 3.6 percent in 2016. For Libya, still in conflict, the economic situation is gloomy. Oil production and export, the countries major source of growth, dropped due to violent conflicts. Other economic activity was disrupted as well.

Nigeria, which accounts for 35 percent of Sub-Saharan Africa's GDP[13]), is an oil-exporting country. Besides oil, the services sector gains importance, doubling its share in GDP since 2008 (*African Development Bank*, 2015). In 2016, induced by the low oil prices, falling oil production and a lack of foreign currency the country is slipping into recession. However, in the medium term a recovery is projected.

Doing business in Africa: improvements, but still challenging

African economies are ranked in the middle and bottom third in the Doing Business Ranking, indicating a high level of bureaucracy. Nigeria still lags in infrastructure, particularly the access to electricity is low. Most countries made certain progress in the last years. Governments in Egypt and Tunisia funded business sector reforms in order to improve the private sector growth and investment (*Subrahmanyam*, 2014).

High unemployment despite high level of education

Unemployment is a substantial problem. The situation on the labour market was already poor before 2011 and deteriorated since then. With the economic fallouts from the uprising of 2011 unemployment increased in the region. In addition, the ongoing crisis in Libya and Syria leads

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[13) IMF Executive Board Concludes 2014, Article IV Consultation with Nigeria, Press Release No. 15/91, March 4, 2015.

to a significant flow of migrants, affecting the labour market in neighbouring countries. In 2016 unemployment rates exceed the double digits in most North African countries.

The level of education is generally high in most North African countries. Considering the Human Development Index from the UNDP, North African countries are classified as high or medium human developed countries (Table 4.9). According to these statistics, Libya is ranked on place 55, Tunisia, Algeria and Egypt are ranked between 90 and 110, while Nigeria lags far behind (152).

Africa, a growing consumer market with risks

Due to rising real incomes over the last years Nigeria emerges as a consumer market (*African Development Bank*, 2012). Also the country's big, young and increasingly urbanised population is expected to stimulate the consumer goods demand. In the medium term (2016-2021) Nigeria's population is expected to grow by 2.5 percent per year, with a share of 63 percent aged under 25 years. Whereas, in Europe – with a stagnating population – only 27 percent of the total population is aged between 0 and 24 years (Figure 4.2). In North Africa population growth is lower than in Nigeria (ranging from 1 percent in Morocco and Tunisia to 2 percent in Egypt) and the share of young population in these countries amounts to between 40 percent and 50 percent. Nevertheless, North Africa's high unemployment rate, especially among young people, dampens consumer demand.

Figure 4.2: Demographics in Nigeria and Europe
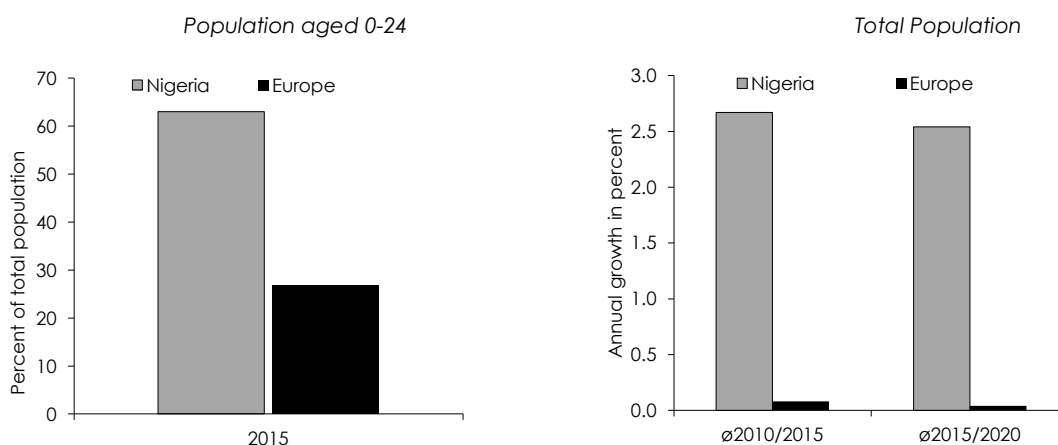
Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, custom data acquired via website.

Summary and implication for Austrian export potentials

African countries have a certain potential for the Austrian export market. Considering the macroeconomic development, medium-term economic growth is forecasted to stay solid in the selected countries. Especially in Nigeria, the high population growth raises demand for

consumer goods. In this context, Africa is often seen as attractive consumer market, but Nigeria still lags behind in human capital and infrastructure. Additionally, bureaucracy negatively affects the business climate in Nigeria and many North African countries. Also security issues remain a big challenge in the future. Especially in Libya, the situation is gloomy due to the ongoing conflict. But also other countries are facing negative spillovers from these conflicts in the area. Also unemployment exerts a downward pressure in North African countries, especially in Tunisia, Egypt and Algeria.

5. The gravity model for trade and the role of supply-side factors

In the empirical literature on foreign trade relations, gravity models constitute the leading methodological approach for the analysis of bilateral trade flows. Drawing from the well-known law of gravity from physics, *Tinbergen* (1962) showed that international trade flows between two countries can be explained by their economic size (measured in terms of GDP) and their geographical distance to each other. Many empirical studies confirm that the variation in international trade flows can to a large extent be explained by only these two variables. In recent contributions the gravity model has been augmented by further trade stimulating factors (common border, language, history, cultural proximity, etc.) as well as trade restrictions (transport costs, tariff and non-tariff trade barriers, etc.). A more detailed overview regarding the variety of influencing factors is provided by *Feenstra* (2003) and *Allen et al.* (2014).

Several papers from the so-called new trade theory literature (e. g. *Anderson,* 1979; *Bergstrand*, 1985; *Eaton – Kortum*, 2002; *Anderson – van Wincoop*, 2003) provide significant enhancements to the theoretical foundation of the gravity equation. Taking *Anderson – van Wincoop* (2003) *as* a starting point, the gravity model nowadays is based on a sound theoretical framework, which is able to capture alternative explanations for the variation in observed bilateral trade flows including love-of-variety preferences (*Krugman,* 1980), the presence of heterogeneous firms (*Helpman et al.*, 2008) and differences in the available production technology (*Eaton – Kortum,* 2002).

In terms of the econometric estimation of observed bilateral trade flows Poisson regression models represent the leading approach. Such models are estimated by Quasi-Maximum-Likelihood (QML) methods resulting in a Pseudo-Poisson-Maximum-Likelihood (PPML) estimator. The main advantages of this approach relative to the previously applied log-linear modelling framework include the possibility to account for zero trade flows (which are frequently observed, especially at lower levels of bilateral trade flow aggregation) and to deal with the observed heteroscedasticity in the error terms of bilateral trade flow regressions (*Santos Silva – Tenreyro,* 2006). Furthermore, the adding-up constraints imposed by structural gravity models à la *Anderson – van Wincoop* (2003) are explicitly taken into account by this estimator (*Fally*, 2015).

The gravity equation can be applied to different research questions. It has been used to explain trade patterns among trading partners, to measure the effects of trade liberalisation and integration or the impact of other policy measures. An important field of application of the gravity model is the estimation of expected trade flows, specifically for calculating counterfactual bilateral trade flows under alternative (policy) scenarios. After the economic transformation taking place in Eastern Europe a number of papers analysed potential trade flows between the EU and the Central and Eastern European countries, by focusing on the

trade enhancing effect of integrating Eastern European countries into the common single market (see among others *Baldwin*, 1994; *Egger*, 2002).

5.1   Austria's export potential – related studies

Against the background of Austria's one-sided geographic focus on Europe as predominating export destination, numerous studies examine the trade potential for Austrian exporters in dynamically developing countries. Early contributions report a large potential for trade between the European Union (Austria) and the CEEC based on gravity model estimations (*Egger*, 1999).

