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Exports in a Tariff-Free Environment:
What Structural Reforms Matter?
Evidence from the European Union Single Market

by Jesmin Rahman, Ara Stepanyan, Jessie Yang and Li Zeng

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Abstract

How do countries enhance their exports of goods in a largely tariff-free environment? Our investigation of export performance of new member states in the European Union single market, which provides a natural control for barrier-free environment, points to the importance of structural reforms, particularly in the areas of higher education, skills upgrade, wage structure's ability to provide incentives to work and foreign investment environment. In addition, establishing links with supply chains, which in addition to the above-mentioned reforms also depend on better institutions and infrastructure, are important. The analysis in the paper shows that new member states are at varying levels of quality and integration, which highlights the need for country-specific policy priorities. Services trade, which is subject to significant non-tariff barriers in the EU market even after the implementation of the Services Directive, shows considerable room for growth given the comparative advantage of some of the new member states.

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I.   INTRODUCTION[1]

Over the last three decades, global trade integration supported by multilateral, as well as unilateral and regional trade liberalizations served as the engine for global growth (Figure 1). In this regard, many researchers studied the impact of tariff liberalization on trade (Dufrénot, Mignon and Tsangarides (2009); and Wacziarg and Horn Welch (2003)). However, there has been relatively less attention paid to the role of structural reforms in promoting exports and trade integration. In this paper, we try to answer what makes countries more successful in exports in a tariff-free environment. The experience of countries that joined the European Union (EU) during the last decade provides a unique opportunity to study this question and explore the importance of structural reforms for export integration, since trade within the EU, at least in goods, takes place in a generally tariff-free environment.

Figure 1. Tariff Liberalization and Export Growth, 1990—2014

World: Real GDP and Exports
(Index, 1990=100)
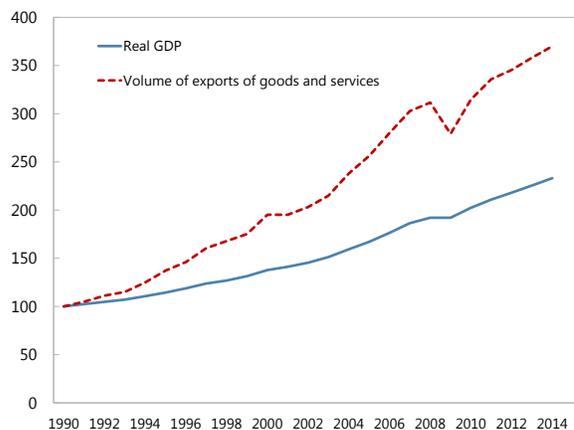
Average Import Tariff Rate
(Percent, applied, weighted mean, all products)
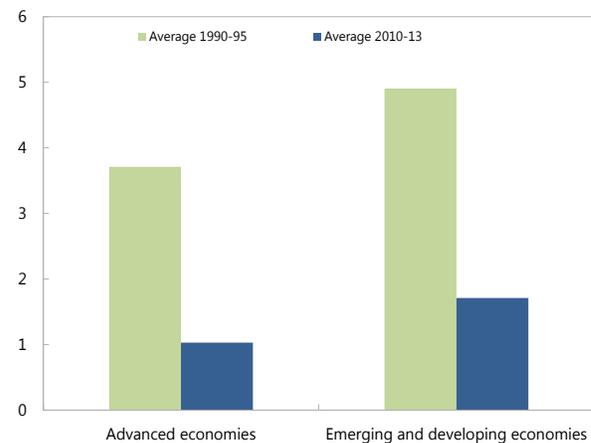
Source: WDI; IMF, World Economic Outlook database.

Being part of the European Union (EU) allows new member states (NMS) access to a much larger market for their products and provides an anchor for growth and convergence.[2] The EU single market creates opportunities for firms to grow, and, at the same

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time, subjects them to stronger competition raising incentives to improve productivity. The open trade and investment regime in turn also acts as a conduit for technology transfer that over time improves quality of exports. Higher exports and quality create a virtuous cycle of growth and convergence (Hausmann et al. 2007). There is, however, a potential flip side as this could pre-maturely expose nascent industries to strong competition from established firms.

In this paper, we examine factors that have shaped export performance of NMS in a largely tariff-free environment. We focus on the role of structural reforms to identify country-specific policy priorities. We also look at whether export integration with the EU has been associated with improvement in export quality, which would allow these countries to climb up in the value chain by producing higher quality products. Another area that we analyze is the role of services sector in exports to date and, going forward, whethere there is scope for a bigger role for services exports.

Our results suggest a strong role for structural reforms in taking advantage of the tariff-free trade environment. Policies that influence higher education and skills match, incentives to work, and foreign investment environment are most relevant. Reform sequencing becomes important for export quality improvement: a conducive environment for foreign investment and greater links with supply chains are key for countries at the lower end of quality spectrum, while tertiary education, skills upgrade, and R&D spending are priorities for countries at the medium-level of quality spectrum. We also find considerable room for increasing services exports to the EU through further dismantling of restrictions by EU members.

The paper is structured as follows. Section II presents empirical evidence on the role of structural reforms in exports to the EU market. Section III presents stylized facts about export quality and diversification of NMS to gauge room for improvement. Section IV discusses the impact of the recently implemented Services Directive on exports and looks into revealed comparative advantage in services exports to assess scope for further increase. Section V presents policy conclusions for both EU institutions and individual countries.

II. EVOLUTION OF EXPORTS TO THE EU SINGLE MARKET: RELATIVE SUCCESS AND DETERMINANTS

The NMS show a varying degree of success in taking advantage of the EU single market. Although, on average, the NMS, both countries that are in the euro area (NMS-EA) and outside (NMS-non EA), have a higher export share in GDP compared to other EU members, there is quite a range. The Czech Republic, Hungary, and Slovak Republic, being among the most open economies in the world, derive a quarter of their GDP from value added exports to the EU, while this share is less than one tenth for Latvia and Romania

Poland and Romania, and NMS-EA includes countries that have joined the euro area in recent years: Estonia, Latvia, Lithuania, Slovakia and Slovenia. The "Other EU "group used in the charts and tables in this paper refers to all other EU members.

(Figure 1). Since the crisis, exports have played a stronger role in growth counting for a higher share of GDP in all NMS-non EA countries except in Croatia. This has been driven by higher exports to both the EU and the rest of the world (Figure 2).

What factors explain the varying export performance in the single market? We investigate this question empirically in a sample of ten NMS for the period 2003-11.[3] Our variable of interest is value added exports to the EU. Scaled by GDP, this variable tells us what share of economic activity in the NMS is generated by import demand from the EU single market. We chose *value added* as opposed to *gross* exports since the former measures exports more accurately taking out re-exports and imported inputs.[4]

Figure 2. NMS: Gross and Value Added Exports of Goods and Services
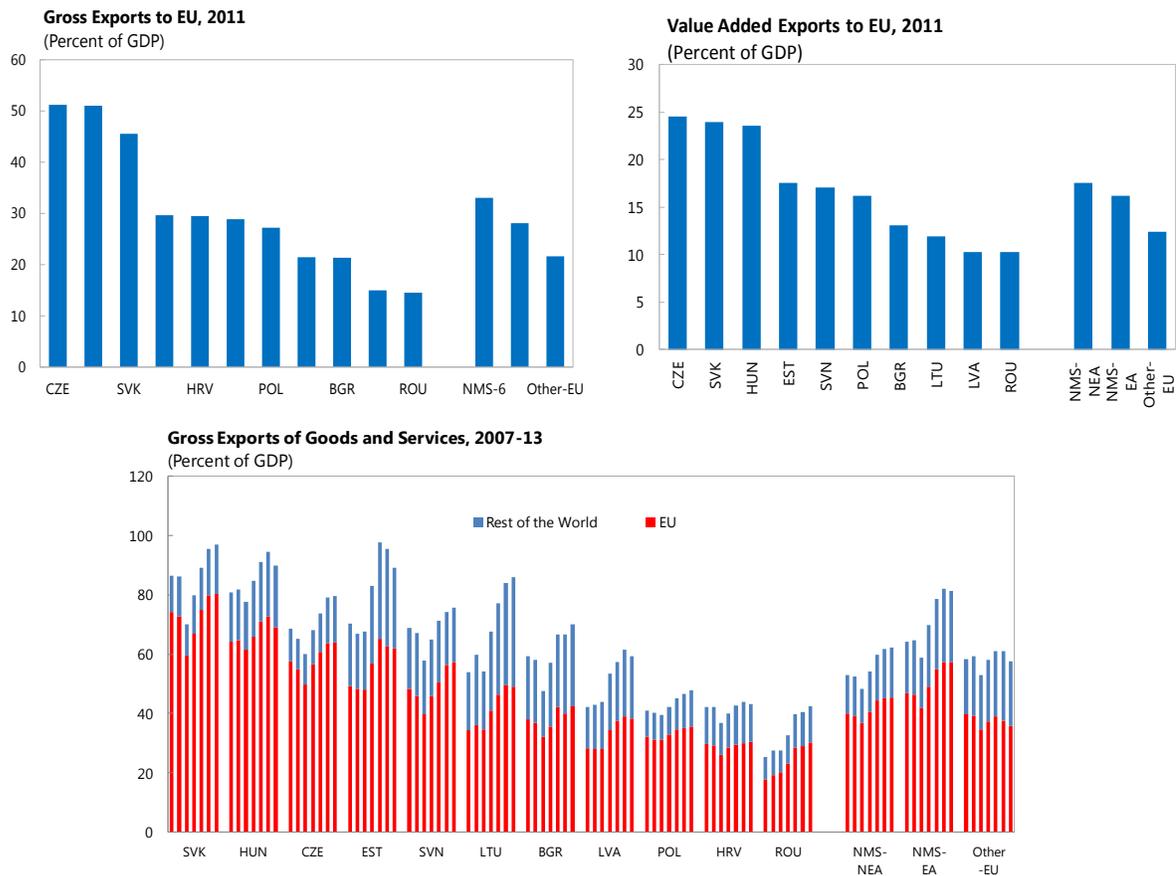
Note: More up-to-date data for value added exports of goods and services could not be shown as the World Input Output Table does not go beyond 2011.
Source: Staff calculations using World Input Output Table, Eurostat and Haver Analytics.

