

Valuing a close connection

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Colophon

Authors

Rob Ruhl

Head of Business Economics

Rob.Ruhl@ing.nl

Mohammed Nassiri

Economic Researcher

Mohammed.Nassiri@ing.nl

Anke Martens

Economist

Anke.Martens@ing.nl

External expert

Gaaitzen de Vries

Assistant Professor of Economics

University of Groningen

This report is partly based on the work done on the World Input Output Database by a team of the University of Groningen, Faculty of Economics and Business. The project was led by Professor Marcel Timmer. Gaaitzen de Vries of the team helped us to calculate the impact of final demand of Western European economies on Central and Eastern Europe, and the other way around.

Foreword

Since the fall of the Berlin wall on 9 November 1989, Western Europe (WE) and Central & Eastern Europe (CEE) have become ever more economically and financially connected. In this report, the ING Economics Department - Global Markets Research seeks to answer the question: 'What has been the contribution to economic prosperity that the relationship between WE and CEE has helped to create over the past 25 years?' To measure this contribution, we have introduced the ING Connection Rate, which captures the values of trade flows, FDI stocks and bank loans expressed as a percentage of GDP. It is the first time that the impact of both regions on each other is measured by looking at the added value created, and translated into production and employment benefits. This is the first of two publications that looks at the economic benefits of the connection between WE and CEE. In our next report, we will focus on the developments that have taken place in production.

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Main conclusions

This report shows that huge benefits have resulted from the economic connection between Western Europe (WE) and Central and Eastern Europe (CEE), Russia (RU), and the Commonwealth of Independent States (CIS) since 1995, leading to growth in employment and GDP.

- 1 In WE, the ING Connection Rate* was equivalent to around 20% of GDP in 2012. In CEE and CIS, it equaled 65% of GDP in the same year
- 2 US\$ 240 billion was added to total production in WE between 1995-2011 due to demand from CEE and RU. In CEE and RU, US\$ 272 billion was added to production due to demand from WE
- 3 The main beneficiaries of the CEE and RU demand in WE were Germany (US\$ 81.5 billion), Italy, UK, France, Spain and the Netherlands
- 4 Between 1995 and 2008, almost 2.7 million jobs were created in WE due to demand from CEE and RU. CEE saw an increase of 1 million jobs due to increased demand from WE. However, Russia lost some 0.5 million jobs in this period, which leaves the total job increase for CEE and RU at around 0.5 million

It is the first time that the impact of both regions on each other is measured by looking at the added value created and its impact on employment.

* The ING Connection Rate combines the values of trade flows, FDI stocks and bank loans, expressed as a percentage of GDP

More prosperous thanks to the connection

1

Capturing the WE - CEE+CIS connection

Both regions showed a substantial increase in prosperity since 1995. GDP and GDP per capita in Central and Eastern Europe and CIS presented a more rapid increase than in Western Europe, as the region was 'catching up' following the collapse of the Berlin Wall. Integration at regional level can be illustrated by increased flows of goods, foreign direct investments and bank loans. Trade flows, foreign direct investments, and bank loans as a percentage of regional GDP, indicate the importance of the overall connection for each region (the connection rate). The connection between WE and CEE+RU is a very important one for both regions.

Take off in GDP growth in CIS and CEE since 2000

'Catching up' process of CEE takes shape

The GDP growth of CEE+CIS accelerated since 2004. This is partly due to the accession of 8 CEE countries to the EU in 2004. The oil wealth generated in Russia pushed CIS economic growth onto a higher growth path. Real economic growth figures (see graph) show the big difference in growth rate of the CEE+CIS countries with the average growth rate of the Western European countries. The German growth performance (1.6%) was even lagging the overall WE growth rate in 2000-2008.

GDP growth CEE countries* and CIS

(GDP real, 2000-2008, 2009-2013)

	2000-2008		2009-2013	
CIS	7.4		1.8	
Latvia	7.2	-0.9		
Lithuania	7.0	-0.1		
Estonia	6.6		0.6	
Romania	5.9	-0.3		
Bulgaria	5.8	-0.4		
Slovak Republic	5.6		1.0	
Serbia	5.0		0.0	
Turkey	4.7		3.9	
Czech Republic	4.5	-0.4		
Croatia	4.3	-1.9		
Slovenia	4.3	-1.9		
Poland	4.2		2.7	
Hungary	3.3	-0.9		
Western Europe	2.1	-0.2		

* CEE countries with nominal GDP above 25 bn. USD as of 2013

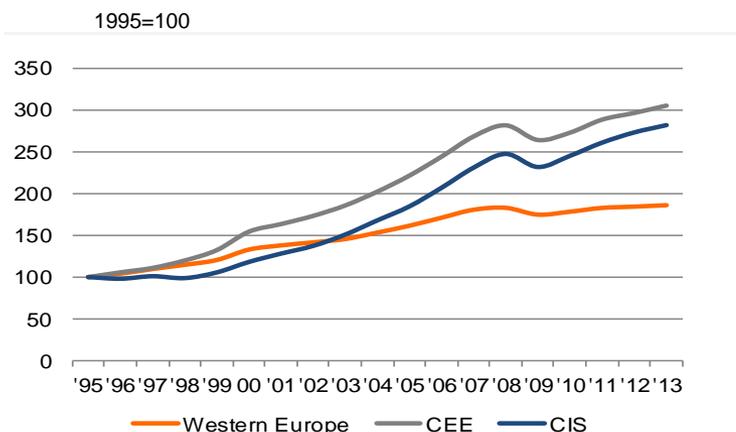
Improvements of GDP per capita in CEE and CIS, a huge gap to bridge still

Increasing prosperity

GDP per capita measured in purchasing power in US dollars shows the development of prosperity in both regions as of the mid 1990s.

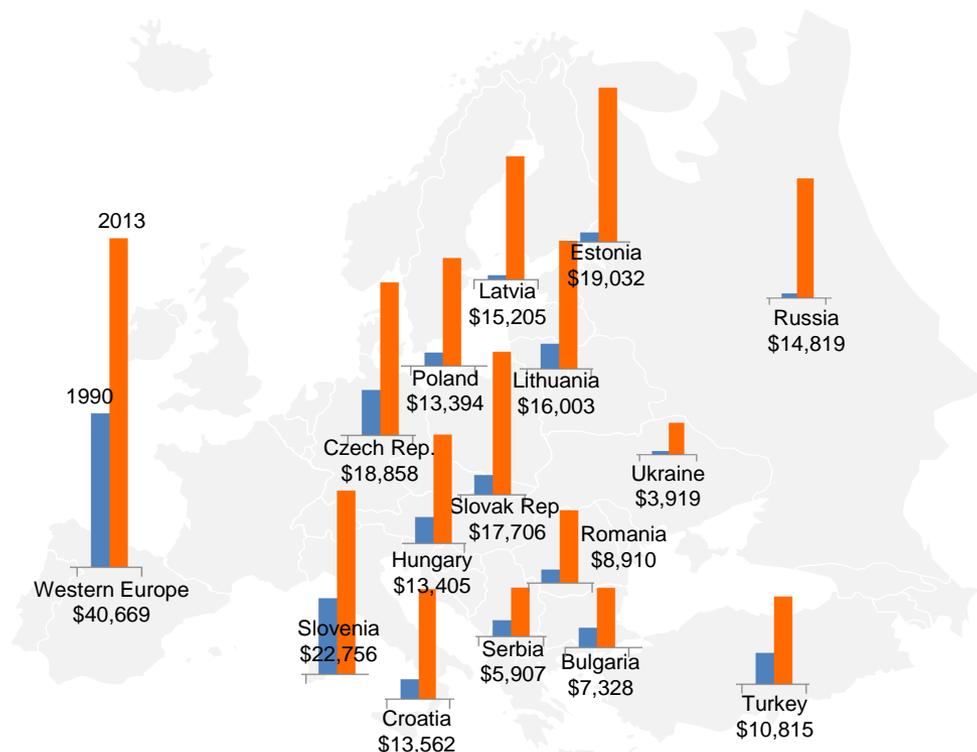
As of 2004, GDP per capita in CEE and CIS increased more rapidly. The catching up got a big boost. This has a lot to do with the accession of 10 CEE countries to the EU. Funds from the EU and foreign direct investments by WE companies supported a rapid growth of GDP per capita in CEE. Increasing demand for CEE and WE products generated production, income and jobs for each region. This will be addressed in chapter 2.