Egger – Stankovsky (1998) identify the Far East as an attractive market for Austrian exports during the 1990s, although the foreign trade relations with this region were weak at that time (in 1996 only 0.23 percent of total imports in the Far East region stem from Austria). Using a structural match index approach which compares the goods structure on the export supply side with the demand structure in the potential export markets, *Stankovsky – Wolfmayr* (2003) evaluate Austria's regional export structure in dynamically developing markets. In addition, they also applied a gravity model to identify the main export patterns and calculate the extractable export potentials available to Austrian manufacturers in selected countries based on medium-term growth projections. Their results show that especially new EU members in Central and Eastern Europe as well as the Western Balkans offered the best export growth opportunities. China and Vietnam together with Turkey, Jordan, South Africa and Algeria were identified as promising extra-EU markets, whereas Industrial Countries in Overseas, such as the USA, remain important export markets for Austria.

In related studies, *Aiginger et al.* (2010, 2012) employ the structural match index to analyse the export potential of Austrian goods exporters in the Black Sea Region, Central Asia and in the South Caucasus. Over the course of the economic catch-up process of South East Asia, Austria benefited from the positive developments in this region. *Zimmermann* (2008) investigated the economic relations of Austria with South East Asia for the period up to 2007 and found a potential to intensify the trade relations with the ASEAN countries. A recent study by *Ebner et al.* (2014) examines the evolution of the trade relations between Austria and the BRICS over the time period from 1996 to 2012. Accordingly and although Austria lost some market shares in these economies, its (relative) competitiveness in the BRICS economies has improved over the last years, especially in the Russian and South African markets. In addition, Austria managed to position itself more prominently in the high-tech segment and an analysis of the product structure of Austria's export economy highlights that demand from Russia, South Africa and India is high and has also grown noticeably from Brazil. Only for China the results of the study indicate that there has been a mismatch between local import needs and Austria's export supply.

While the studies mentioned above focus on trade potentials for trade in goods, the literature referring to Austrian trade in services in the context of export potentials from a regional

perspective is rare. For an observational period from 1995 to 2005, *Brandicourt et al.* (2008) found substantial unexploited potentials for Austrian commercial services exports while travel services were exploiting their potentials. Their results are confirmed by *Wörz* (2008) who further documents Austria's export strengths in the transport and travel sectors. In accordance with the regional structure of Austrian trade in goods, *Wörz* (2008) highlights that Austria's services exports are also highly concentrated within the European Union. Specifically, 64 percent of total services exports went to the EU 15 and 56 percent of total imports originated from these countries in 2006. *Wolfmayr et al.* (2013) examine the main patterns and structure of Austrian trade in services for the period 2006 to 2009 and further expand their analysis by applying the gravity model of bilateral trade. Their empirical analysis includes a sample of Austrian firms with 37 destination countries within and outside the EU. On the basis of medium-term GDP projections from the IMF World Economic Outlook, their simulations indicate high export potentials for Austrian services exports in markets outside the EU, especially in Australia, Brazil, New Zealand and in emerging economies including Russia, Turkey and the Ukraine.

5.2 Supply-side aspects for export potentials: strengthening Austria's competitiveness

For the empirical assessment of Austrian export potentials in overseas economies, we augment the gravity framework with competitiveness measures available for all OECD members as source countries. In particular, we are interested in studying the impact of supply-side characteristics and the countries' energy policies. The first included indicator captures the economy's innovative capacities measured in terms of research and development (R&D) expenditures relative to GDP. Following the large literature on innovation and international competitiveness we – ceteris paribus – expect a positive impact of R&D expenditures on average export volumes of the OECD member states. Furthermore, the OECD members' trade structures are dominated by intra-industry trade relationships and, at the same time, these economies are typically characterised by both relatively high direct and indirect labour costs. As a consequence, for such highly industrialised countries their international competitiveness crucially depends on the productivity of the labour inputs employed. Accounting for the crucial role of human capital discussed in the theoretical and empirical cross-country growth literature (e. g., *Romer*, 1990), we further augment our gravity model specification with information on educational expenditures separately for secondary and tertiary education. With the signing of the "Paris agreement" by virtually all countries of the world including all highly industrialised economies, a major challenge over the next couple of years will centre on the restructuring of energy utilisation including the need to decarbonise energy production and consumption. In this analysis, we are therefore also interested in providing evidence on whether proactive policies regarding the implementation of the Paris measures could be a boon or bane for the competitiveness of Austrian manufacturing and services industries in international markets. Implementing energy policy measures aiming at contributing to successfully achieving the Paris agreement goals could in

the short run induce relative cost disadvantages as compared to economies which do not yet heavily invest in alternative energy production and consumption, while becoming an innovation leader in fostering sustainable energy use can generate long-run comparative advantages (see section 5.5 for more details). In particular, the empirical analysis accounts for sustainable energy use by considering the share of non-fossil fuel energy consumption as an additional source country characteristic entering the empirical specification of the gravity models.

5.3 Investment in R&D, higher education and alternative energy consumption: Austria's position in an international comparison

As small, open economy Austria faces new challenges in a steadily globalizing economy. Austria will only be able to maintain its position among the top high-income countries if it is able to achieve a high productivity level through the use of new technologies and by taking advantage of specialisation in human-capital-intensive and technologically sophisticated products. Technological change is the most important driving force behind long-term economic growth. In this context, investment in research and development (R&D) and higher education as well as an increasing use of energy from alternative sources play a key role. In a related study of the "Österreich 2025" project and based on a survey among large Austrian manufacturing firms *Hölzl et al.* (2016) stress the importance of capacity building and product diversification as driving forces for competitiveness. In a similar vein, *Reinstaller et al.* (2016) also show that the proportion of persons with tertiary education has a positive effect on the development of new export specialisations, since they help to reduce path dependencies in the production system. In particular, as exporting is closely linked to innovative activity, skills shortages also affect the exporting potential (*Bock-Schappelwein et al.*, 2012). Focusing on an overall European growth strategy, *Aiginger* (2016B) points to the export surplus in European trade relations and the fact that Europe's market share in global trade has declined less than the one of the USA. However, in the areas of innovation and higher education Europe is not catching-up. Furthermore, a comparison to the five "innovation leaders" of the EU (Germany, Denmark, Finland, Netherlands and Sweden) within the scope of the European Innovation Scoreboard reveals that Austria lags behind this reference group in all criteria (see *Janger et al.*, 2016A, 2016B for a comprehensive analysis on the innovation frontier). Additionally, the results by *Hölzl – Janger* (2014) confirm that the availability of qualified employees is the most important obstacle to innovation in advanced countries, while the availability of external financing seems less relevant. Against this backdrop, this chapter provides an international comparison of Austria's performance in all three key variables – R&D expenditures in percent of GDP, expenditures for tertiary education in percent of GDP and the share of non-fossil fuel energy consumption in total consumption – among the OECD countries, putting a special focus on other small and open economies, like the Nordic countries.