[3] We were not able to include Croatia in the regression analysis due to lack of data for value added exports and many of the structural variables.

[4] For robustness check, we also use gross exports as the dependent variable. The details on data sources and robustness checks can be found in Annex 1.

In what follows, we examine the role of structural factors in export performance. The choice of structural variables draws on the trade literature which emphasizes the importance of human capital (Bougheas and Riezman 2007, and Bombardini et al. 2012) and institutional quality (e.g. Anderson and Marcouiller 2002, and Levchenko 2007). These factors affect competitiveness and export performance of a country by influencing the overall environment in which firms operate. In selecting explanatory variables, we started with a large set covering human capital, labor market efficiency and flexibility, foreign investment, physical and virtual infrastructure, and governance. The final selection was made based on data availability and statistical significance. Below are the five variables that were included in our preferred regression specification, all of which show a strong correlation with value added exports to the EU (Annex 1, Figure 2).

- **Human capital.** Better human capital improves a country's exports through expansion of productive capacity over time. Human capital is proxied by two variables: higher education (***upper secondary or tertiary education attainment***) and the share of employed participating in ***continuous vocational training and skills upgrade***. The second variable, which takes into account on-the-job training and skills upgrade, also implicitly captures the degree of skills match in the economy (for example, Card and others (2009) found that vocational and on-the-job training programs tend to lead to better labor market outcomes).

- **Labor market efficiency.** A well-functioning labor market is critical for ensuring an efficient allocation of labor force and providing incentives to work. We proxy labor market efficiency with two variables. First, ***inactivity trap***, which captures incentives to stay out of the work force either because after-tax income is too low or social benefits are too generous (a larger value indicates weaker incentive to work). The intuition behind this variable is that if the difference in net income of an employed person relative to an unemployed person is higher than the difference in gross incomes of the two, there are higher incentives to work. Otherwise, tax and social benefits create incentives to stay out of work. Second, ***minimum wage relative to gross average wage***, which captures wage competitiveness of low-skilled labor. Given that several NMS show revealed comparative advantage (RCA) in low-skill labor-intensive products in their trade with the EU (Annex II, Table 1), having a competitive wage at the lower end of the skill spectrum is relevant for many.

- **Foreign investment environment**. The importance of foreign direct investment in promoting exports and technology transfer is well-known. This is particularly so for the NMS where foreign capital from the EU has been a main driver of growth since transition to market economies. We use ***foreign investment environment*** as the fifth structural variable. This variable is an index based on a survey that captures prevalence of foreign ownership in a country as well as sentiment regarding whether current regulations

discourage foreign ownership.[5] A higher index indicates a more conducive environment for foreign ownership.

- **Participation in supply chains**. In addition, we also include a measure of supply chain integration (the share of exports processed through upstream and downstream supply chains in total) given the strong role of supply chains in global and EU exports in the past decade (IMF, 2013; Rahman and Zhao, 2013). The degree of supply chain integration, which varies across time and country, captures the effects of other structural and institutional variables that may have important bearing on FDI and foreign firms' decisions to locate operations but could not be included in the regression due to lack of data: the quality of export processing infrastructure, unobserved regulations or obstacles hindering business operation, availability/cost of utilities and other inputs, and tax advantages. By including this variable, we have a more complete coverage of structural factors that are relevant for exports.

What about the gravity factors that are typically found to be important determinants of trade flows in the literature? In our regression, the measure of supply chain integration is already capturing many of the gravity factors, such as distance from markets, domestic market size and income level. According to Rahman and Zhao (2013), about 88 percent of the explained variance in integration with supply chains in a sample of 40 countries over 15 years is captured by these factors. Nevertheless, we include gravity variables -- income per capita, weighted distance from export partners, and population of the exporting country (which also controls for the size of the domestic market and the bias that smaller countries typically have a higher exports-to-GDP ratio compared to larger countries) – in our regression analysis. In addition, we control for demand growth in partner countries (using two proxies: weighted PPP real GDP growth and weighted consumer sentiment in partner countries), and price competitiveness (proxied by the unit labor cost based real effective exchange rate, REER-ULC).

The choice of the estimation method was determined by restrictions posed by our small sample. Small sample size prevented us from using dynamic panel estimation, which allows the lagged dependent variable to affect the dependent variable and control for endogeneity. Instead, we used panel OLS method including time dummies, euro area accession dummies, and dummy variable for the euro area crisis (all dummies were found statistically insignificant). We also used Generalized Least Square method (random effects), since this method provides estimates that are more efficient compared to the OLS. Our baseline estimation does not include country-specific dummy variables as it prevents us from identifying structural factors that are important for export performance, as most structural variables move slowly over time and are likely to be highly correlated with the country

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[5] An alternative would have been to use "strength of investor protection index" from the World Bank's Doing Business indicators set. However, given that this index is broadly constant for most countries over time, it would have acted as a country-specific effect.

dummies. The absence of country-specific dummy variables in estimation may, however, imply that the impact of structural variables is somewhat overestimated in our regressions although they turn out mostly statistically insignificant when we include them in the regression. [6]

Estimation results show that structural factors explain much of the variance in value added exports of NMS to the EU (Table 1). We used two alternatives for the dependent variable: value added exports to the EU in percent of a country's own GDP (columns 1 and 2, Table 1), and this variable's distance from the NMS-10 group average (column 3, Table 1). The five structural variables are all statistically highly significant and together capture more than 80 percent of the explained variance in all regressions.

Differences in educational attainment, vocational training and skills upgrade and foreign investment environment seem to be most significant among structural variables. The relative importance of structural variables included in the regression is illustrated in Figure 3, which shows the increase in value added exports to the EU brought about by a one-standard-deviation improvement in the explanatory variable (LHS panel). The strongest impact comes from human capital, in particular continuous participation in vocational training and skills upgrade. This is consistent with the empirical literature that suggests significant productivity gains from vocational training (for a survey of literature see OECD (1998) and Descy and Tessaring (2005)). In the version that uses the distance of value added exports from the group average, foreign investment environment shows the largest impact with higher education and skills also contributing strongly (Figure 3, RHS panel).

We also find participation in supply chains and price competitiveness to be statistically significant (Table 1). Links with supply chains increase exports with the impact found to be the second highest when compared to the structural variables included in the regression (Figure 3, LHS). This highlights the role of participation in supply chains as an important conduit for increasing exports. Higher REER-ULC decreases exports by eroding competitiveness, although this variable was not significant in some specifications. In contrast, per capita income level, weighted distance from partner countries, weighted GDP growth in partner countries and population come out as statistically insignificant; this could be due to the fact that supply chain participation, which strongly depends on gravity variables, is partly capturing their impact on exports. Weighted GDP growth in partner countries is found insignificant in the OLS version, but significant in the GLS estimation.

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[6] The correlations between structural variables are quite weak, suggesting that our estimates of relative significance of structural variables are not biased due to multicollinearity (see Annex I. Table 3).

Table 1. Determinants of Value-Added Exports of Goods and Services to EU: NMS-10, 2003—11

	Estimation results		
	In levels		Relative to NMS-10 average
	OLS	GLS [2]	OLS
Structural variables			
Upper secondary or tertiary educational attainment	0.16**	0.19**	0.33***
Participation in continuous vocational training and skills upgrade	0.15***	0.16***	0.14***
Inactivity trap	-0.09***	-0.08*	-0.03*
Relative minimum wage	-0.08**	-0.09**	-0.16***
Foreign investment and ownership environment [1]	1.0**	1.0**	2.2***
Control variables			
Share of exports processed by supply chain	0.44***	0.44***	0.34***
PPP GDP per capita	0.00	0.00	0.00
Weighted real GDP growth of trading partners	0.06	0.06***	0.13
Real effective exchange rate (ULC-based)	-0.03	-0.03	-0.07**
Population	0.57	0.48	-0.68
Constant	-29.4***	-31.69***	0.03
Observations	73	73	73
R-squared	0.858	0.857	0.859

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
1/ Higher values indicate lower degree of restrictions.
2/ Errors are robust to country clustering.

The coefficients of structural variables are robust to alternative specifications. The coefficients of most structural variables remain statistically significant with relatively stable **values if we replace our dependent variable with gross exports of goods and services, exports** (both gross and value added) of goods and services separately, or exports of goods and services to the world (Annex I, Table 2).[7] This generally points to the importance of the structural reforms regardless of whether trade takes place in a tariff-free environment (goods exports to the EU) or in a more restricted setting (services exports to the EU, and goods and services exports to the rest of the world). However, more structural variables remain significant when explaining exports of goods within the EU than exports of services to the EU or exports to the world which may indicate a higher relevance of these reforms in a tariff-free environment. To ensure the results are not driven by outliers, we re-estimate the baseline regression by excluding one sample country at a time. The coefficients of all structural

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[7] The results with lagged explanatory variables (to address potential endogeneity issues) were broadly similar.

indicators in these regressions remained qualitatively the same and quantitatively close to the baseline results.

Figure 3. Structural Reforms: Relative Importance for Export to the EU

Impact of Structural Factors on Value Added Exports to EU

Note: This chart illustrates the increase in value added exports to EU that would be brought about by a one standard deviation improvement in each factor.