GDP per capita by region, 1995-2013 (USD in PPP)



Source: IMF, ING calculation

GDP per capita by country and WE region (Nominal USD, 1990 and 2013)



A close connection between Western Europe and CEE+GIS

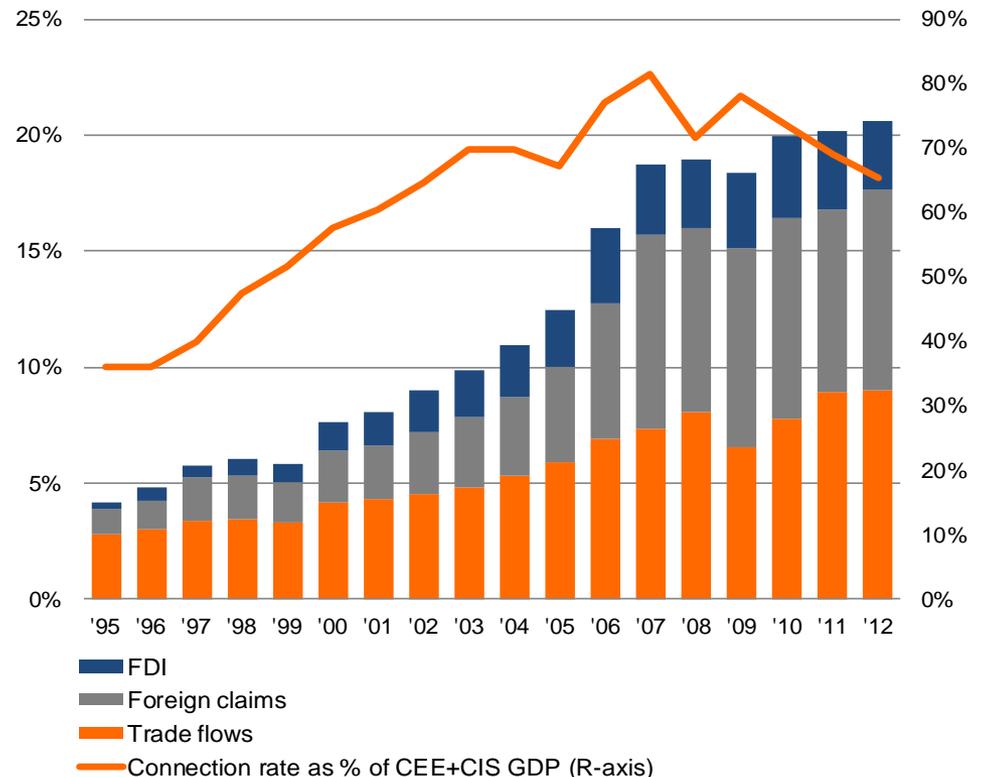
Crisis interrupted WE and CEE+GIS coming closer

The catching up process of CEE and CIS with WE is strongly linked to increasing trade flows, foreign direct investments and bank claims from WE on CEE+GIS. The sum of the three elements expressed as a % of GDP is what we refer to as the connection rate. This rate has been steadily increasing to 19% of WE GDP since the mid 1990s. In 2009, the year after the start of the global financial crisis, the rate of connectedness showed a sharp fall, which was mainly due to a drying up of trade flows, the freeze on bank loans to the region, and a moderate increase of FDI's in US dollars. The connection rate has since recovered all the ground lost, reaching 20.6% of WE GDP in 2012.

The connection rate for CEE+GIS in % of GDP shows a different development as of 2009. The ratio (orange line in graph rhs.) increased to 82% in 2007 in GDP. CEE+GIS. Obvious GDP of CEE+GIS is much smaller than GDP of WE. As a consequence the ratio is much higher. Since the beginning of 2008 the orange line shows a decline of the ratio. The downward trend is due to the higher economic growth figures for the CEE+GIS region a drying up of trade flows, a freeze on bank loans and a moderate growth of FDI.

The rapid increase and current level of the connection rate express the importance of this connection for both regions. There is no other region with such a strong connection with WE except for WE itself.

Connection rate as % of WE GDP and CEE+GIS GDP



Note:

- Foreign claims are end of year and from Western European BIS banks
- Trade flows cover only trade in goods
- FDI (stock) are sum of inward and outward

Source: UNCTAD, OECD, BIS, ING calculation

More than 50% of the connection made up by Poland, Russia and Turkey

Largest economies play major roles

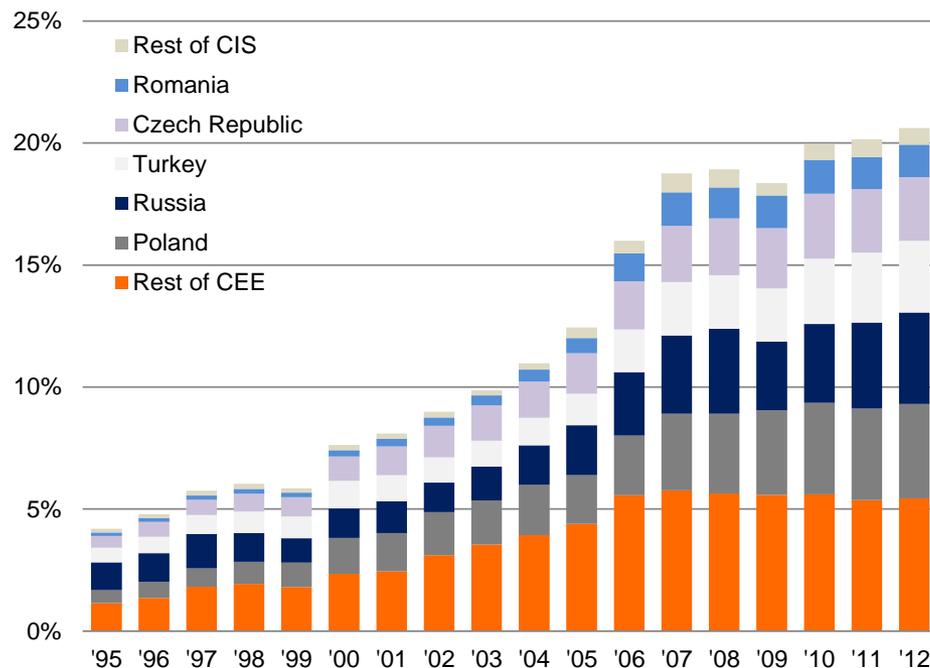
Poland, the largest single contributor, makes up 3.9 percentage points of the 20.6% connection rate in 2012. The largest component of that number refers to claims of WE banks on Poland, which make up almost half of the connection rate.

Russia is the second largest contributor with 3.7 percentage points of the total. In this case, however, the largest component is trade: total exports and imports account for 60% of the link.

Turkey represents 2.9% of the total. Trade was the largest component of the WE-Turkey connection in the years before the crisis. After the crisis, bank claims on Turkey became the largest part of the connection (46%).

The fastest increases in the link between the regions took place in Romania (connection rate with WE only 0.1% in 1995, against 1.3% in 2012) and Poland (0.5% connection rate in 1995, against 3.9% in 2012).

Connection rate by CEE and CIS countries as % of WE GDP



Source: UNCTAD, OECD, BIS, ING calculation

WE frontrunners in the connection with CEE are still in the lead

Early birds still in the lead

Germany, Italy and Austria had already relatively strong ties with CEE+CIS countries even before 1989. Based on the long standing relationship they were able to expand their activities in the region more rapidly than other countries.