Table 5.1: International comparison of expenditures for R&D and tertiary education and non-fossil fuel energy consumption, ø1998 – 2011

	R&D expenditures	Government expenditures in tertiary education		Non-fossil fuel energy consumption
	As percent of GDP	bn USD	As percent of GDP	As percent of total energy consumption
Australia	1.98	10.20	1.12	5.8
Austria	2.33	4.45	1.44	25.2
Belgium	1.97	5.41	1.32	25.7
Canada	1.95	25.20	1.78	24.5
Switzerland	2.73	6.55	1.20	46.2
Chile	0.38	0.92	0.59	24.9
Czech Republic	1.27	1.28	0.87	15.8
Germany	2.57	39.80	1.20	17.9
Denmark	2.60	5.89	2.35	15.2
Spain	1.14	10.80	0.97	19.4
Estonia	1.07	0.16	1.08	72.0
Finland	3.49	3.95	1.95	49.8
France	2.17	25.10	1.13	48.0
Great Britain	1.76	20.80	0.95	12.0
Greece	0.61	1.93	1.06	6.8
Hungary	0.96	1.01	1.03	20.7
Ireland	1.31	2.18	1.18	9.1
Iceland	2.70	0.18	1.34	77.7
Israel	4.13	1.65	1.04	3.2
Italy	1.14	13.60	0.78	9.8
Japan	3.23	27.90	0.60	17.9
South Korea	2.91	4.44	0.54	17.5
Luxembourg	1.61	.	.	12.1
Mexico	0.39	7.58	0.86	11.9
Netherlands	1.89	9.25	1.39	6.5
Norway	1.63	6.23	2.06	43.4
New Zealand	1.17	1.86	1.68	32.6
Poland	0.64	3.33	1.01	5.2
Portugal	1.01	1.86	0.97	18.7
Slovak Republic	0.58	0.53	0.82	28.0
Slovenia	1.60	0.51	1.27	30.4
Sweden	3.63	7.01	1.86	65.7
Turkey	0.61	2.79	0.89	12.2
USA	2.61	168.00	1.32	14.5
OECD average	1.82	12.80	1.20	24.9
EU-15 average	1.95	10.86	1.32	22.8
Nordic countries average	3.24	5.62	2.05	43.6

Source: World Bank, OECD. – Nordic countries: Denmark, Finland and Sweden.

Table 5.1 summarises the average expenditures for R&D, higher education as well as the share of non-fossil fuel energy consumption in percent of total across OECD countries over

the period 1998 to 2011[14]). The international comparison assesses Austria's performance in all three key variables as good and above OECD average. However, Austria's performance lags behind that of other advanced OECD countries such as the Nordic countries (Denmark, Finland and Sweden). In 1998 Austria's ratio of gross expenditures on R&D to GDP amounted to 1.8 percent, slightly above the OECD average of 1.6 percent. However, Austria's R&D intensity lagged behind the "innovation leaders", a reference group of comparable, economically and technologically sophisticated countries, including Denmark, Finland and Sweden.

Figure 5.1: Development of R&D expenditures in Austria and the Nordic countries, 1998 – 2011
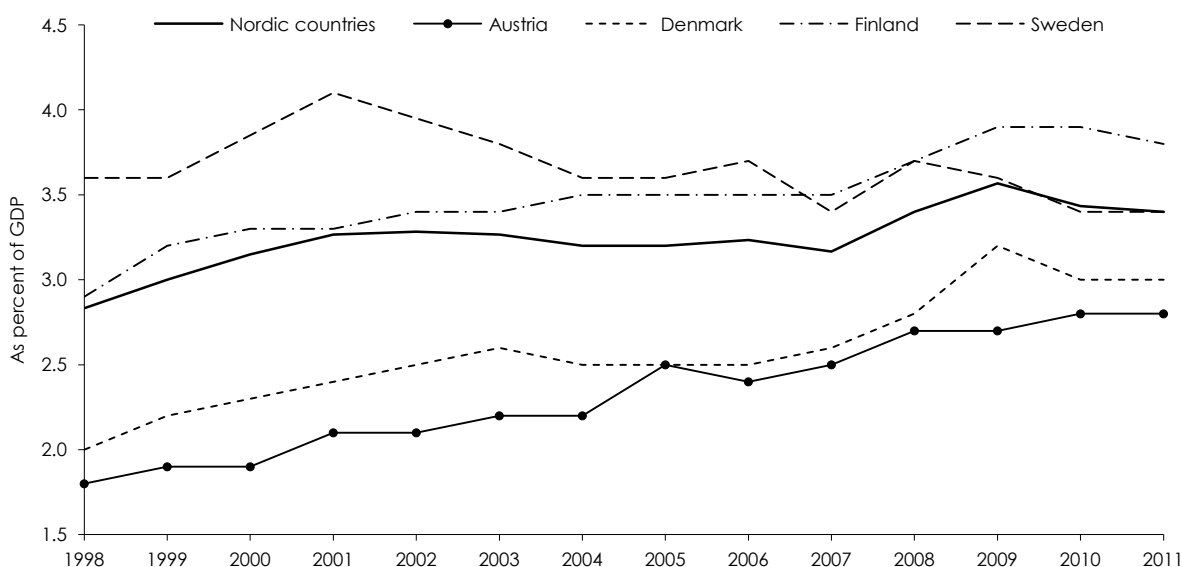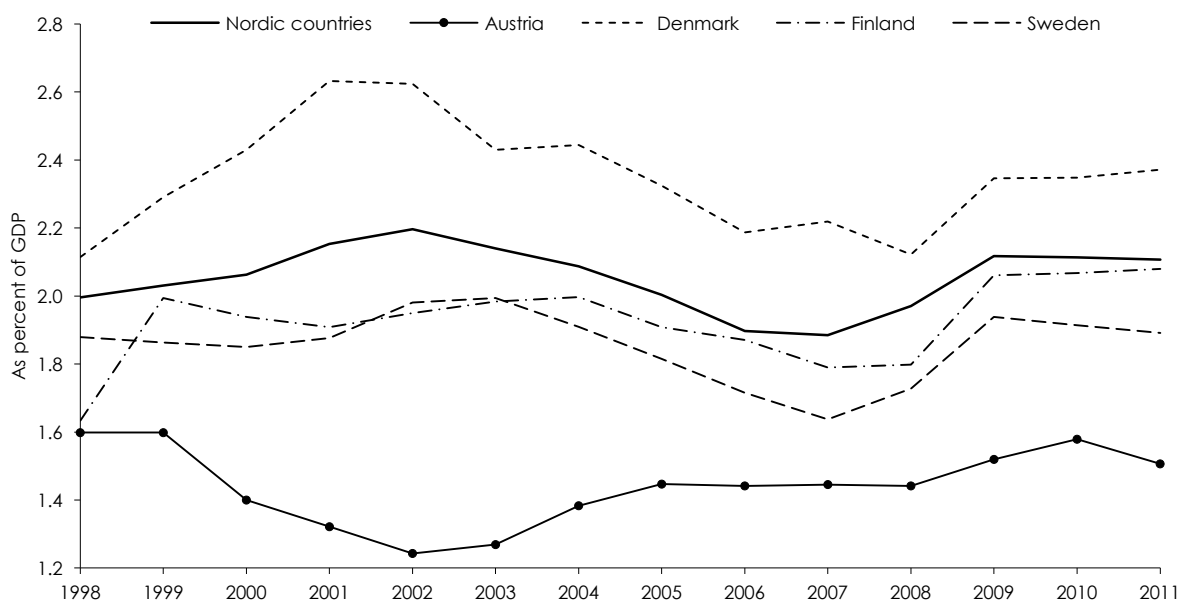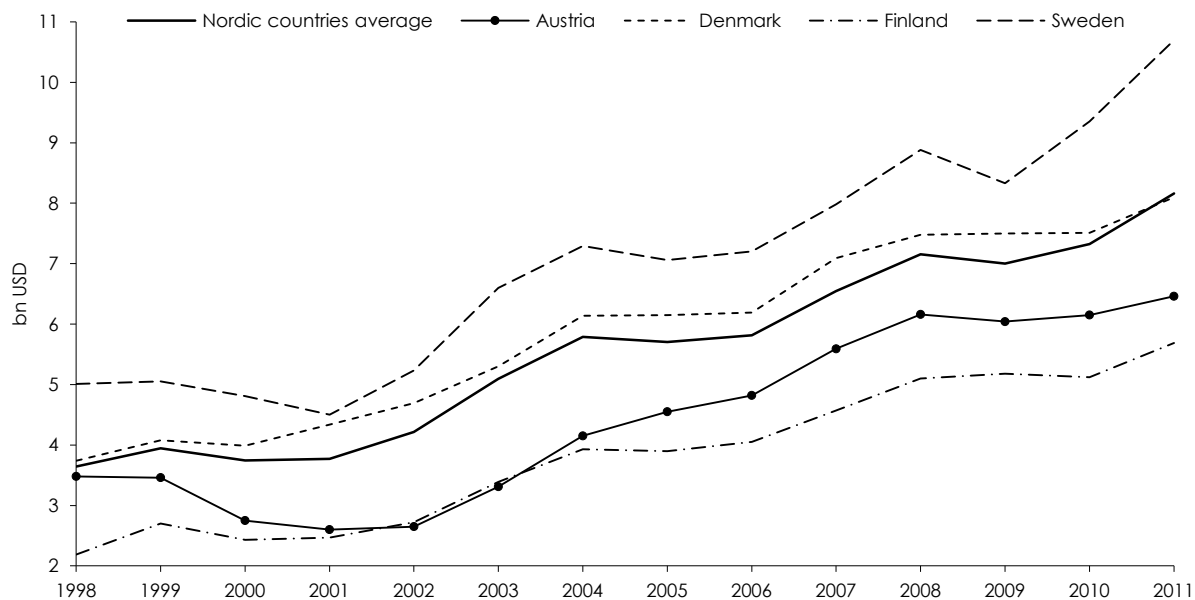