Decompositon of Goodness of Fit 1/

1/ The decomposition is done according to Shapley value.
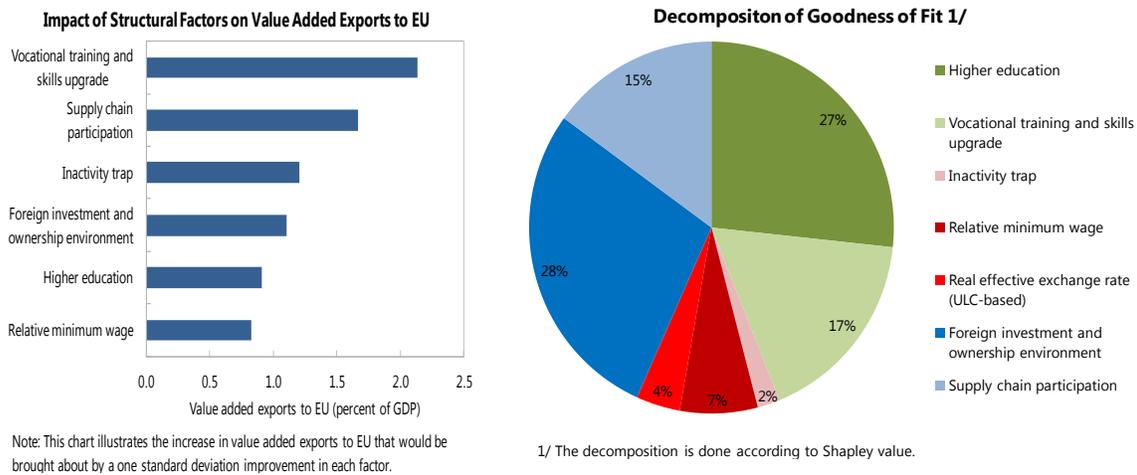
For advanced economies of the EU, labor market and foreign investment seem to be more relevant for export performance than human capital variables. For this group, higher education and vocational training come out as statistically insignificant, while the impact of inactivity trap, minimum relative wage and foreign investment environment becomes much stronger (Annex I, Table 2). This probably suggests the presence of some threshold effects for higher education and vocational training above which the marginal impact becomes smaller. The statistical insignificance possibly points to most advanced economies in the EU having reached these thresholds, hence factors such as labor market efficiency and foreign investment environment becoming more significant in explaining export performance in the single market. The supply chain integration is statistically significant but shows a smaller impact on export performance in advanced EU economies as opposed to in the NMS. This probably points to the crucial role that supply chains can play at initial stages of export integration, particularly for smaller economies.

Our empirical findings identify country-specific relative strengths and weaknesses in explaining export performance in the EU market. We look at the contributions of structural variables in explaining a country's export performance relative to its NMS peers.

Czech Republic, Slovak Republic, and Hungary show an above average export performance relative to other NMS, while Bulgaria, Latvia, Lithuania, and Romania show a below average performance during 2003—11. The performance of Estonia, Poland, and Slovenia was close to the average for NMS, particularly in more recent year. A decomposition of contribution of structural factors based on regression results shown in Table 1, Column 3 yields the following observations (Figure 4):

- For the Czech Republic and Slovak Republic, vocational training and skills upgrade, higher education, a favorable foreign investment environment and links with supply chains have all contributed positively during 2003—11. Labor market variables, both wage cost and incentives to work, have not been a source of competitiveness for Czech Republic. For Hungary, wage competitiveness, strong links with supply chains and foreign investment environment have contributed positively, with contribution from foreign investment environment declining in recent years. Vocational training and higher education are, on the other hand, areas that have contributed negatively to Hungary's export performance relative to the NMS.

- For Bulgaria, Latvia, Lithuania, and Romania, the below-average performance in exports has been persistent with the gap relative to the NMS average worsening or staying stable over time. While the Baltic countries generally fare very well in institutional rankings, for the set of structural variables used in our investigation Latvia and Lithuania seem to show gaps relative to other NMS. This highlights the need for broad-based reforms, particularly in the areas of human capital, labor market efficiency, and foreign investment environment (Figure 4).

- The performance of Estonia and Slovenia was close to the NMS average. In Estonia, foreign investment environment had positive contribution, while higher education and relative minimum wage contributed negatively. Slovenia benefited from low relative minimum wage, above-average level of higher education, and vocational training which were offset by a relatively less friendly environment for foreign investment. For Poland, we have seen an improvement in export performance over time with the gap relative to other NMS decreasing over time. Higher education and competitive wages have contributed positively, while a relatively lower degree of participation in supply chains has been a drag. Although foreign investment environment contributes negatively, in recent years Poland has seen an improvement as well as a pick-up in off-shoring and outsourcing of business services (McKenzie 2013). These factors have boosted Poland's exports to the EU since 2010.

Figure 4. NMS: Exports to EU Relative to NMS Average, 2003—11*
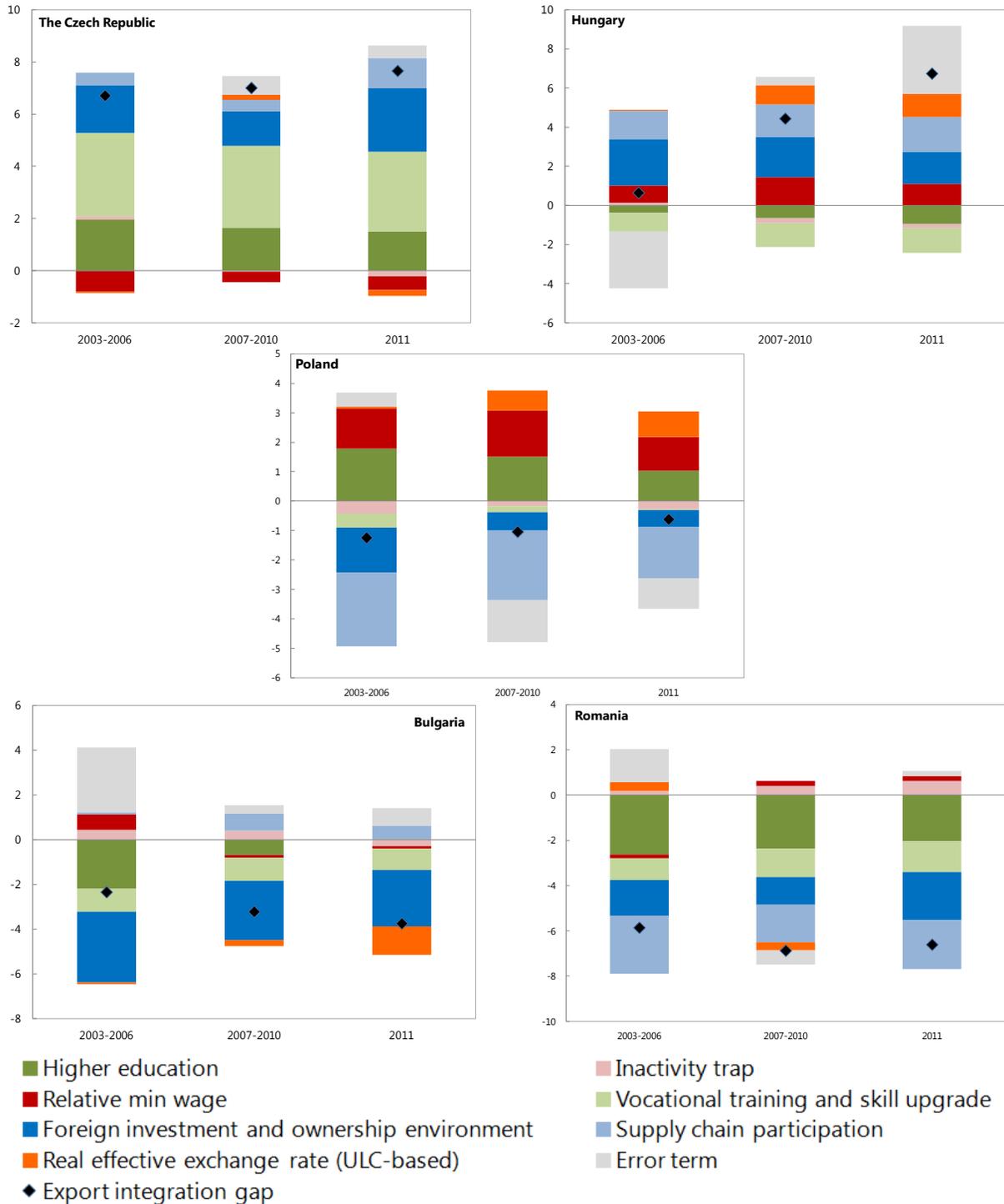
Source: Staff calculations using regression results in Table 1, column 3.
* Bars in the charts are contribution from structural factors to the distance of exports/GDP from NMS average based on regression results in Table 1, column 3.