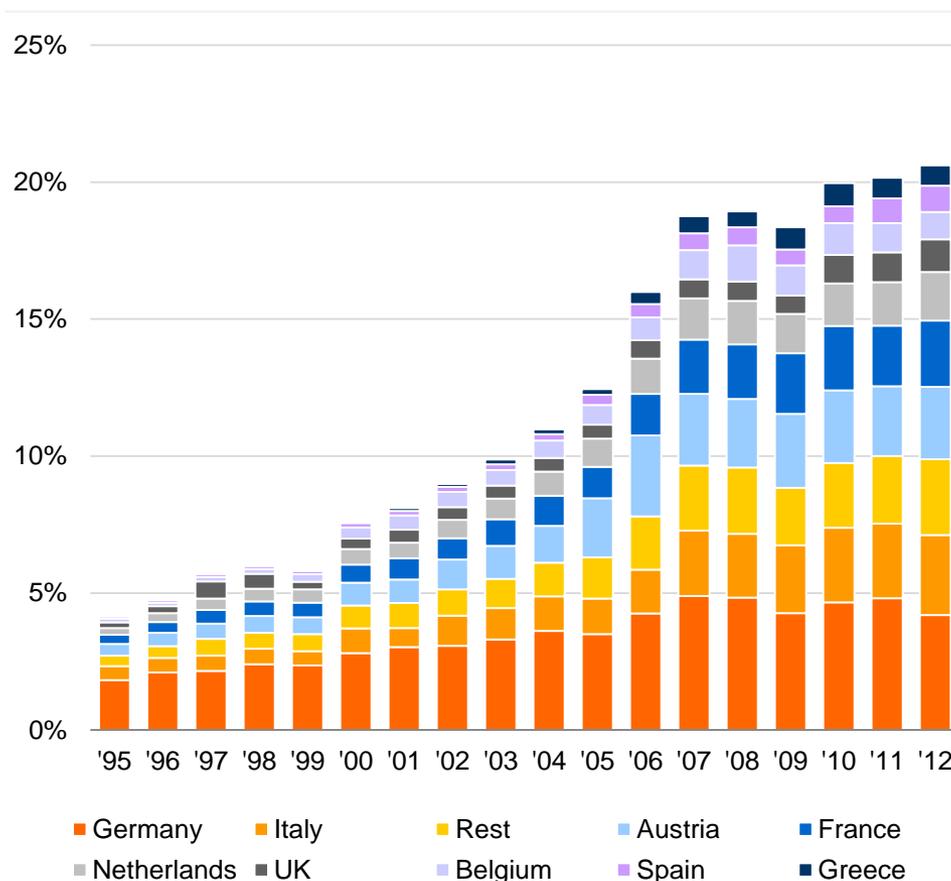
High growth in connectedness since the turn of the millennium has been in the Southern European countries Greece and France. Growth in bank claims of French banks in CEE is the main driver behind this rapid growth of France.

The largest link of WE with CEE+RU originates in Germany: this country is responsible for 4.2 percentage points of the 20.6% connection rate in 2012. Three quarters of this German link is made up of trade flows.

Second and third largest contributors are Italy and Austria, with 2.9% and 2.6% respectively. For these countries, the connectedness is primarily through bank claims. Banks from both countries rapidly strengthened their activities in CEE soon after the tiring down of the Berlin wall.

Large investments in local production facilities were done not only in the banking sector, but also in the manufacturing sector. Most well known are the investments in the automotive industry. Contributing to an increase of production, jobs and income in CEE and stimulating demand from CEE for products and services in WE and created jobs in the services sectors and high added value manufacturing sectors. Both regions benefitted from this development.

Connection rate by Western European countries as % of WE GDP



Source: OECD, BIS, ING calculation

2

Foreign demand versus domestic demand

The growing internationalisation of the economies shows foreign demand became more important at the expense of domestic demand in both regions. Demand from consumers, corporates and governments from CEE+RU started to play an important role for producers in WE at the expense of foreign demand from their own region. Western European consumers, corporates and governments used to play a dominant role in the foreign demand for producers in CEE+RU. That role, while still dominant, seems to have diminished due to Asia's (China) role becoming more important.

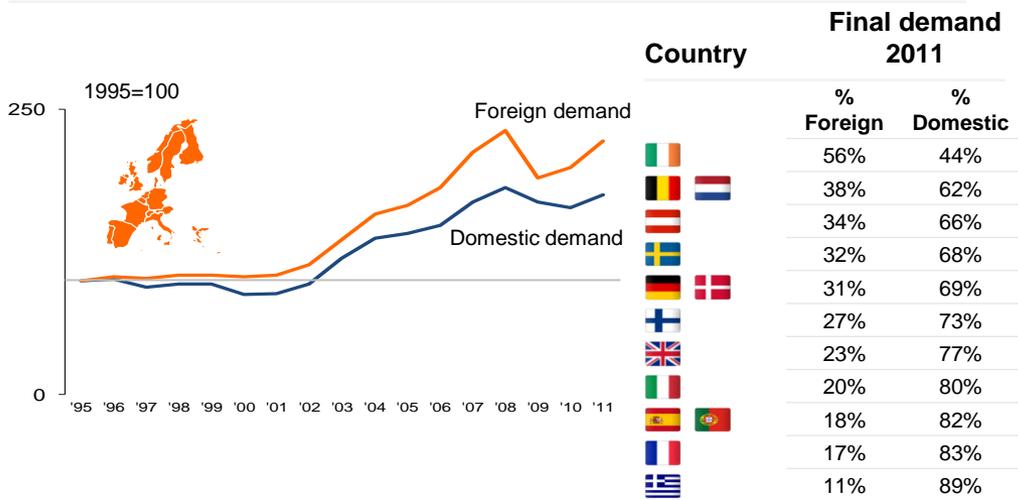
With the help of the WIOD we were able to calculate the impact of increasing demand from both regions on each other. The calculation generates numbers on the gross added value and the number of jobs created. The impact of growth of demand outnumbered the loss of jobs due to the redistribution of production in both regions.

More dependency on foreign demand in both regions

Increasing internationalisation

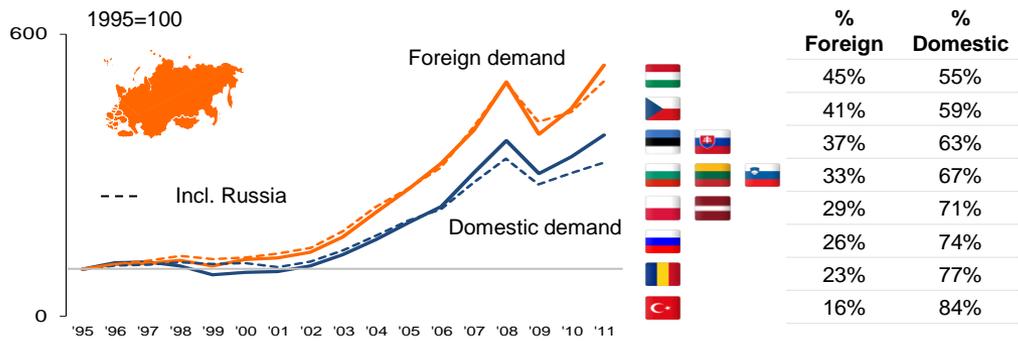
More and more production and services are meant for serving foreign demand. As shown in the graph foreign final demand (measured in value added) increased more rapidly than domestic demand in the period 1995-2011. The global crisis of 2008 had a severe negative impact on foreign demand. In the recovery phase foreign demand was clearly in the lead in WE. Countries most vulnerable due to global developments in WE, are Ireland, the Netherlands and Belgium. The countries least depending on foreign demand are Greece (11% in share of GDP) plus France, Spain and Portugal.