Source: World Bank, OECD. – Nordic countries: Denmark, Finland and Sweden.

In terms of innovative capacities Austria managed to improve relative to the reference group between 1998 and 2011 and the gap to the lead group shrank, most noticeably until the mid-2000s (see Figure 5.1). The main reason for this was the direct impact of intensified efforts towards creating a more innovation-friendly environment (by e. g., amending the tax incentives for R&D through the introduction of a research cost deductible). Despite this effort to boost R&D, the innovative and technological intensity of Austria remained below that of the innovation leaders, like the Nordic countries, and Japan. In 2011 the share of R&D expenditures in percent of GDP amounted to 2.8 percent, while the average of the Nordic countries amounted to 3.4 percent.

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[14]) Note the share of non-fossil fuels also includes nuclear energy consumption and thus, this share increases for countries using this energy source extensively, such as Belgium, Sweden, Germany, Great Britain, Japan and some new EU member states. For the benchmark comparison and the counterfactual analysis we assess the usage of renewable energy consumption in Austria and the Nordic countries as reference group. Due to data limitations comparable data is only available for the EU-28 countries from 2004 onwards.

Figure 5.2: Development of expenditures for tertiary education in Austria and the Nordic countries, 1998 – 2011


Source: World Bank, OECD. – Nordic countries: Denmark, Finland and Sweden.

Another factor that may considerably foster competitiveness in exports is the availability of a highly educated workforce, using the expenditures in tertiary education as a proxy. In 1998

the share of expenditures in higher education in GDP amounted to 1.6 percent, whereas the OECD average was 1.1 percent. Although the performance of Austria marks clearly better than the OECD average, it falls short relative to the average of the Nordic countries, which amounted to 2.0 percent in 1998. Additionally, between 1998 and 2011 expenditures in higher education in terms of GDP decreased slightly to 1.5 percent, while the average across the OECD increased to a share of 1.4 percent of GDP. Similarly, the ratio increased to 2.1 percent in the reference group, implying that the gap has further widened. In terms of absolute expenditures in tertiary education the amount spent for higher education in Austria increased from US$ 3.5 billion to US$ 6.5 billion over the period 1998 to 2011, as Figure 5.2 shows. While government expenditures in tertiary education have been close to the Nordic countries in 1998 (US$ 3.7 billion), equivalent expenditures have grown considerably in Denmark, Finland and Sweden until 2011 amounting to an average level of US$ 8.2 billion.

Figure 5.3: Development of renewable energy consumption in Austria and the Nordic countries, 2004 – 2011
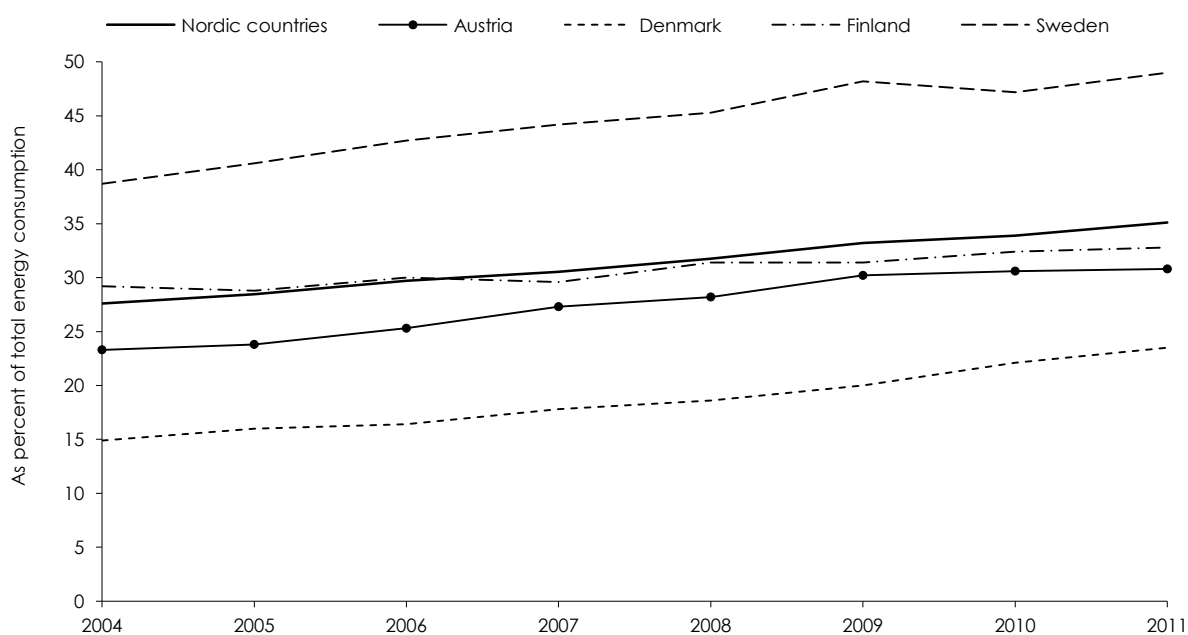
Source: Eurostat. – Nordic countries: Denmark, Finland and Sweden.

The corresponding national target for Austria with respect to the European 20-20-20 targets[15]) aims to increase the share of renewable energy sources in gross final energy consumption to 34 percent until 2020 (*European Commission*, 2009). As Figure 5.3 depicts, Austria's

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[15]) This climate and energy package was enacted by the EU in 2009 and sets three key targets for the year 2020, including a cut in greenhouse gas emissions, an increase in the share of renewable energy as well as an improvement in energy efficiency (see also http://ec.europa.eu/clima/policies/strategies/2020/index_en.htm).

performance can be assessed as good, as the share of renewable energy consumption increased sharply from 23.3 percent in 2004 to 30.8 percent in 2011. In an international comparison across EU-28 members Austria appears to be above the EU average in terms of the consumption of renewable energy sources. However, it still lags behind the Nordic economies. While in 2004 the share of alternative energy sources amounted to 27.6 percent on average in Denmark, Finland and Sweden it increased further to 35.1 percent in 2011. However, this implies that the gap to the frontier economies has not narrowed.

To sum up, an international comparison in terms of the three key areas – R&D, education and renewable energy – confirms Austria's performance among the top high-income countries. Nevertheless, in direct comparison to the Nordic countries (Denmark, Finland and Sweden) Austria's position in all three key variables lags behind, although efforts to narrow the gap over the last 15 years have been partly successful. Thus, further emphasis to foster the continuous improvement of Austrian enterprises in terms of their competitiveness in export markets may offer new opportunities for export-driven growth dynamics, especially on fast growing markets outside the EU.