Figure 4 NMS: Exports to EU Relative to NMS Average, 2003—11* (concluded)
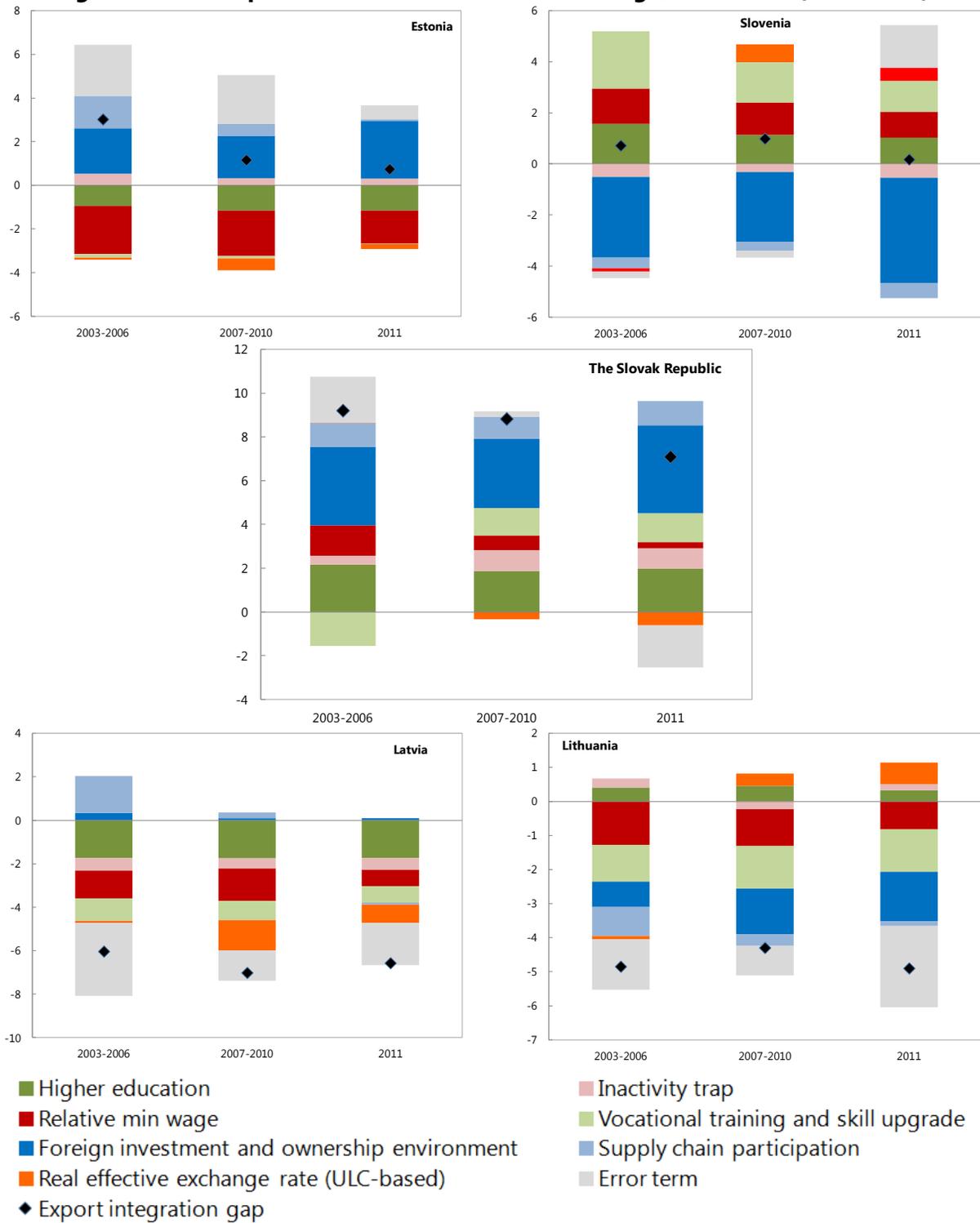
Source: Staff calculations using regression results in Table 1, column 3.
*Bars in the charts are contribution from structural factors to the distance of exports/GDP from NMS average based on regression results in Table 1, column 3.

III. EXPORT QUALITY AND DIVERSIFICATION IN NMS: ROOM FOR GROWTH

The quality of export products from the NMS is generally high when compared to the rest of the world. We assess the quality of merchandise exports to the world using an index developed by Henn, Papageorgiou, and Spatafora (2013) based on an estimated relationship between export quality, export unit value, production cost, and the distance from importers.

- The overall exports quality for NMS is above the 60th percentile when compared to all countries in the world (Figure 5). Slovenia leads with an overall quality level close to the 90th percentile and Romania, at 61st percentile, lags the others. An analysis of quality at a more disaggregated product level shows three tiers: Slovenia, the Czech Republic and the Slovak Republic in the highest tier where the quality ranges between 61st and 97th percentiles; Croatia, Hungary, Poland, and Estonia in the next tier, where the quality ranges between 40th and 89th percentiles; and Lithuania, Bulgaria, Latvia, and Romania in the third tier, where the quality ranges between 24th and 80th percentiles. In other words, underneath an overall high quality, there seems to be a wide range at individual product level.

- Next, we calculate room for quality improvement taking into account a country's standing in the quality ladder relative to the others and the average quality absorbed by its importers. A positive gap indicates that quality demanded by importers is larger than that provided by the exporting NMS. Our analysis reveals positive quality gaps for all NMS with the largest room in Lithuania, Latvia, and Romania (Figure 5).

A comparison of export quality in the EU market using a different methodology shows lower overall quality for NMS exports. Based on Di Comite, Thisse and Vandenbussche (2014), which uses firm-level cost data in a mark-up model to capture the quality of exports in the EU market, NMS show a quality distribution that is concentrated at the low (Bulgaria, Romania, Lithuania, Latvia, and Poland) to middle (Hungary, Estonia, Slovenia, Slovak Republic, and Czech Republic) part of the quality spectrum (Figure 5). The share of export products where the quality is below the 50th percentile relative to other EU countries ranges between 62 percent in Poland to 52 percent in Hungary. In other words, more than half of export products from NMS belong to the bottom half of the quality ladder showing significant room for quality improvement in the EU market. This is not surprising given that the EU is a very competitive market which hosts 10 of the countries with top quality ranking in the world. Not surprisingly, when measured against just exporters in the EU, the quality of NMS products fare relatively worse than when compared against the world. However, relative ranking within the NMS comes out similar to what we found in the case of world market: Slovenia, the Slovak Republic, the Czech Republic, and Hungary still come out at the top among NMS with an export products concentrated in the mid-quality range.

However, the improvement in quality was not achieved without trade-offs. Several countries that considerably improved their export quality (the Czech Republic, Hungary, and the Slovak Republic) have experienced an increase in export product concentration as shown by the higher internal margins over time (Figure 5).[8] This is also evident from the evolution of their comparative advantage over time, which suggests that most of these countries have consolidated their RCAs in a fewer number of products over time (Annex II, Table 2). Other NMS, who have a lower stance in the quality ladder, have relatively unchanged internal margins. In other words, there seems to have been a trade-off between improving quality and diversification in exports.

For NMS, export quality is found to be positively correlated with export value in both EU and world markets (Figure 6). This is not surprising as most NMS have experienced an improvement in export quality since 2005 as exports also grew. Vandenbussche (2014) finds that the estimated price elasticity of quality is around 0.5, implying that any quality upgrading would likely result in a firm's capacity to increase price, profits and market share. This shows causality from quality to higher exports. Going forward, this positive relationship between quality and exports is likely to strengthen. Globally speaking, NMS are not countries where low labor costs or labor abundance could be a source of comparative advantage given ageing population, although this may be currently the case relative to advanced Europe. So improving quality has to be a part of the strategy to enhance exports and our analysis shows significant room for quality improvement, particularly in the EU market.

How can countries improve their export quality over time?

- A survey of the literature shows that some of the structural reforms that explain differences in exports performance in our regression analysis are also the ones that tend to explain differences in export quality: human capital, institutional quality, and foreign investment (Box 1). In addition, R&D expenditure is important for quality improvement.

- The EBRD 2014 Transition Report, which looks at innovation and knowledge-based growth in transition economies, finds that different factors matter in quality improvement at different levels of economic development and product quality. At a relatively low level of development and product quality, when countries are trying to access technology, openness and facilitation of foreign investment are important. The study also finds firms that are part of the global supply chains tend to be more innovative than non-linked firms. The capacity to absorb such technology and replicate depends on the quality of secondary

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[8] A country is becoming more concentrated on the intensive margin (a higher value in the index) when relatively more export proceeds come from a limited number of products within each group. A country is becoming more concentrated on the extensive margin (a higher value in the index) if the average export value of traditional products is increasing relative to the average export value of new products. While intensive margin indicates product diversification, the extensive margin indicates relative importance of new products. For more details, see Henn, Papageorgiou, and Spatafora (2013).

and undergraduate education, and the effectiveness of on-the-job training. For countries with more mid-quality products, it is important to be able to innovate. The EBRD study finds that a country's ability to innovate depends on postgraduate education, quality of scientists and engineers, quality of scientific research, flexibility of product and labor market, effective cooperation between science and industry, and availability of venture capital which become important for countries with mid-quality products trying to move up.

Based on this, NMS would have different policy priorities in terms of improving export quality. For Bulgaria, Lithuania, and Romania, the focus should be on improving foreign investment regime, boosting secondary education, and linking with supply chains which would help with acquiring technology. For Slovenia, the Czech Republic, the Slovak Republic, Hungary, and Estonia, policies need to focus on improving the environment for innovation. For these countries, a comparison outside the region also points to the need for ramping up higher education and R&D spending (Box 2). A diversification of exports outside the EU and into new products is another way to enhance exports, particularly for those countries that have less room for quality improvement of their traditional exports.