Development foreign and domestic demand (Value added, nominal USD)



Not much difference in dependency on foreign demand between WE, CEE+RU

The average ratio of foreign demand in percentage of GDP for WE (30%) and CEE (32%) do not differ much. Hungary is the most open economy with a ratio of 45%. The Turkish economy is a fairly closed economy with a ratio of 16%. After bottoming out of the crisis in 2009 foreign demand was in the lead in the recovery phase in CEE and RU like in WE.

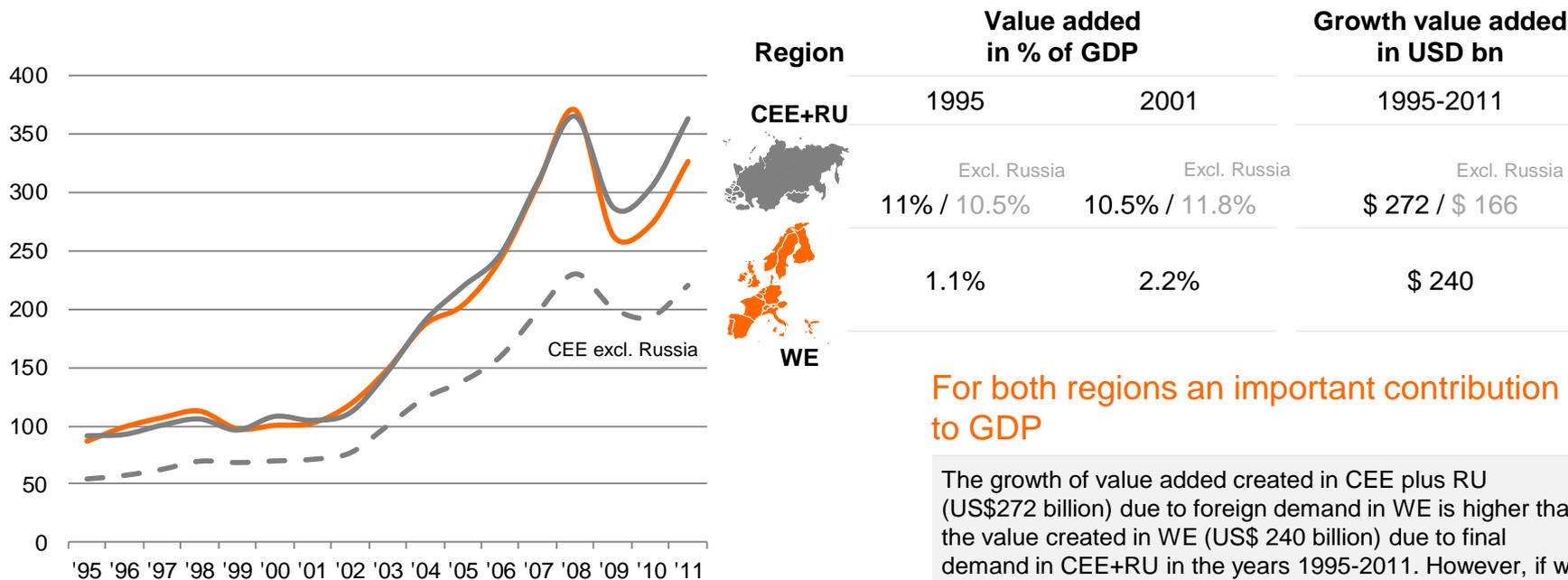


Source: WIOD, ING calculation

Bilateral demand growing in parallel till 2008 crisis

Value added created by region due to bilateral demand

(1995-2011, nominal USD billion)



For both regions an important contribution to GDP

The growth of value added created in CEE plus RU (US\$272 billion) due to foreign demand in WE is higher than the value created in WE (US\$ 240 billion) due to final demand in CEE+RU in the years 1995-2011. However, if we exclude Russia (impact oil/gas) from the CEE+RU total, the number for CEE drops to US\$166 billion. The total value created in 2011 still reflects almost 12% of CEE GDP. For the larger WE economy the total value added represents 2.2% of GDP in 2011. For both regions, it is an important contribution to GDP.

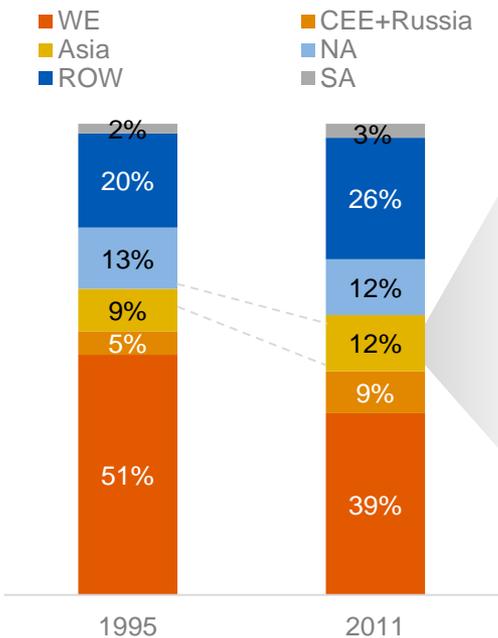
Source: WIOD, ING calculation

Growth CEE+RU demand more important than Asia for WE

Demand from its own region became less important for Western Europe

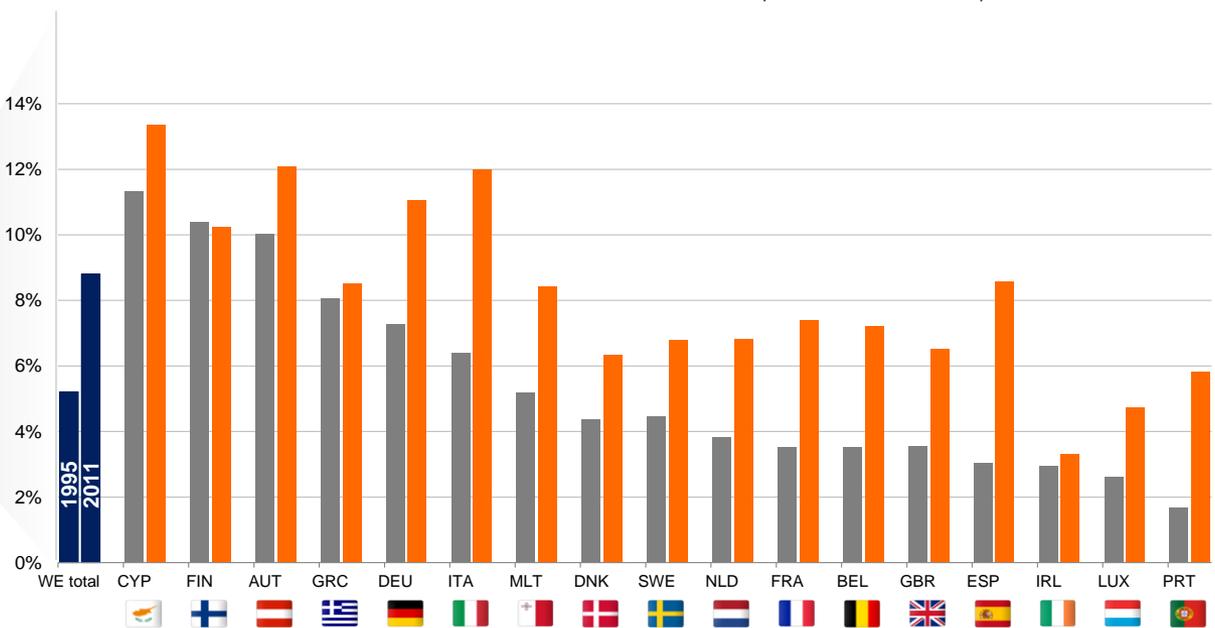
CEE and Asia became more important customers of WE products and services in 1995-2011. Customers of the own WE region could not keep up with the increasing demand from these regions. The rest of the world (ROW) includes important winners as well. Countries from the Middle East, Oceania, Africa are included in this group of countries. Austria, Italy, Spain and France are most successful in attracting customers from CEE+RU. In all WE countries except Ireland, Greece and Finland CEE+RU demand became more important.