5.4   Data description

The empirical analysis examines the determinants of bilateral export flows separately for goods and services trade, disaggregated at the industry level. Bilateral nominal export flows for goods (measured in millions of US-Dollar) are drawn from the United Nations Commodity Trade Statistics Database (COMTRADE). The sample covers goods export flows for all 34 OECD members to 183 destination countries disaggregated at the two-digit level (according to SITC, rev.3) for the period 1998 to 2012. Export flows for services (measured in millions of US-Dollar) are taken from Eurostat's Balance of Payments Statistics (BOP). Focusing on the bilateral dimension of services trade, data is still limited to a small number of destination economies, mostly high-income countries. These data limitations need to be considered in the empirical analysis, specifically if one wants to compare potential trade flows for goods exports to services exports. Using the Eurostat database the sample covers services exports of the EU-28 countries to 67 destination countries by BOP category (based on Balance of Payments Manual 5) for the period from 2006 to 2012. In particular, it provides services trade in total services and main service categories, including transportation, travel, communication services, construction, insurance, financial services, royalties and license fees, other business services and personal, cultural and recreational services[16]).

The size of the destination market is captured by nominal GDP (measured in billions of US-Dollar), which is taken from the IMF World Economic Outlook (WEO) database. Furthermore, we include an indicator variable on Bilateral Trade Agreements (RTA) in the analysis, which equals 1 whenever a regional trade agreement is in place, and 0 else. In a similar vein, to account for liberalisation in services trade we include an indicator variable on

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[16]) Trade in governmental services is excluded from the sample.

Economic Integration Agreements (EIA), which equals 1 whenever the trade pairs have a services agreement as defined in Article V of GATS in place, and 0 else[17]). In addition, we make use of several reporter-specific variables to proxy for competitiveness in terms of expenditures on education and R&D and sustainable energy consumption, all three variables are provided by the World Bank's World Development Indicators (WDI) database. A description of the variables and an overview on the data sources are reported in Table A 8.1 in the Appendix. Table 5.2 and Table 5.3 report summary statistics for goods and services export flows as well as the set of explanatory variables included in the empirical model.

Using disaggregated export data at the industry level, our dataset is characterised by many zero trade flows as bilateral trade relationships do not exist in all industries. The final panel on goods export flows comprises 6,478,000 bilateral-year-industry observations, while the sample on services trade covers 70,918 bilateral-BOP-year observations.

Table 5.2: Descriptive statistics – goods exports, 1998 – 2012

	Obser-vations	Mean	Standard deviation	Minimum	Maximum
			OECD 34		
exp_mn	6,478,000	11.9	216.3	0.0	85,904.6
gdpn_r	6,478,000	1,216.7	2,508.7	5.6	15,517.9
lgdp_r	6,478,000	26.6	1.6	22.4	30.4
gdpn_p	6,478,000	267.2	1,110.9	0.0	16,163.2
lgdpn_p	6,478,000	23.7	2.4	16.4	30.4
rta	6,478,000	23.4	42.3	0.0	100.0
rdexp	6,478,000	1.8	1.0	0.3	4.5
non_fossil	6,478,000	24.5	18.9	2.8	83.8
expterd	6,478,000	13.8	31.9	0.1	210.6
lexpterd	6,478,000	22.2	1.6	17.9	26.1
			Austria		
exp_mn	252,900	5.9	66.8	0.0	6,083.9
gdpn_r	252,900	306.2	85.8	196.4	429.1
lgdp_r	252,900	26.4	0.3	26.0	26.8
rdexp	252,900	2.3	0.3	1.8	2.8
non_fossil	252,900	25.2	3.3	21.5	31.0
expterd	252,900	4.4	1.4	2.6	6.5
lexpterd	252,900	22.2	0.3	21.7	22.6

The descriptive statistics offer a first glimpse on the relevance of destination market characteristics for goods and services exports in total and for Austria as source country in specific. Regarding the goods trade panel Table 5.2 depicts that the average export volume amounts to US$ 11.9 million, however, it varies considerably from zero export flows up to US$ 85.9 billion. A similar pattern applies for the subsample of Austria as exporting country. On

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[17]) Both the RTA and EIA indicator variable are based on the WTO Regional Trade Agreement Gateway and provided by Mario Larch's Regional Trade Agreements Database from *Egger – Larch* (2008), available at http://www.ewf.uni-bayreuth.de/en/research/RTA-data/index.html

average, Austrian firms export US$ 5.9 million across all industries and destination markets. The remarkably high trade volumes for Austrian exporters refer to exports to Germany, Austria's most important trading partner. Around 23 percent of all trade pairs have a RTA in place. Interestingly, services exports are on average eight times larger than goods exports which is partly driven by the smaller sample focusing only on EU-28 countries. Recent efforts to deregulate services markets in the EU may also explain the high share of services agreements, over the years 2006 to 2012 more than 55 percent of all country pairs have an Economic Integration Agreement in place. Furthermore, Table 5.2 for goods exports reveals that the ratio of R&D expenditures to GDP is on average higher in Austria than across all OECD countries. Regarding the panel on services trade for the years 2006 to 2012 the gap between EU countries and Austria in terms of R&D is even larger. While across all EU-28 exporters the average R&D ratio amounts to 1.6 percent, the equivalent share is 1.1 percentage points higher on average in Austria. Regarding non-fossil energy consumption the average share in total across OECD countries amounts to almost 25 percent, a similar share is documented for Austria. Interestingly, with respect to average expenditures in tertiary education Austria falls behind the EU average over the period 2006 to 2012, as Table 5.3 presents. While Austria spends on average US$ 5.9 billion on higher education, average expenditures across all EU countries amount to US$ 8.1 billion.

Table 5.3: Descriptive statistics – services exports, 2006 – 2012

	Obser-vations	Mean	Standard deviation	Minimum	Maximum
	EU 28				
expdl_mn	70,918	103.3	498.0	0.0	16,641.3
gdpn_r	70,918	667.8	973.0	7.5	3,751.9
lgdp_r	70,918	26.2	1.5	22.7	29.0
gdpn_p	70,918	1,060.7	2,287.1	2.7	16,163.2
lgdp_p	70,918	26.5	1.6	21.7	30.4
eia	70,918	56.0	49.6	0.0	100.0
rdexp	70,918	1.6	1.0	0.4	3.9
non_fossil	70,918	27.1	18.0	0.2	81.1
expterd	70,918	8.1	11.3	0.1	50.6
lexpterd	70,918	21.8	1.6	18.1	24.6
	Austria				
expdl_mn	3,198	97.5	524.0	0.0	10,579.6
gdpn_r	3,198	394.1	31.7	334.3	429.1
lgdp_r	3,198	26.7	0.1	26.5	26.8
rdexp	3,198	2.7	0.2	2.4	2.8
non_fossil	3,198	28.7	2.0	25.3	31.0
expterd	3,198	5.9	0.5	4.8	6.5
lexpterd	3,198	22.5	0.1	22.3	22.6

5.5 Econometric specification and estimation results

A standard formulation of the gravity model for bilateral trade at the industry level reads as:

$$(1) \qquad\qquad X_{ijkt} = \exp(x_{ijkt}\beta)\,\mu_{ijkt},$$

where X_{ijkt} denotes exports from country *i* to country *j* in industry *k* at time *t*. x_{ijkt} represents a vector collecting explanatory variables such as source- and destination-country-specific (nominal) GDPs, source-destination-industry fixed effects[18] and time-specific fixed effects. Accordingly, the identification for the remaining parameters of interest is based on time variation in exports within source-destination-industry observations. With this modelling choice any unobserved and time-constant heterogeneities in source, destination and industry characteristics such as e. g., geographical distance, common borders and common language are controlled for. We additionally also control for Regional Trade Agreements (RTAs). For our sample of manufacturing industries, the specification includes an indicator variable RTA_{ijt} which equals 1 whenever the countries *i* and *j* have a common Regional Trade Agreement (RTA) in place at time *t* and 0 otherwise. For analysing services trade we replace this by an Economic Integration Agreement (EIA) indicator. The latter indicator should be more useful for services trade since it is based on Article V of the GATS agreement on trade liberalisation in services industries[19]. The estimated parameters associated with either RTA or EIA capture the average marginal export effects induced by Regional Trade Agreements (see e. g., *Anderson et al.*, 2015; *Christen et al.*, 2016). In this study we prefer to pool over all industries and estimate parameters capturing average export effects of the policy variable of interest. The main reason for this is that due to structural changes in the production and export patterns observed over the last decade it is difficult to ex-ante assess which industries might become more important in the future. For such instances, estimated average effects might allow to most accurately identify unexploited total export potentials.