Figure 5. NMS: Export Quality, Room for Improvement, and Export Diversification

Export Quality Relative to the World Market, 2010 1/

Room for Quality Upgrade Relative to the World Market, 2010 2/
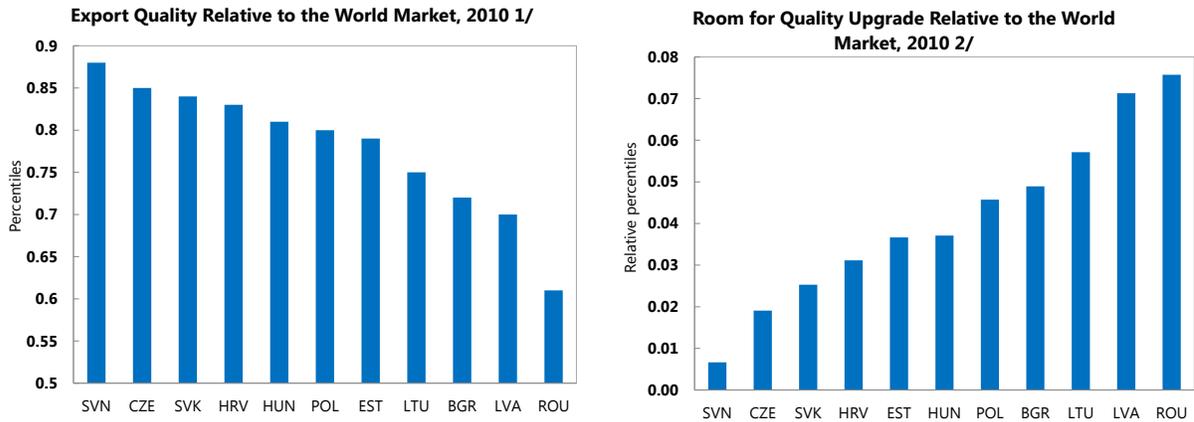
Source: Henn, Papageorgiou, and Spatafora (2013).

Distribution of Export Quality, 2011
(Percent of total exports values to EU15)

■ 0.75 - 1   ■ 0.5 - 0.75   ■ 0.25 - 0.5   ■ 0 - 0.25
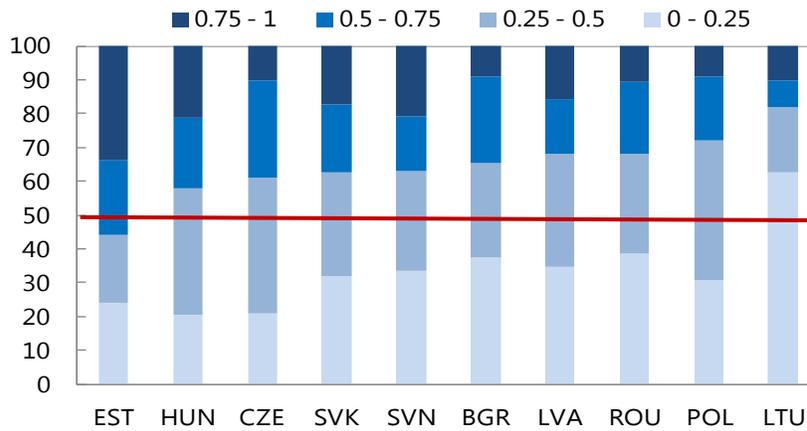
Source: Di Comite, Thisse and Vandenbussche (2014).

Cumulative Change in Export Concentration Index, 1995—2010

Intensive margin

Exstensive margin
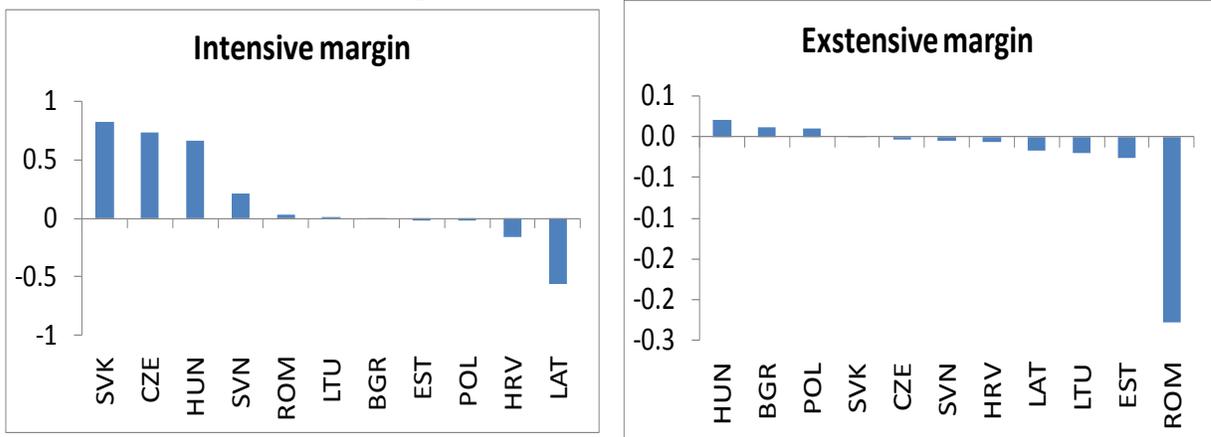
Source: Henn, Papageorgiou, and Spatafora (2013).

Note: Quality ranks are normalized between zero and 1; "1" = highest.

1/ Vertical axis shows place of countries in the export quality distribution of all countries in the world. 2/ Room for quality upgrade shows the gap between country's export quality and the quality demand by trading partners.

Figure 6. NMS: Exports Value and Quality
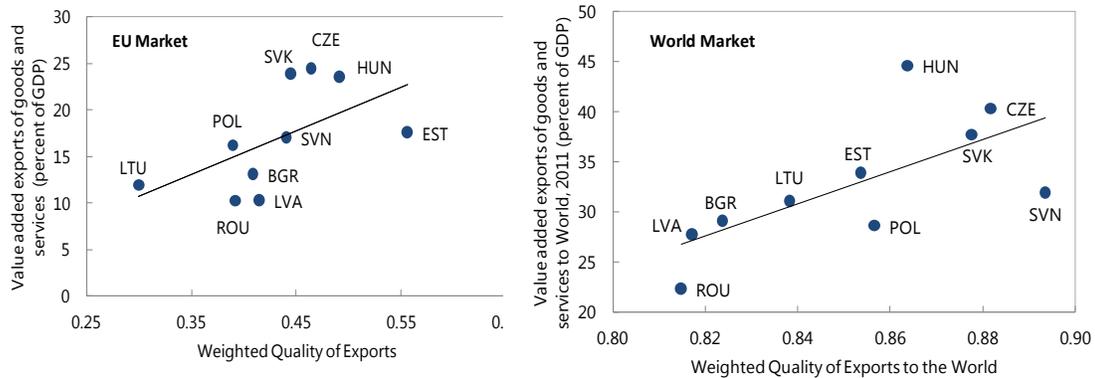
Source: For weighted export quality, staff calculations using Henn, Papgeorgiou and Spatafora (2013) for world exports and Di Comite, Thisse and Vandenbussche (2014) for EU exports; For value added exports, staff calculations using world input output data.

IV. SERVICES EXPORTS: NON-TARIFF BARRIERS ARE HOLDING BACK PERFORMANCE

Goods dominate over services in exports from NMS to the EU. Although services sector contribute to two-thirds of the EU GDP and create 9 out of 10 jobs, its share in intra-EU trade is low. For NMS, the share of services sector in value added exports is only a third and much less than that in gross exports (Figure 7). Croatia is the only country among NMS where services products, mostly related to the tourism sector, dominate exports to the EU. The lower share of services in exports, among other things, is explained by specific characteristics of service products: many services are traditionally non-tradable which can only be delivered at production location and hence not part of the cross-border trade. But we want to explore whether a lack of comparative advantage relative to other EU members and restrictive market access may be contributing to relatively low services exports. When it comes to services exports, the single market does not work quite as well as it does for goods. Countries face numerous restrictions in the form of authorization, economic needs test, licenses, territorial restrictions and restrictions on multidisciplinary activities. In this regard, we want to see to what extent the adoption of Services Directive (SD) in 2006 has helped reduce barriers to exports.

Most services exports from NMS fall under sectors covered by the SD.[9] The weighted average share of SD sectors in total services exports from NMS-non EA to the EU (70 percent for NMS-non EA, almost 90 percent for Croatia) is significantly higher than

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[9] These include travel, construction services, computer and information services, operational leasing, miscellaneous business services, royalties, education and other personal, and cultural and recreational services. The rest of the services exports fall under the category of "Regulated" sector which include the following six sectors: transportation, communication services, financial services, insurance services, health, and government services.

other EU (62 percent) countries while that from NMS-EA (59 percent) falls a little below other EU average (Figure 7). According to the assessment by European Commission, the implementation of the SD has reduced average restrictions on services imports across products and countries by about 30 percent since 2006, although with considerable variations (Montiagudi et al, 2012, see Annex III for a summary). Exports from NMS benefited from the SD as services exports from these countries in sectors covered by the SD grew more (on average 7-8 percent annually) than from other EU members (Figure 7). The increase was even more pronounced when we look at sectors that were most liberalized after the SD.