WE value added due to demand from different regions...



...and development CEE+RU share in value added created in Western European countries due to foreign demand, 1995-2011

SA= South America | NA= North America | ROW=Rest of the World



Source: WIOD, ING calculation

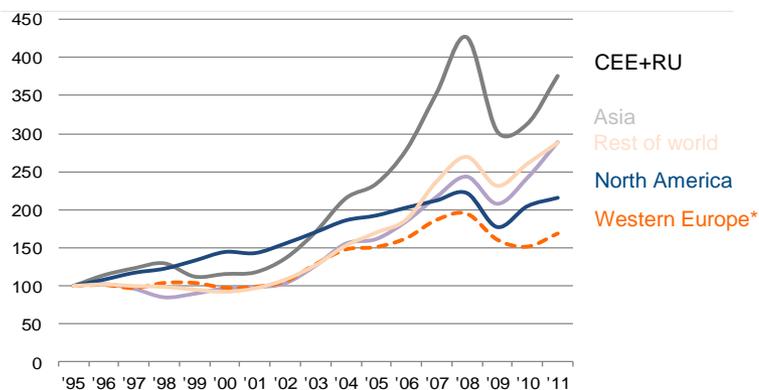
The WE lucky ones to satisfy CEE demand

Western European value added due to demand from CEE+RU grew rapidly

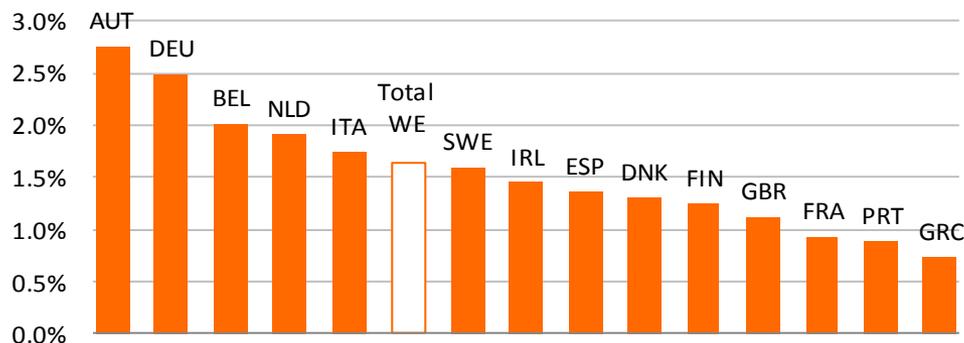
CEE+RU show highest growth since 2004 of all regions of demand for WE products. In total the growth of value added in WE production amounted to US\$ 240 billion in 1995-2011. The main beneficiaries of the CEE+RU demand in WE are Germany (US\$ 81.5 billion), Italy, UK, France, Spain and the Netherlands (chart at the bottom right hand). As shown in the graph, Austria and Belgium also have profited significantly from increased demand from CEE+RU when we take into account the size of their economy.

Growth of Western European value added due to demand from different regions, 1995-2011

Index 1995=100



Growth value added by country due to increased demand from CEE+RU (2011 compared with 1995, as % of GDP)



Growth value added by country due to increased demand from CEE+RU (2011 compared with 1995)

Countries	Increase of value added (USD billion)	% share of total WE value added growth
Germany	81.5	34%
Italy	34.5	14%
United Kingdom	24.8	10%
France	23.5	10%
Spain	18.7	8%
Netherlands	14.4	6%

* Demand from Western Europe consist of foreign demand within the region, e.g. German demand for French products

Source: WIOD, ING calculation

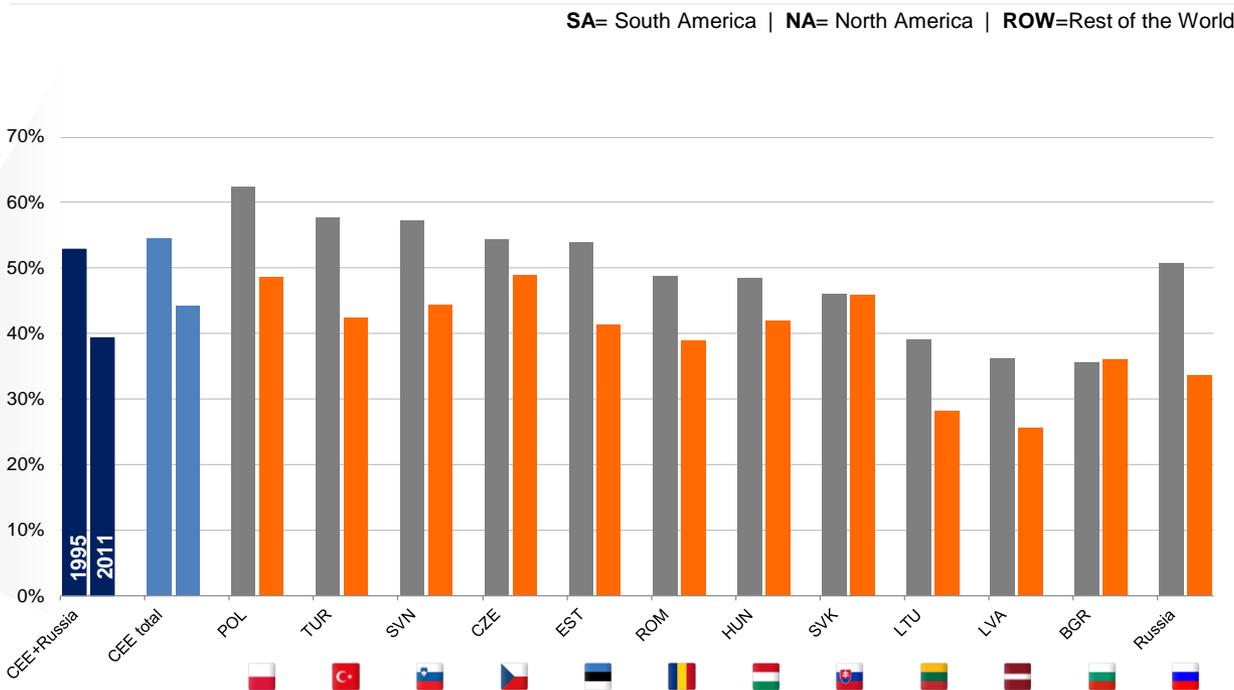
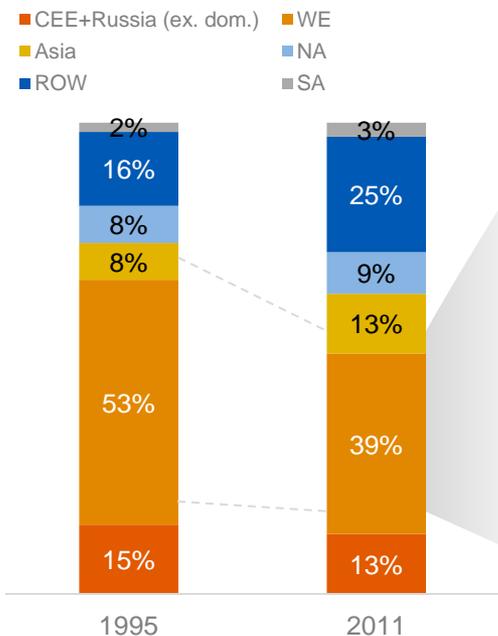
Asian demand becoming more important for CEE+RU production at the expense of WE

WE lost share but very important for CEE+RU still

WE became less important clients for CEE producers. However, on average 39% of demand for products from CEE comes from WE. The conclusion must be that WE still is very important for CEE. The global trend of Asia becoming an important manufacturing region and an important consuming region is reflected in its increasing share in demand for CEE+RU production. The decreasing share of WE demand is reflected in the percentages for the individual countries below. For instance, in Poland the WE share decreased from 62% in 1995 to 48% in 2011. In Russia and Turkey, a similar loss of share in demand by WE is visible.