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[18] In a panel data framework, the literature typically also calls for the inclusion of destination*time and source*time fixed effects in order to control for multilateral resistance (*Fally*, 2015). In our application the policy variables of main interest only contain source country-time variation which renders the inclusion of the full set of source*time dummy variables as impossible. The inclusion of a full set of destination*time-fixed effects would be theoretically feasible this would induce an asymmetric treatment of multilateral resistance which would complicate the interpretation of the results. For this reason and due to the concern raised against alternative approaches such as the *Baier – Bergstrand* (2009) approximation (see *Behar*, 2009) the analysis does not explicitly account for the effects of the multilateral resistance terms. Further due to the large number of zero bilateral export flows, the constrained analysis of variance (CANOVA)-PPML approach as suggested by *Egger – Nigai* (2015) seems also of only limited applicability in our context. For these reasons, we rely on the simpler standard PPML approach but only incompletely control for multilateral resistance.

[19] For more information on different trade liberalisation indicators see the readme file for "Mario Larch's Regional Trade Agreements Database" available at: http://www.ewf.uni-bayreuth.de/de/download/RTA-Daten/readme_RTA_20160215.pdf.

In line with the existing empirical literature and based on theoretical reasoning, the level of GDP is expected to affect trade flows positively, as larger economies tend to have higher trade intensities and it proxies for the size of the exporting country and demand strength of the importing country. In addition, larger governmental expenditures on R&D as well as education, specifically tertiary education, are supposed to raise export volumes. Regarding the impact of alternative energy use no clear-cut theoretical expectation can be formed ex-ante. On the one hand, an early adoption of the Paris measures could be associated with a short-run relative cost disadvantage as compared to economies which do not yet heavily invest in alternative energy production and consumption. On the other hand, becoming an innovation leader in this industry might induce substantial economies of scale and scope resulting in a comparative advantage (at least in the long run). This could be associated with an improvement in the international competitiveness translating into export gains. In order to assess whether such positive effects can likely be materialised, the analysis relies on already existing differences in the preferences on energy consumption across the OECD economies.

Table 5.4 and Table 5.5 provide the estimation results from the gravity model specifications for manufacturing and services industries, respectively. The estimation results are based on a maximum of 3,004,600 (69,277) industry-source-country-destination-country observations for the manufacturing (services) industries. The first column in each table provides the estimates for baseline specifications excluding the three considered source country indicators. These columns commonly suggest that the baseline is well specified both in terms of the impact of source and destination country GDP as well as with regard to the models explanatory power. The simple correlation coefficient of 0.97 between observed and predicted export flows from the simple model indicates suitable predictive power of the model which is important for conducting meaningful policy experiments for trade potentials. Both GDPs turn out statistically very significant and take on the expected positive signs. Accordingly, within-industry exports are on average larger for larger country pairs. This finding once more points to the relevance of "gravitational forces" for bilateral trade relationships.

Interestingly, in our specifications Regional Trade Agreements only seem to play a minor role in explaining differences in export levels. This is especially true for services exports where the singing of an EIA turns out statistically insignificant throughout all model specifications. The main reason for this finding might be based on the datasample composition available for this empirical exercise. Due to limited comparable data on the other policy measures for non-OECD economies, we are only able to consider bilateral combinations where the exporter is an OECD economy. OECD economies, in turn, tend to have relatively similar trade policy preferences and therefore the regional trade indicator is characterised by little variation in the datasamples at hand.

In columns (2) to (4) of both tables we separately include each respective policy variable while column (5) reports the results from the full model specification where all three variables enter simultaneously. For educational expenditures columns (4) and (5) utilise tertiary

education as our proxy variable. A comparison of the results from the individual inclusion versus the large model allows assessing whether the three proposed source country indicators capture different policy dimensions which are relevant for explaining within-industry export flows over time. The results for the individual coefficients from the smaller models are expected to be close to the ones from the full specification whenever the different policy covariates are to some extent independent from each other (orthogonal).

Table 5.4: Estimation results – goods exports

	Basis model	R&D	Non-fossil	Education	Full model	Robustness
logGDP-reporter	0.568***	0.590***	0.553***	0.454***	0.469***	0.577***
	(0.038)	(0.038)	(0.038)	(0.058)	(0.057)	(0.065)
logGDP-partner	0.729***	0.727***	0.730***	0.727***	0.727***	0.723***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Bilateral Trade Agreements	0.051	0.048	0.058*	0.046	0.051	0.055
	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)	(0.034)
R&D expeditures		0.102***			0.075***	0.086***
		(0.027)			(0.027)	(0.027)
Non-fossil fuel energy consumption			0.492***		0.463**	0.438**
			(0.184)		(0.180)	(0.188)
logTertiary expeditures				0.114***	0.100***	
				(0.039)	(0.038)	
logSecondary expenditures						-0.019
						(0.058)
Number of observations	3,004,600	3,004,600	3,004,600	3,004,600	3,004,600	2,793,807

Source: WIFO calculations. – ***, ** and * indicate the significance at the 1%-, 5%- and 10%-level. Standard errors are reported in parenthesis

Starting with the results for manufacturing industries, the separate inclusion of all three variables and the full model specification yield very similar results, whereas the parameters obtained from the latter are somehow smaller in magnitude. In qualitative terms, however, the results from column (2) to column (5) in Table 5.4 commonly suggest positive impacts of all three policy variables for bilateral within-industry export flows. Accordingly, source countries which increase their R&D to GDP ratio, the expeditures for tertiary education and consume a larger share of their energy based on non-fossil (and renewable energy) are able to, on average, increase their exports. In column (6) of Table 5.4 we replace the expeditures for tertiary education by the corresponding data for secondary education. While the estimates and levels of significance for the other two policy variables are hardly affected by this modification, a change in public expenditures for secondary education does not exhibit any statistically significant effect on manufacturing industries' exports. This finding suggests that for highly developed economies such as the OECD member states, only differences in funding of tertiary education seem to be crucial for explaining variation in foreign market success while secondary education is not as important.

Turning our attention to the services industries, the results reported in Table 5.5 again point to the crucial role of investment in R&D as a driver for a country's export performance. In contrast to Table 5.4, however, we are not able to identify any significant role for tertiary/secondary education and non-fossil energy consumption for shaping services exports. With regard to the latter, this finding does not come as a big surprise as services provision is typically very labour-intense and its competitiveness does not depend much on other inputs such as energy. The non-significant effect for education in the services exports dataset might at least be partially explained by the relatively small number of destination economies available from the BOP database.