Figure 7. NMS: Services Exports and Services Directive
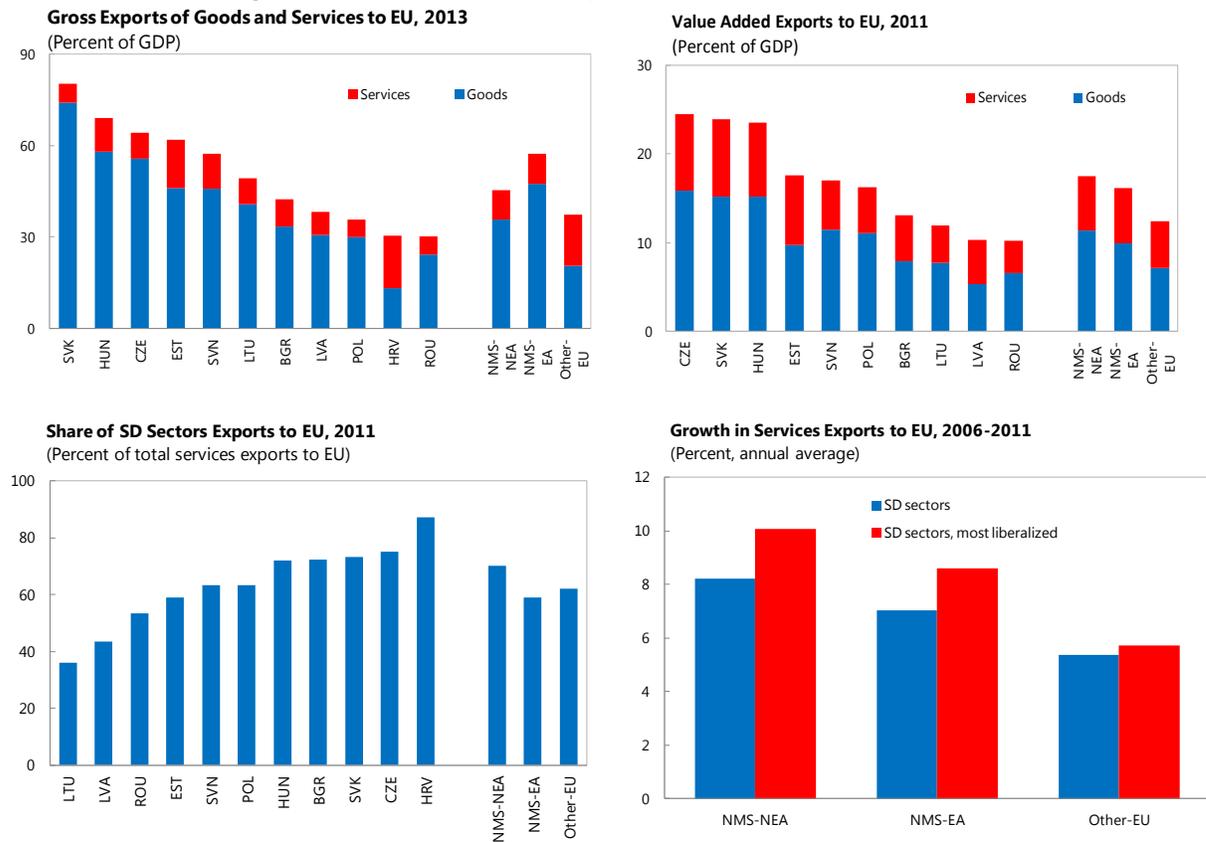
Note: Most liberalized sectors include travel agency, real estate agents, tourist guide, and hotels, which are the sectors with the top percentile percent changes on barriers after the implementation of the Services Directive.

Source: Staff calculations using World Input Output Table, Eurostat and Haver Analytics.

However, significant barriers remain regarding services exports, particularly with regards to professional services. The SD was adopted to promote competition and trade in services products. During the implementation period (2006-9), member countries were to review their respective regulatory framework for services in order to identify restrictions that can be removed. Countries were given considerable leeway in the sense that pre-existing restrictions could be maintained if they were deemed necessary to protect public interest and as long as they were non-discriminatory, necessary and proportionate. Countries worked in clusters of 5 members each for mutual evaluation of abolition/amendment of restrictions. Given the broad coverage and the deference to member states for action, liberalization of

services trade under the SD has fallen short of expectations (Corugedo and Ruiz, 2014). Specifically, among many advanced economies in the EU which are major absorbers of exports from the NMS, many barriers remain on professional and technical services after the implementation of the SD (Annex III).

Our analysis of comparative advantage shows that NMS would greatly benefit from further liberalization of services imports by EU member states. Estonia, Bulgaria, Hungary, Latvia, Lithuania, Romania and the Slovak Republic show comparative advantage in higher number of services products than goods products (Annex II, Table 1). Croatia, where a RCA analysis based on value added exports was not possible due to data unavailability, would also likely fall into this group given the high share of services exports. The Czech Republic, Hungary, Poland and Romania hold comparative advantage in professional and technical services relative to other EU members (Table 2). The weighted average share of professional services in total SD exports range between 30–40 percent in these four countries. Further liberalization of services trade, particularly those in professional services, would greatly help NMS increase exports to the EU. Meanwhile NMS countries on their side should implement structural reforms that helps services exports. Our analysis shows reforms to enhance vocational training, incentives to work, foreign investment environment, and integrate into regional supply chains are particularly conducive for services export (Annex I Table2).

Table 2. RCA: Exports on Professional and Technical Services

	RCA	% of exports in sectors under SD
Bulgaria	0.6	16
Croatia	0.4	8
Czech Republic	1.1	30
Hungary	1.1	31
Poland	1.1	36
Romania	1.1	40
Estonia	0.8	27
Latvia	0.7	31
Lithuania	0.4	23
Slovak Republic	0.8	20
Slovenia	0.5	16

Sources: Eurostat; and IMF staff calculations. Note: RCA is relative to total services gross exports.

V. POLICY IMPLICATIONS

Structural reforms play a key role in maximizing benefits of unrestricted access to the EU single market. Our analysis based on the experience of NMS shows that improving exports to the EU depends on a competitive economy underpinned by structural reforms, particularly in the areas of higher education, skills upgrade, wage structure's ability to provide incentives to work, and foreign investment environment. Other institutional reforms that promote successful integration with supply chains are also helpful in enhancing export performance, not just to the EU but to destinations outside the EU.

Our analysis identifies some country-specific structural reform priorities that can help boost export performance. For Bulgaria, Latvia, Lithuania, and Romania, where export performance has been persistently weak relative to other NMS, closing the distance with peers will require broad-based reforms, particularly improvement in skills, education attainment, and foreign investment regime. For Slovenia, a more conducive foreign ownership regime, for Poland, greater links in services-based supply chains, for Estonia, more emphasis on higher education and labor market efficiency, and for Hungary, higher education seem to constitute areas for priority actions.

There is room for quality improvement in exports in all NMS. The analysis presented in this paper, which takes into account both export quality relative to other exporters and quality demanded by importers, shows that there is room for improvement in NMS, particularly with respect to exports to the EU market. The room for quality improvement is particularly large for Bulgaria, Lithuania, Latvia, and Romania. We also find a strong positive relationship between exports value and quality, suggesting that pursuing structural reforms, such as improving human capital, labor market and business environment, would help increase both exports and quality.

For quality improvement, structural reforms need to be mindful of a country's existing quality level. For countries producing products at the lower end of quality spectrum, accessing technology through improving foreign investment environment and greater links with supply chains are key. Countries that are at the medium-level of quality spectrum, improving skills and higher education, and innovation through higher R&D spending are priorities.

For countries that are already highly integrated with the EU single market and produce mid-quality products, diversification in products and markets will prove useful. Looking outside the EU may be useful for these countries that derive a high share of domestic output from demand in the EU market. Given that export products from these countries are at a relatively high level when compared to other exporters from the world, increasing quality of existing products would require a significant boost in R&D expenditure and tertiary education. Diversification of exports into new products would be another option for these countries to stay on the export-led growth path.

Services exports can significantly help increase exports to the EU. Our analysis shows that a large part of services exports from NMS fall under the SD. A number of NMS countries have comparative advantage in these products including in professional services which remain most restricted. Further dismantling of restrictions by EU members, both advanced and emerging economies, will help maximize benefits from the single market. In this regard, a renewed impetus to the SD through third-party review of principles of non-discrimination, necessity and proportionality to assess public interest may also help (Corugedo and Ruiz, 2014).

Box 1. What Explains a Country's Quality Upgrade in Exports?

A survey of the recent literature shows that factors that help countries to increase export integration are also the factors that help them to move up the quality ladder over time (Box Figure 1). More specifically, a survey of literature identifies the determinants of export quality as follows:

- *Human capital and R&D:* Zhu et al (2009) suggest that human capital and R&D serve as important sources of indigenous knowledge creation contributing to the rise of export sophistication. Hausmann, et al. (2007), Weldemicael (2012), and Henn, Papageorgiou, and Spatafora (2013) also find human capital to have a significant positive effect on export quality.

- *Institutional quality:* Henn, Papageorgiou, and Spatafora (2013) find that an increase in institutional quality is associated with faster quality upgrading. Weldemicael (2012) shows that institutional quality has a significant impact only for manufactured exports. However, Hausmann et al. (2007) argue that institutional quality is not significantly related to export sophistication after controlling for per capita income. This could be because income level tends to be positively correlated with institutional quality.

- *FDI:* Zhu et al (2009) and Weldemicael (2012) find that FDI, as the main channels of international knowledge transfer, has a significant positive impact on the export quality.

- *Capital and natural resource abundance:* Zhu et al (2009) show that higher capital-labor ratio helps a country export more sophisticated goods while natural resource abundance has a negative impact. It appears to reduce a country's motivation to accumulate physical and human capital and industry upgrading. However, they show that in countries with higher institutional quality, natural resources tend to generate a significant positive effect on export sophistication.

- *Country size and distance from major markets:* Weldemicael (2012) suggests that country size has a significant positive effect on export quality, while remoteness from major markets has a strong negative effect on export sophistication. Zhu et al (2009) also find that country size is conducive to raising the level of export sophistication.

Box 1. Figure 1. Export Quality and Its Determinants

Export Quality and Spending on R&D

$y = 0.0656\ln(x) + 0.9359$

Average export quality for the last 10 years

Average Expenditure on R&D relative to GDP for the last 10 years

Export Quality and Labor Market Efficiency

$y = 0.073x + 0.6042$

Average export quality for last 10 years

Average lindex for efficient use of talents

Export Quality and Labor Force with Tertiary Education

$y = 0.0041x + 0.8342$

Average export quality for last 10 years

Average share of labor force with tertiary education

Source: Papageorgiou, and Spatafora (2013), WDI, ILO, and IMF staff estimates.