CEE+RU value added due to demand different regions...

...and development Western European share in value added created in individual CEE countries + RU due to foreign demand, 1995-2011



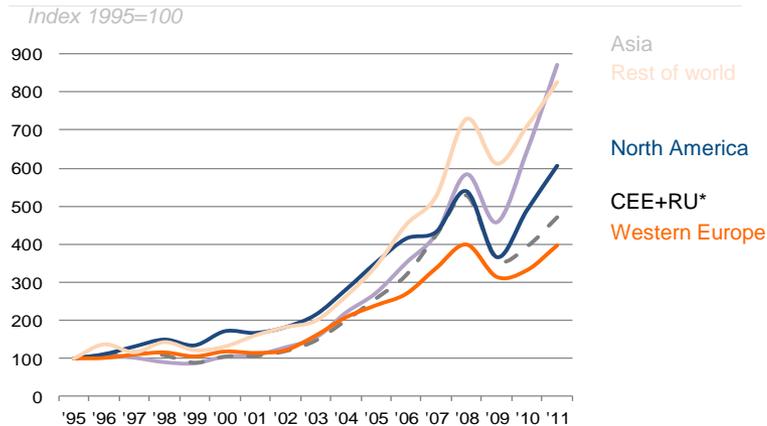
Source: WIOD, ING calculation

Russia, Poland and Turkey main beneficiaries of WE demand growth

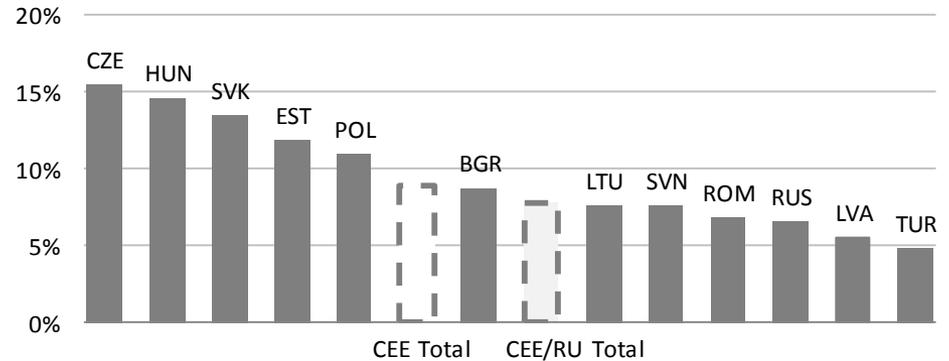
A decreasing share but still a huge amount

With almost 40%, Russia was the main beneficiary of increased demand from WE in the period 1995-2011. Oil, gas and oil prices play an important role in this huge share of Russia. Poland profited from the growing WE demand for an amount of almost US\$ 50 billion (value added) in 1995-2011. Turkey, Poland and Russia are the main beneficiaries (69%) of the WE demand for products in CEE+RU. Taking into account the size of the economy (value added increase as % of GDP) especially Czech Rep. and Hungary benefited relatively well from increased WE demand.

Growth of CEE+RU value added due to demand from different regions, 1995-2011



Growth value added by country due to increased demand from WE (2011 compared with 1995, as % of GDP)



Growth value added by country due to increased demand from WE (2011 compared with 1995, in nominal USD)

Country	Increase of value added (USD billion)	% share of total CEE+RU value added growth
Russia	105.7	39%
Poland	49.1	18%
Turkey	32.8	12%
Czech Rep.	29.1	11%
Hungary	17.8	7%
Slovak Rep.	11.8	4%

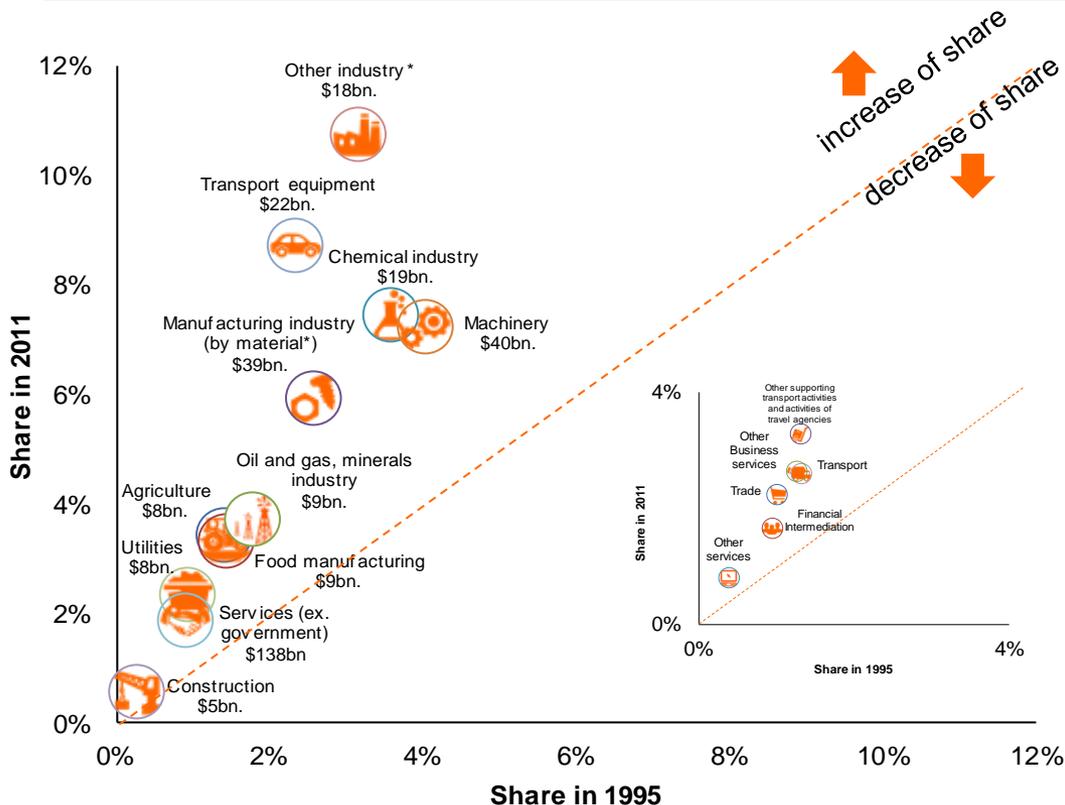
* Demand from CEE+RU consist of foreign demand within the region, e.g. Polish demand for Hungarian products

Source: WIOD, ING calculation

Increasing demand CEE+RU positive impact on most WE sectors of industry

Development share CEE+RU demand in value added Western European sectors

(Share 2011 compared with share 1995, value added in USD billion)



All WE sectors benefited from CEE+RU demand a couple of industries stand out

CEE+RU became more important in consuming WE products. The more internationally oriented sectors benefited most from increased demand from CEE+RU via direct exports or indirectly through value added in other countries' exports. The success of these sectors reflects not only the increasing demand from CEE+RU, but also the extent to which Western Europe remained competitive to satisfy this demand. By plotting the shares in 1995 against those in 2011 (see figure) a few sectors stand out. Most successful industries are: other industry (2/3 textile), transport equipment, chemical industry, machinery and manufacturing by material. Construction and the services sectors are traditionally domestic oriented but service sectors play an ever increasing role in the value chains of manufacturing sectors.

Large Italian and German sectors main beneficiaries of growth CEE+RU demand

Other industry (2/3 = textile) shows the highest growth rate thanks to rapidly growing spending power in Russia and Turkey. 70% of growth in demand comes from these two countries. Especially Italian textile industry benefited from this growing demand. Germany, by far the largest WE producer of transport equipment and machinery, accounted for 50% of value added growth due to increased demand from CEE+RU. Italy took up 15% of WE value added growth in the machinery.