Table 5.5: Estimation results – services exports

	Basis model	R&D	Non-fossil	Education	Full model	Robustness
logGDP-reporter	0.737***	0.758***	0.730***	0.661***	0.705***	0.693***
	(0.119)	(0.118)	(0.119)	(0.135)	(0.133)	(0.145)
logGDP-partner	0.470***	0.471***	0.470***	0.470***	0.470***	0.455***
	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)
Economic Integration Agreements	0.009	0.008	0.009	0.008	0.007	-0.000
	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)	(0.065)
R&D expeditures		0.080*			0.077*	0.099**
		(0.044)			(0.045)	(0.050)
Non-fossil fuel energy consumption			-0.130		-0.145	-0.247
			(0.354)		(0.360)	(0.346)
logTertiary expeditures				0.067	0.039	
				(0.053)	(0.053)	
logSecondary expenditures						0.115
						(0.102)
Number of observations	69,277	69,277	69,277	69,277	69,277	63,568

Source: WIFO calculations. – ***, ** and * indicate the significance at the 1%-, 5%- and 10%-level. Standard errors are reported in parenthesis

5.6 Counterfactual analysis

In a next step, the estimation results from both samples are used for quantifying Austria's export potentials in various overseas regions. Here, we apply the country-grouping as discussed in Section 2. For the assessment of the export potentials we rely on the results provided in column (5) of both tables. Based on the model parameters we firstly calculate status-quo export flows as implied by the model. For the counterfactual scenario, we assume that Austria would catch-up to the average of the Nordic economies (Denmark, Finland and Sweden) and provide four different scenarios for the manufacturing industries. In the first three we assume that Austria would catch-up in one of the respective policy indictors while in scenario four we assume that Austria would simultaneously catch-up to the averages in all three different dimensions. For the services sectors, we only run one counterfactual scenario for a change in R&D expenditures. The latter choice is due to the non-significant impact of non-fossil energy consumption and tertiary education for services exports. All counterfactual

calculations are based on data for 2011. For the counterfactual scenarios we increase Austria's R&D to GDP ratio in 2011 by 0.6 percentage points from 2.8 percent to 3.4 percent. Expenditures for tertiary education are counterfactually increased by US$ 1,703 million, the share of non-fossil energy consumption needs to be increased from 31 percent to 35 percent in order to mimic the Nordic average in terms of renewable energy efforts. In terms of policy changes required, the first goal seems to be the one that could be most realistically achieved while especially for the last counterfactual scenario large policy and behavioural adjustments appear to be necessary.

Table 5.6: Counterfactual export gains for different policy scenarios by regions

	Goods				Services
	R&D expenditures	Tertiary expenditures	Non-fossil fuel energy consumption	Joint scenario	R&D expenditures
	mn USD				
Industrial Countries Overseas	486.7	216.0	199.2	919.0	103.1
Western Balkan Countries	66.4	50.4	48.1	147.3	3.5
Black Sea Region extended	137.7	67.2	62.4	266.0	19.1
BRICS	436.0	201.2	186.2	829.5	89.1
Latin America	46.6	21.7	20.1	89.1	5.8
South East Asia	156.2	71.5	66.2	297.0	24.7
Middle East	126.4	58.2	53.8	240.5	8.3
Africa	46.1	29.8	28.2	96.8	4.3
Other countries	48.2	77.3	75.5	150.0	1.4

Source: WIFO calculations. – Other countries excluding EU-28 and EFTA.

Table 5.6 reports the counterfactual export gains disaggregated for different destination country groups. Columns (1) to (4) (column 5) provide(s) the results for the manufacturing (services) industries. Table 5.7 assesses differences in export potentials across different manufacturing and services industries by further disaggregating the main industries into their subcategories. Starting with the impact of a counterfactual increase in R&D to GDP ratio by 0.6 percentage points, the largest export potentials to be exploited would be available in Industrial Countries in Overseas and the BRICS countries. Based on our simulations exports to the Industrial Countries in Overseas (the BRICS) could be expanded by volumes worth around US$ 490 million (US$ 440 million). The increasing importance of these two country groups as future export markets is quantitatively also confirmed by *Hölzl et al.* (2016). For the remaining country groups the expected additional exports induced by proactive R&D policies are much smaller, however. To give an example, exports to South East Asia are expected to grow by only US$ 160 million in total. The smallest export potentials are identified for Africa and Latin America together with the economies forming the rest of the world.

With regard to the other two policy variables of interest we obtain very similar patterns across the different country groups. This result does not come as a big surprise since the model structure imposes symmetric counterfactual impacts across all covariates. In relative magnitudes, however, the impacts of the alternative counterfactuals for additional export potentials are smaller and differ only slightly. As can be inferred from column (2) an increase of Austria's total expenditures for tertiary education generates a similar amount of additional potential exports as efforts towards more renewable energy consumption. To attach some numbers to this, the policy scenario suggests that the exports to the Industrial Countries in Overseas and the BRICS economies could be increased by approximately US$ 200 million to US$ 220 million. Interestingly, a feasible increase in Austria's non-fossil fuel energy consumption from 31 percent to 35 percent of total energy consumption (going along with a substantial restructuring of the Austrian and European energy markets) would generate considerable export potentials, as column (3) depicts. Based on the model calculations exports to the Industrialised Countries Overseas and BRICS could be increased by up to US$ 200 million and US$ 190 million, respectively. Such a policy would further increase the export potential to the Western Balkan Countries by about US$ 50 million. Accordingly, catching-up to the average of the Nordic economies in terms of energy consumption would likely induce almost half of additional export potentials as a comparable expansion of R&D expenditures would generate in the same region.

A simultaneous adjustment of the three respective policy variables to the Nordic averages obviously would induce the largest export gains. Accordingly, once Austria would simultaneously increase the R&D to GDP ratio, provide more financing for the tertiary sector and induce a shift in energy consumption, manufacturing exports into the Industrial Countries in Overseas could rise by about US$ 920 million. This number again is followed by the BRICS economies with the total effect amounting to US$ 830 million. In terms of additional total export potentials, these economies are followed by South East Asia and the extended Black Sea Region. These country groups both exhibit export potentials almost up to US$ 300 million. Based on our counterfactual scenarios the smallest overall export potentials for Austrian manufacturing firms are reported for African and Latin American countries. For both we calculate total export potentials due to simultaneous policy shifts well below US$ 100 million.

Due to a lack of available cost estimates, it is difficult to assess the costs-benefit-ratio for the three different policy options. Intuitively, a change in the energy-mix will come with relatively high costs and thus this measure might not be most effective, especially in the short term. Nevertheless, the Paris goals call for policy action and the evidence provided in this analysis at least suggests that taking a leading role in this transition could be accompanied by additional positive effects such as a strengthening of the market position abroad.

Briefly turning our attention to the services industries, the last column in Table 5.6 reports differences in Austrian services exports due to a counterfactual increase in the R&D to GDP ratio. In qualitative terms, the results are very similar to the ones for the manufacturing

industries. Accordingly, exports to the Industrial Countries in Overseas and the BRICS economies could be most substantially increased by expanding R&D investments in Austria. For the other country groups the total exports induced by more R&D relative to GDP are negligible and below US$ 25 million in all cases. Here however it is again important to note that the services exports estimates and counterfactual calculations are based on a much smaller sample of potential destination economies and therefore the results from both exercises are not directly comparable.

Table 5.7: Counterfactual export gains for different policy scenarios by sectors

	Goods					Services
	R&D expen-ditures	Tertiary expen-ditures	Non-fossil fuel energy consumption	Joint factors		R&D expen-ditures
	mn USD					
Food, liv e animals	38.0	28.1	26.8	83.5	Transportation	58.3
Bev erages, tobacco	39.0	69.1	67.7	128.3	Trav el	62.0
Crude materials	20.9	24.5	23.8	55.5	Communications serv ices	8.1
Mineral fuels, related materials	1.8	2.0	1.9	4.7	Construction serv ices	3.6
Animal, v egetable oils, fats, waxes	0.4	0.5	0.4	1.0	Insurance serv ices	0.7
Chemicals and products	190.3	87.6	81.1	362.2	Financial serv ices	8.9
Manufactured goods	271.3	122.1	112.8	513.4	Computer, information serv ices	13.1
Machinery, transport equipment	754.4	347.4	321.5	1,436.0	Royalties and license fees	8.2
Miscellaneous manuf. articles	139.7	63.1	58.3	264.6	Other business serv ices	95.7
Commodities nec.	94.7	48.9	45.7	185.9	Personal, cultural, recreational serv .	0.9

Source: WIFO calculations.