Box 2. What Can Czech Republic and Hungary Learn from Korea?

For countries such as Czech Republic and Hungary, a comparison with countries outside transition economies may also be instructive despite differences in policy environment. We looked at the experience of the world's most successful export-driven countries, such as Japan and Germany, and Korea—a country that has successfully pursued a sustained period of export-led growth kick-started by the Japanese supply chain (Figure 1). We focused on the evolution of structural variables indentified in empirical literature as significant for quality upgrade over time. Since 1970, Japan and Germany have demonstrated a negative room for quality improvement with respect to what their importers have demanded. This means that they have provided a quality above and beyond the level demanded by importers helping **them maintain market shares and stay as leaders. Korea joined this group in the early 2000s after a steady improvement in quality**. Available time series data for R&D spending and tertiary education, variables that are identified in literature as important contributors to quality improvement, shows a ramping up by Korea in both aspects and surpassing the levels of Germany by early to mid-2000s. For Czech Republic and Hungary, to pursue a similar path to quality upgrade and movement up the value chain, there seems to be a need for significant improvement on these fronts (education, R&D expenditure) as well as business environment.

Box 2. Figure 1. Quality Improvement: Lessons from Korea

Japan and Germany provided a quality above and beyond that demanded by importers: Korea joined this rank in 2000...
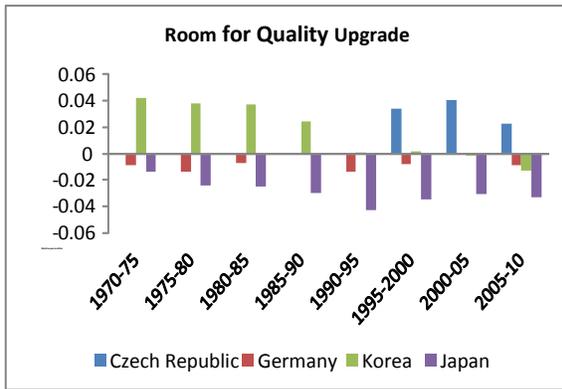
...benefitting from a boost in R&D spending...
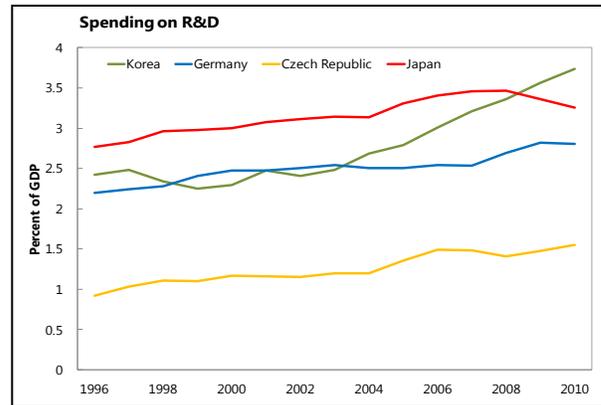
... tertiary education
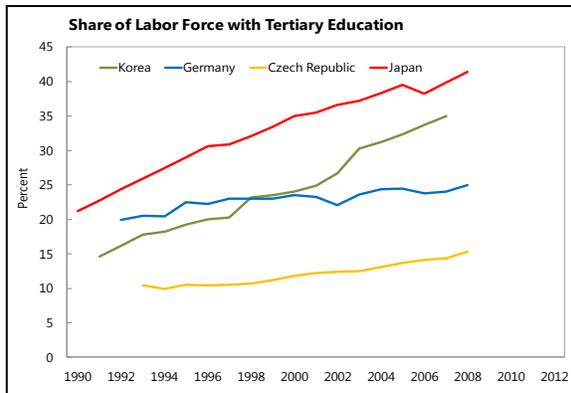
..and a friendly business environment.
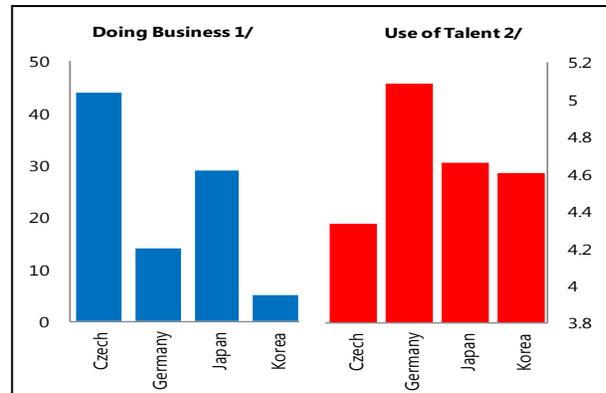
1/ Doing business ranking as of 2014, a higher number indicates lower quality.
2/ A higher number for use of talents suggests more efficient use. This index is a composite index of the following indices: pay and productivity; reliance on professional management; country capacity to retain and attract talent; and relative female participation in the labor force. The value indicates as of 2014.
Source: The World Bank and World Economic Forum.

Annex I. Data Appendix and Robustness Check for Regression Analysis for Export Integration

We follow Koopman, Wang and Wei (2012) to decompose gross exports in order to calculate value added exports and the share of exports processed through supply chains (Figure 1).

Value-added exports = sum of (1) ~(3)

Supply-chain related exports = sum of (2) ~ (9)

Annex I. Figure 1. Accounting of Gross Exports: Concepts
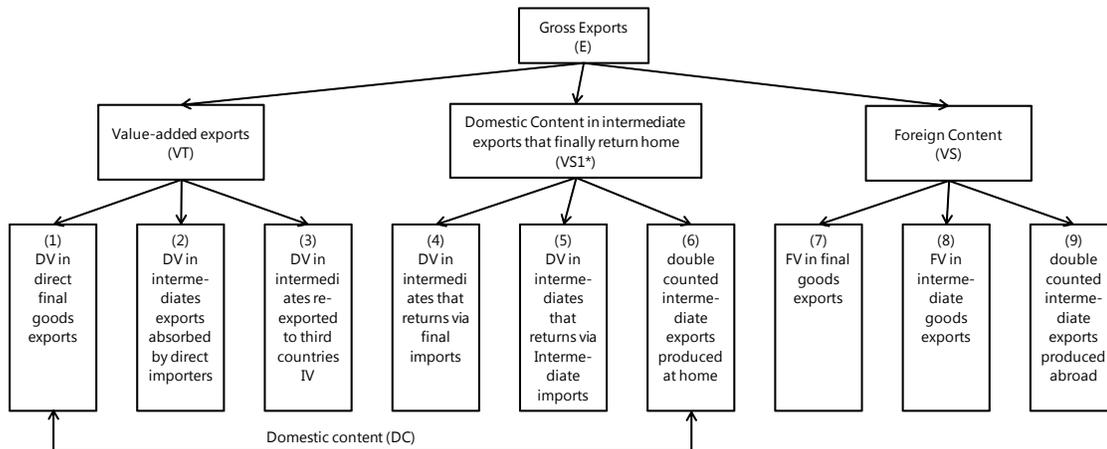
Annex I Table 1 provides definition of variables, sources and statistical properties and Annex I Figure 2 shows scatter plot of dependent variable (value added exports) and structural variables used in the regression.

Annex I. Table 1. Summary Statistics and Data Sources

Variable	No. of obs.	Mean	Std. dev.	Min.	Max.	Source
Domestic value-added exports to EU (% of GDP)	90	17.9	5.2	10.0	29.5	World Input-Output Database; World Economic Outlook database, IMF; and IMF staff calculations
Upper secondary or tertiary educational attainment (% of population aged 20-24 years)	90	85.6	5.5	75.0	94.1	Eurostat
Participation in continuous vocational training and skills upgrade (% of total employed)	77	27.4	14.7	13.3	61.0	LAF database, European Commission
Inactivity trap 1/	86	71.6	13.6	42.0	90.0	LAF database, European Commission
Relative minimum wage (% of gross average wages)	80	40.3	10.0	23.5	62.4	LAF database, European Commission
Foreign investment and ownership environment	80	6.7	1.2	4.3	8.9	Economic Freedom of the World 2013 Annual Report
Share of exports processed by supply chain (% of gross exports)	90	76.9	3.8	67.7	82.7	World Input-Output Database and IMF staff calculations
Weighted real GDP growth of trading partners	90	0.2	4.1	-11.6	12.2	World Input-Output Database; World Economic Outlook database, IMF; and IMF staff calculations
Population	90	10.2	11.0	1.3	38.5	World Economic Outlook database, IMF
PPP GDP per capita	90	17312.7	5183.8	7828.2	29402.8	World Development Indicators database, World Bank
GDP weighted distance	90	2197.4	2288.7	423.7	9176.1	GeoDist database, CEPII; World Economic Outlook database, IMF; and IMF staff calculations

1/ Inactivity trap $= 1 - \frac{(\text{In−work net pay } - \text{ out−of−work net pay})}{(\text{in−work gross pay} - \text{out−og−work gross pay})}$.

To ensure the results are not driven by outliers, we re-estimate the baseline regression by excluding one sample country at a time. The coefficients of all structural indicators in these regressions remained qualitatively the same and quantitatively close to the baseline results. We also included dummy variables to control for EU accession, financial crisis which came insignificant.