*Note:

- Other industry consists of: textiles (products), leather & footwear, manufacturing nec & recycling
- Manufacturing industry by material consists of: metals & fabricated metal, rubber & plastics, Paper and wood

Source: RUG, ING calculation

WE demand and investments had a positive impact on higher value added production in CEE

Western Europe still important as buyer CEE products

For most sectors of industry WE remains the most important foreign consumer of CEE products and services. As presented on page 14 total value added created in CEE due to WE demand increased from 10.5% of GDP (1995) to 11.8% (2011) of GDP. It is interesting to note that this is the opposite from what we saw in terms of value added due to only foreign demand on page 17. The difference is the result of rapidly increasing importance of foreign demand for CEE compared with domestic demand. In other words, even though WE lost share compared to other foreign consumers of CEE products this region became more important because of a decreased share of value added related to domestic demand.

Transport equipment and machinery mainly produced for Western Europe

Years of investments from WE have led to a strong position in transport equipment sector especially in the automotive. More than two-thirds of CEE automotive exports go to Western Europe. Looking at the whole transport equipment sector 42% of value added created in CEE is due to WE demand. This is exceptionally high and more than the value added created due to demand from the own CEE region. This also counts for machinery where 41% of value added is due to Western European demand (31% for CEE demand). Czech Rep., Poland and Turkey are responsible for 65% of CEE value added in the transport equipment sector underlining the shift towards higher value added production.

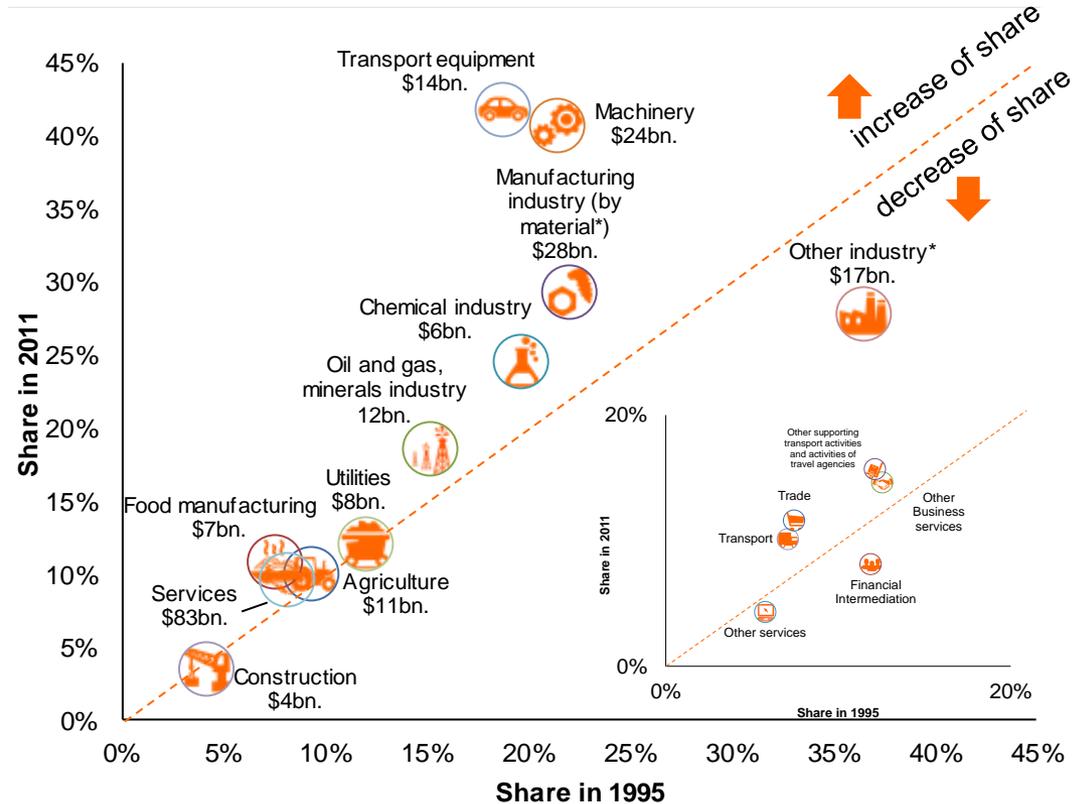
*Note:

- Other industry consists of: textiles (products), leather & footwear, manufacturing nec & recycling
- Manufacturing industry by material consists of: metals & fabricated metal, rubber & plastics, Paper and wood

Source: WIOD, ING calculation

Development share WEU demand in value added CEE (ex. Russia) sectors, 1995-2011

(Share 2011 compared with share 1995, value added in USD billion)



CEE+RU demand largest contributor to WE employment

Services related jobs show largest increase due to final demand from CEE+RU

Increasing demand from CEE+RU in 1995–2008 is responsible for increasing employment in WE by 2,7 million jobs. The growth in employment due to the CEE+RU demand is even bigger than the growth due to demand from Asia, North America and South America combined. The services industry is by far the most important beneficiary in WE. These services sectors are strongly linked to manufacturing sectors which are growing so rapidly in CEE. 40% of the employment growth in services refers to other business services, renting of machinery and equipment, retail trade (20%), transport (8%) and financial intermediation (5%). Most jobs in the WE manufacturing sectors are created in the manufacturing by material*, machinery, and transport equipment.

Difference in employment in Western Europe due to development final demand from different regions, 1995-2008

	x1000 jobs	Western Europe	CEE+RU	Asia	North America	South America	Rest of the world
 Agriculture		-1,772	91	-29	0	2	92
 Food manufacturing		-243	61	-3	16	1	97
 Oil and gas, minerals industry		-365	34	2	4	5	-10
 Manufacturing industry (by material)*		-1,358	291	109	69	48	301
 Chemical industry		-386	53	11	63	15	29
 Machinery		-878	228	191	34	41	111
 Transport equipment		-273	195	28	40	5	27
 Other industry*		-1,427	207	-66	-87	6	-2
 Utilities		-208	14	4	6	2	14
 Construction		1,810	56	13	14	6	49
 Services		12,984	1,297	845	840	230	2,707
Government services		9,589	138	94	86	19	194
Total WE economy		17,473	2,665	1,198	1,084	379	3,610

*Note:

- Other industry consists of: textiles (products), leather & footwear, manufacturing nec & recycling
- Manufacturing industry by material consists of: metals & fabricated metal, rubber & plastics, Paper and wood

Russia, Poland and Turkey are main foreign job creators in WE

Largest economies have biggest impact on WE employment

Russia, Poland and Turkey created on balance 1.6 million jobs in WE. Almost half of the jobs are created in the services sectors and the other part mainly in the more value added sectors like the manufacturing by material, transport equipment and machinery. The negative figures for the chemical and machinery industry in Turkey can be the result of the changing production structure in Turkey. The government strongly stimulates the domestic production in high value added sectors of industry.

Difference in employment in countries of WE due to final demand from countries in CEE+RU, 2008/1995

							
x1000	Russia	Poland	Turkey	Romania	Hungary	Czech Rep.	Rest of CEE
 Agriculture	1	30	11	12	9	9	19
 Food manufacturing	2	17	2	8	8	8	16
 Oil and gas, minerals industry	4	7	10	4	2	3	4
 Manufacturing industry (by material)	64	75	25	38	21	23	45
 Chemical industry	13	18	-4	8	5	5	8
 Machinery	71	61	-15	34	18	14	45
 Transport equipment	87	33	21	16	12	10	16
 Other industry	50	24	91	19	7	3	13
 Utilities	3	4	1	2	1	1	2
 Construction	9	15	14	5	4	2	7
 Services	292	271	226	128	103	106	170
Government services	33	31	21	10	14	10	19
Total country effect	630	586	405	284	203	193	363

*Note:

- Other industry consists of: textiles (products), leather & footwear, manufacturing nec & recycling
- Manufacturing industry by material consists of: metals & fabricated metal, rubber & plastics, Paper and wood

WE is second most important contributor to the increase in jobs in CEE+RU

Restructuring process CEE overshadows positive impact WE demand

The loss of jobs in agriculture in CEE+RU, and several other sectors of industry reflects the change in the production structure in CEE. Low productivity in many sectors of industry including the agriculture required a painful restructuring process resulting in a huge loss of jobs. The impact of the restructuring overshadows the positive impact of growing demand from WE as well. North America has the largest positive impact employment in CEE, mainly in services sectors. Within this sector wholesale trade and inland transport (oil effect due to RU) are the most important subsectors. Growing demand of WE for CEE+RU transport equipment is dominant in the manufacturing industry apart from the services sectors. If we eliminate Russia from the numbers in the table below the net contribution in CEE employment by Western European demand increases to about 1 million jobs in stead of 477 thousand.