Turning to Table 5.7 it becomes obvious that the largest export potentials in goods industries can be exploited in the machinery and transport equipment sector. Throughout, the first three columns corresponding to counterfactual scenario analyses for R&D intensity, expenditures in tertiary education and an energy consumption shift towards non-fossil energy resources, the estimated export gains in the machinery and transport equipment industry are approximately three times larger as in the second most profiting industry, the production of manufactured goods that are classified chiefly by material. Besides these two only three other manufacturing industries are indicated to (substantially) profit from catching-up to the Nordic averages in the three respective policy variables. For the remaining five industries, the difference between the counterfactual scenarios and the status-quo are only of minor quantitative relevance.

When comparing the overall effects across the different counterfactual policy scenarios, an increase in the R&D to GDP ratio to the Nordic average is again identified to generate the largest export potentials in important current and future markets. An increase in the expenditures in tertiary education would induce the second largest additional exports while a shift in the energy consumption patterns towards the Nordic average ranks only third. Unsurprisingly, simultaneous policy efforts in all three different dimensions would contribute

most significantly towards strengthening the foreign market position of Austrian manufacturing exporters.

Finally, in line with the findings for different destination groups a catching-up in Austria's R&D intensity would additionally also positively contribute to the generation of additional export potentials in the services industries. Across different services sectors the other business services would profit the most followed by the tourism and transportation services. For the remaining services industries the positive effect of an increase in the R&D to GDP ratio is of minor quantitative importance.

6. Summary and conclusions

The evidence from the empirical analysis based on gravity models for bilateral trade flows suggests that Austria's export performance in promising foreign markets could be enhanced by concentrating economic policy measures on promising supply-side and competitiveness enhancing factors. More specifically, policies which successfully increase the R&D to GDP ratio (by e. g., establishing a R&D investment friendly environment) and the provision of more (public) funding for tertiary education could help Austrian manufacturing firms to strengthen their market positions abroad. In a similar vein, but as a more long-lasting policy endeavour, policies which aim at changing the energy-mix used in the Austrian economy could also positively contribute to the export performance of Austrian firms. A more effective exploitation of services export potentials could be triggered by, again, increasing the R&D intensity in Austria while the other two suggested policy measures seem to be of minor relevance for the international competitiveness of services industries.

For the assessment of the effectiveness of different policy measures, the second part of the report conducted several counterfactual scenario analyses. In particular, we compared the estimated trade flows from the status-quo with alternative scenarios in which we assume Austria would reach the Nordic average (Denmark, Finland, Sweden) in the three policy relevant variables from the estimations. Accordingly, the analysis allows for the following conclusions.

Identifying export potentials

- The largest export gains would be induced by catching-up to the Nordic average in terms of innovative capacities captured by R&D expenditures relative to GDP. By contrast, adjusting the energy-mix consumed in Austria and expenditures in tertiary education would be less effective. Concentrating the policy efforts on an increase in R&D to GDP ratio could stimulate Austria's exports not only in the manufacturing industries but also positively contribute to services exports. Given the observation of a still ongoing process of structural change and the growing importance of services exports in total trade, policy measures aiming at achieving this goal might, in general, be most effective.
- With respect to a geographical breakdown, the largest export potentials to be exploited could be realised in the Industrial Countries in Overseas and the BRICS economies (these results are also in line with qualitative evidence provided by *Hölzl et al., 2016*). Linking these results to the macroeconomic analysis, the solid medium-term outlook for the Industrial Countries in Overseas seems most promising for the realisation of export potentials. While structural factors are impeding economic growth in the BRICS economies, they still bear a certain potential for Austrian exports, specifically China and Russia, once the trade conflict with the latter is relieved. Although the estimated export potentials in the Western Balkans are negligible, the

catching-up process in this region offers chances for Austrian firms, which face closely intertwined trade relations with these economies. The catching-up implies the need for expenditures in private investment such as e. g., transport and energy infrastructure and consumption. Similarly, due to the robust economic outlook and the high population growth, African countries also might have a certain potential for Austrian exports in the investment and consumer goods sectors. However, the region still struggles with political insecurity, militant conflicts and educational shortcomings. Additionally, the drop in oil price exhibited strong negative shocks in the past. Also, in the Middle East the economic outlook depends crucially on raw material prices and the future developments in geopolitical risks. The estimated export potentials in this region are, however, rather small.

Exploiting spillover effects

- In terms of identifying a possible policy-mix, it seems that simultaneously increasing expenditures for R&D and tertiary education could be relatively easy to be implemented in a complementary fashion. This, in turn, would allow to exploit potential positive spillover effects between the specific policy measures addressing the respective policy goals.
- Taking all the results from the empirical exercise regarding the impacts of alternative policy measures in R&D, education and energy consumption at face value, simultaneous efforts in all three aspects would be most promising for exploiting both short- and long-run export gains. On the other side, such policies might be very costly and therefore it could be complicated to adopt all measures. With regard to the former two policy options, changes in the regulatory framework and reforms in the education system could have similar effects as increases in the expenditures and therefore such measures can be viewed as valuable alternative policy options.

Exploiting export prospects in the short run and long run

- Policies which would help Austria to catch-up in the R&D intensity in production and in terms of tertiary education funding can be implemented also in the short run if politically desired. Their respective export effects might become feasible already over a medium-term perspective.
- Implementing a change in the energy consumption patterns, by contrast, might be more difficult to achieve and would also call for adjustments on the production side by new and additional investments into alternative energy production capacities. Such investment projects can typically only be implemented in the medium to long run. Accordingly, policy measures which intend to support the catching-up in the energy consumption patterns to the Nordic frontrunners need to be adopted rather soon to possibly allow for positive trade potential exploitation effects in the future. Over the course of the transition period, in which large investments are likely to be needed, Austrian firms might face a comparative cost disadvantage, due to the

maybe higher electricity input prices, but the evidence from the counterfactual scenario analysis indicates a long-run market position advantage for early adopters and frontrunners.

Utilisation of different promotion schemes

- With a view to realising a competitive market position, measures that improve the international competitiveness of domestic enterprises and create a framework that enables export structures to respond with even greater versatility to structural factors of dynamically growing markets should be supplemented by direct export promotion schemes such as e. g., export guarantees in case clear market failures are to be identified.

- Enterprises deciding upon market entry in foreign export destinations are often confronted with obstacles in terms of specific information on the market and finding suitable business contacts, considerable market entry costs as well as legal and financing uncertainty. Numerous existing promotion schemes and tools of market development and export promotion exist in Austria. As these support schemes come under the responsibility of several governmental authorities and institutions, it would be advisable to coordinate the efforts and tools with all institutions and agencies involved. By bundling the range of products and focusing on selected target markets synergy and spillover effects are likely to be realised. A particular role in this context is the provision of export guarantees as well as support measures with respect to the "go international" initiative. Studies confirm the effectiveness of these support schemes on goods exports, as these tools support to overcome market failures facilitating the difficult development of new export markets (see *Url*, 2016; *Christen et al.*, 2015).

- Additionally, regarding the proposed competitive measures a closer interlinking with other funding institutions (such as FFG and AWS) could be considered in order to exploit additional synergies.

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8. Appendix

Table A 8.1: Variable description and data sources

Abbreviation	Description	Data source
exp	Goods exports (mn USD)	UNO, COMTRADE
expdl	Services exports	Eurostat, BoP Statistics
gdpn_p	Nominal GDP of partner countries (bn USD)	IMF, World Economic Outlook
gdpn_r	Nominal GDP of reporter countries (bn USD)	IMF, World Economic Outlook
rdexp	R&D expenditures (as percent of GDP)	World Bank, World Development Indicators
expterd	Tertiary expenditures (bn USD)	World Bank, World Development Indicators
non_fossil	Non-fossil fuel energy consumption (as percent of total energy consumption)	World Bank, World Development Indicators
rta	1 if Bilateral Trade Agreement is in place	Egger - Larch (2008)
eia	1 if Economic Integration Agreement is in place	Egger - Larch (2008)