Difference in employment in CEE+RU due to development final demand from different regions, 2008/1995

	x1000	CEE+RU	Western Europe	Asia	North America	South America	Rest of the world
 Agriculture		-10,171	-797	-385	-122	-12	186
 Food manufacturing		-81	20	-20	-6	-1	55
 Oil and gas, minerals industry		-811	-217	47	47	4	118
 Manufacturing industry (by material)		91	29	-30	5	22	441
 Chemical industry		-190	-68	-21	-3	14	40
 Machinery		-1281	142	-129	1	12	281
 Transport equipment		-289	258	18	33	7	129
 Other industry		-413	-302	38	-58	6	163
 Utilities		20	-13	29	30	8	88
 Construction		930	10	11	9	2	53
 Services		9212	1210	719	588	113	1,691
Government services		4055	207	87	54	11	147
Total CEE+RU		1,070	477	364	578	187	3,392

*Note:

- Other industry consists of: textiles (products), leather & footwear, manufacturing nec & recycling
- Manufacturing industry by material consists of: metals & fabricated metal, rubber & plastics, Paper and wood

Negative contribution to growth employment by Germany compensated by UK, Spain, France, Greece and Belgium

Germany still most important contributor to employment despite of slow growth

The negative contribution of German demand to employment of CEE can be explained by three factors. Germany is the most important contributor to the job creation in CEE from all WE countries (50% in 1995 and 29% still in 2008). In the period 1995-2008 German final demand did show a very moderate increase compared to the other WE countries. This slow growth in demand (still + US\$ 42 bn '95-'08) was not able to generate enough jobs to compensate for the rapidly improving productivity in CEE or the reduction of jobs due to restructuring. As a consequence the German contribution to growth of employment in CEE did show a negative number.

Difference in employment in countries CEE+RU due to development final demand from WE countries 2008/1995

							
x1000	UK	Spain	France	Greece	Belgium	Germany	Rest of WE
 Agriculture	-45	-12	-55	22	-9	-448	-249
 Food manufacturing	12	1	3	5	3	-11	8
 Oil and gas, minerals industry	17	-1	-20	6	2	-144	-77
 Manufacturing industry (by material)	21	37	36	16	11	-114	22
 Chemical industry	-1	-1	-3	-1	-4	-38	-20
 Machinery	66	48	68	9	11	-128	67
 Transport equipment	40	30	61	4	12	26	85
 Other industry	29	52	34	23	-11	-418	-12
 Utilities	11	6	3	5	7	-29	-17
 Construction	19	6	7	12	4	-48	12
 Services	343	194	191	111	99	-85	357
Government services	69	26	25	9	7	18	52
Total country effect	580	385	350	222	133	-1419	226

*Note:

- Other industry consists of: textiles (products), leather & footwear, manufacturing nec & recycling
- Manufacturing industry by material consists of: metals & fabricated metal, rubber & plastics, Paper and wood

Country coverage

Western Europe (WE)	Central Eastern Europe (CEE)	CIS	Asia	North America (NA)	South America (SA)	Rest of the world (ROW)
Austria	Albania	Russia	China	United States	Brazil	
Belgium	Bosnia and Herzegovina	Armenia	India	Canada	Mexico	
Cyprus	Bulgaria	Azerbaijan	Indonesia			
Denmark	Croatia	Belarus	Japan			
Finland	Czech Republic	Georgia	Korea			
France	Estonia	Kazakhstan	Taiwan			
Germany	Hungary	Kyrgyzstan				
Greece	Latvia	Mongolia				
Ireland	Lithuania	Republic of Moldova				
Italy	Montenegro	Tajikistan				
Luxembourg	Poland	Turkmenistan				
Malta	Romania	Ukraine				
Netherlands	Serbia	Uzbekistan				
Portugal	SFR of Yugoslavia					
Spain	Macedonia					
Sweden	Slovakia					
United Kingdom	Slovenia					
Iceland	Turkey					
Switzerland						
Norway						

The black colored countries are only included in chapter 1 due to data limitations, the orange-colored countries represent the regions also in chapter 2

Industry classification

NACE code	NACE description	Included in following sectors in report
AtB	Agriculture, Hunting, Forestry and Fishing	Agriculture
C	Mining and Quarrying	Oil and gas, minerals industry
15t16	Food, Beverages and Tobacco	Food manufacturing
17t18	Textiles and Textile Products	Other industry
19	Leather, Leather and Footwear	Other industry
20	Wood and Products of Wood and Cork	Manufacturing industry (by material)
21t22	Pulp, Paper, Paper , Printing and Publishing	Manufacturing industry (by material)
23	Coke, Refined Petroleum and Nuclear Fuel	Oil and gas, minerals industry
24	Chemicals and Chemical Products	Chemical industry
25	Rubber and Plastics	Manufacturing industry (by material)
26	Other Non-Metallic Mineral	Oil and gas, minerals industry
27t28	Basic Metals and Fabricated Metal	Manufacturing industry (by material)
29	Machinery, Nec	Machinery
30t33	Electrical and Optical Equipment	Machinery
34t35	Transport Equipment	Transport equipment
36t37	Manufacturing, Nec; Recycling	other industry
E	Electricity, Gas and Water Supply	Utilities
F	Construction	Construction
50	Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel	Services
51	Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles	Services
52	Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods	Services
H	Hotels and Restaurants	Services
60	Inland Transport	Services
61	Water Transport	Services
62	Air Transport	Services
63	Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies	Services
64	Post and Telecommunications	Services
J	Financial Intermediation	Services
70	Real Estate Activities	Services
71t74	Renting of M&Eq and Other Business Activities	Services
L	Public Admin and Defence; Compulsory Social Security	Government Services
M	Education	Government Services
N	Health and Social Work	Government Services
O	Other Community, Social and Personal Services	Government Services
P	Private Households with Employed Persons	Government Services

Methods and literature

What is WIOD?

International trade is increasingly trade in tasks and activities instead of trade in goods. This has deep consequences for the geographical location of production, gains from trade and the functioning of labour markets. Current statistical frameworks are not well equipped to provide the necessary data to analyse these phenomena. The World Input-Output Database (WIOD) is the first database that provides time-series of annual world input-output tables for forty countries worldwide covering the period from 1995 to 2011. These tables have been constructed in a clear conceptual framework on the basis of officially published input-output tables merged with national accounts data and international trade statistics. The new approach of assessing the impact of economies on each other by calculating the added value created to produce exports instead of the value shipped to the destination country improves the usefulness of data on international trade.

From foreign demand to jobs

How important is foreign demand in generating new job opportunities? We use the so-called 'trade in value added' methodology, based on multi-regional input-output tables, as introduced by Johnson and Noguera (2012). This methodology provides a consistent accounting framework of the direct and indirect effects of domestic and foreign demand growth on value added, based on the multiplier analysis. We focus explicitly on the creation of employment. The World Input-Output Database allows us to investigate how foreign demand has driven the size and the structure of employment in the long-run. The creation of time series based on the WIOD data and the translation of the added value in employment figures are important add-ons by the University of Groningen. By tracing the value added at the various stages of production, it provides an ex-post accounting of the value of final demand. This allows one to measure the importance of foreign demand relative to domestic demand for home-country value added growth in a consistent framework. Translation of the value added into the number of jobs is done by using the ratio of value per person engaged, calculated for each year, by industry and by country.

Literature

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