Annex I. Table 2. What about Gross Exports? Are Goods and Services Exports Different?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Value Added exports to EU: goods and services	Value Added exports to the world: goods and services	Gross exports to EU (GE)	Value Added exports to EU: goods	Value added exports to EU: services	GE to EU: goods	GE to EU: services	Value Added exports to EU: advanced EU
Upper secondary or tertiary educational attainment	0.156*	0.301***	0.417***	0.147***	0.023	0.415***	0.002	0.036
	(0.083)	(0.099)	(0.156)	(0.040)	(0.034)	(0.128)	(0.050)	(0.042)
Participation in continuous vocational training and skills upgrade	0.147***	0.035	0.310***	0.107***	0.049***	0.259***	0.051***	-0.005
	(0.029)	(0 .035)	(0.053)	(0.014)	(0.012)	(0.044)	(0.017)	(0.064)
Inactivity trap	-0.0917***	-0.032	-0.195***	-0.055***	-0.029**	-0.155***	-0.040**	0.263***
	(0.026)	(0.032)	(0.051)	(0.013)	(0.011)	(0.042)	(0.017)	(0.052)
Relative minimum wage	-0.083**	-0.047	-0.369***	-0.135***	-0.004	-0.369***	0.000	-0.221***
	(0 .038)	(0 .045)	(0.061)	(0.016)	(0.013)	(0.050)	(0.020)	(0.033)
Foreign investment and ownership environment	0.905**	0.998*	2.961***	0.749***	0.492***	2.487***	0.474*	1.804***
	(0 .424)	(0.507)	(0.752)	(0.195)	(0.165)	(0.617)	(0.243)	(0.494)
Share of exports processed by supply chain	0.450***	0.571***	1.217***	0.136***	0.208***	0.904***	0.313***	0.259**
	(0.118)	(0 .141)	(0.186)	(0.048)	(0.041)	(0.152)	(0.060)	(0.085)
Real effective exchange rate (ULC based)	-0.030	-0.023						-0.064
	(0.019)	(0.022)						-0.087
Weighted real GDP growth of trading partners	0.055	0.162**						-0.082
	(0.060)	(0.072)						-0.119
Population	0.475	1.327**						-0.622*
	(0 .551)	(0.659)						-0.333
PPP GDP per capita	0.000	0.0003***						
	(0 .000)	(0.0001)						
GDP weighted distance	0.000	-0.0009**						
	(0 .000)	(0 .0003)						
Constant	-29.265***	-45.783***	-96.763***	-10.829**	-13.305***	-79.292***	-17.471***	-22.654**
	(10.272)	(12.282)	(19.191)	(4.980)	(4.218)	(15.744)	(6.211)	(11.151)
Observations	73	73	73	73	73	73	73	115
R-squared	0.858	0.829	0.861	0.882	0.746	0.868	0.671	0.96

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

We also test for robustness by running our baseline regression using gross exports, and separate regressions for goods and services exports as captured by value added and gross (Table 2). All structural variables remain highly significant in the regression explaining variation in gross exports, gross goods exports and value added goods exports. Some notable differences in the results across alternative specifications are the following.

- When we use value added export to the world as a dependent variable instead of value added export to the EU, labor market variables (relative minimum wage, REER_ULC, and inactivity trap) become insignificant, while gravity variables such as distance, trading partners' demand growth, and GDP per capita become statistically significant confirming our prior that gravity variables are more important in trade outside the EU. The insignificance of labor market/wage variables probably reflects the fact that NMS countries do not have the same degree of wage price competitiveness vis-à-vis the rest of the world as they have relative to the EU.

- For the model specification where only services exports (value added and gross) is used as the dependent variable, higher education and relative minimum wage become insignificant. This could be because services exports in these countries are mostly in labor intensive sectors (hence low skilled) and a good part often takes place in the informal sector (hence minimum wage may not be binding). Vocational training, on the other hand, appears relevant for both goods and services exports emphasizing the role of skills.

Annex I. Table 3. Correlation Coefficients Between Structural Variables

	Upper secondary or tertiary educational attainment	Participation in continuous vocational training and skills upgrade	Inactivity trap	Relative minimum wage	Foreign investment and ownership environment
Upper secondary or tertiary educational attainment	1	0.70	-0.03	-0.32	0.17
Participation in continuous vocational training and skills upgrade		1	-0.06	-0.04	0.15
Inactivity trap			1	-0.11	-0.53
Relative minimum wage				1	0.11
Foreign investment and ownership environment					1

Source: Authors' estimates.

Annex I. Figure 2. NMS: Value-Added Exports and Structural Factors, 2003—11
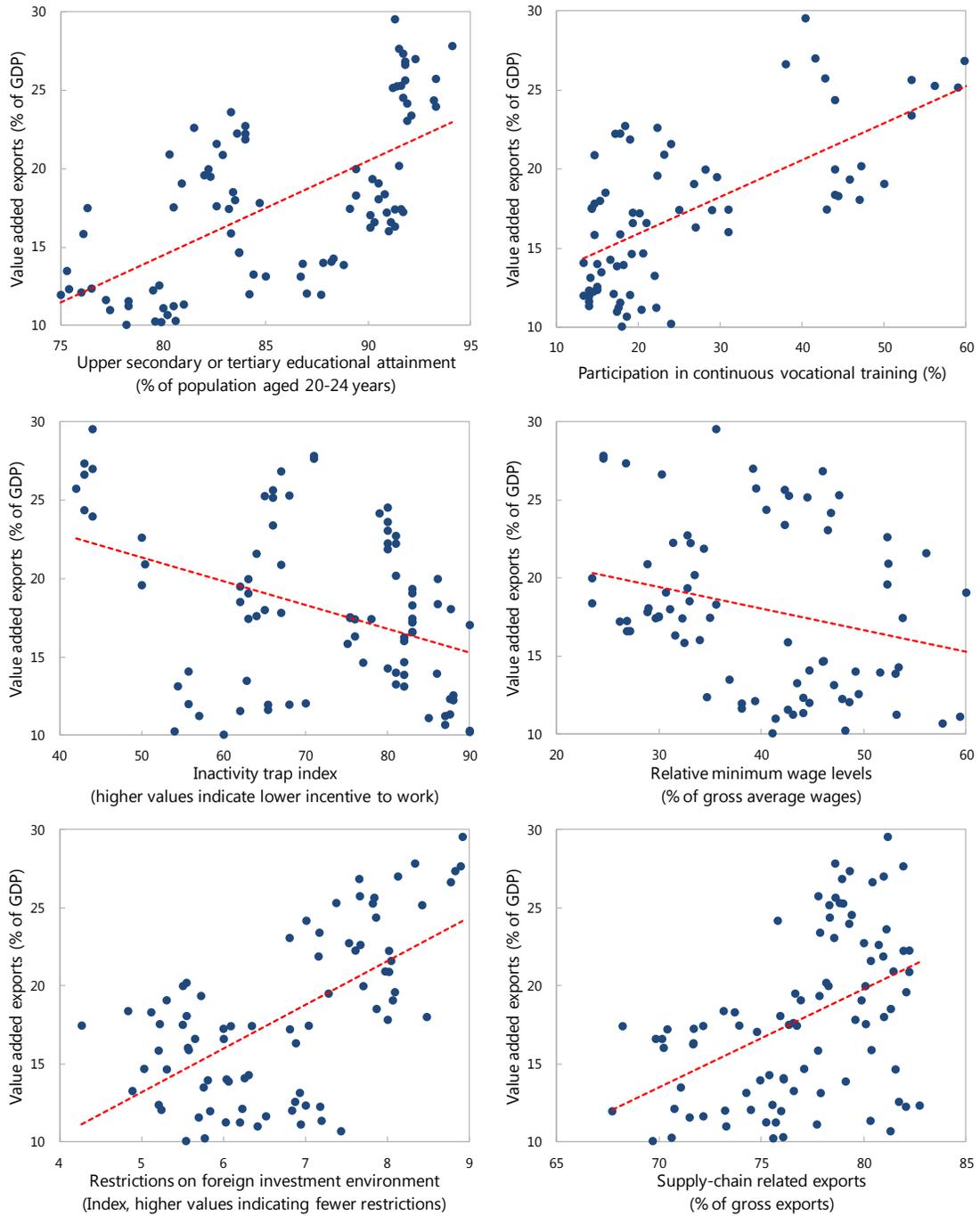
Sources: Economic Freedom of the World 2013 Annual Report; European Commission LAF database; Eurostat; World Input-Output Database; and IMF staff calculations. The dots represent country/year pairs.

Annex II. Evolution of Revealed Comparative Advantage (RCA) in the EU

Revealed comparative advantage (RCA) in EU is calculated as the share of a product in a country's total exports to EU relative to the average share of the same sector in total EU exports. If the value of RCA exceeds one, the country has a revealed comparative advantage in that product relative to other exporters in EU, while a value less than one indicates the opposite. The analysis is done using value added exports data for goods and services.

NMS[1] countries show comparative advantage in various goods and services products relative to other EU countries with services sectors slightly dominating (Table 1). While Czech Republic, Slovak Republic and Poland show RCA in more manufacturing products, others possess RCA in higher number of services than manufacturing products. Labor-intensive goods and services tend to constitute between one quarter (Czech Republic) to almost half (Romania) of the products where these countries have comparative advantage. This reflects the considerable wage cost differences between these countries and advanced EU countries.

The comparative advantage of some NMS has undergone significant changes over time (Table 2). Some countries, such as the Czech Republic and Hungary, consolidated their RCA into fewer number of products. For Czech Republic, old advantages in services exports gave way to new advantages in fewer knowledge-intensive manufacturing products. For Hungary, RCA shifted away from labor- and capital-intensive manufacturing products into knowledge-intensive manufacturing. In contrast, Poland and Bulgaria saw less drastic changes in RCA over time, with Poland consolidating its RCA in labor-intensive services sectors and Bulgaria gaining RCA in more services products. Baltic countries also show limited changes mostly losing RCA in labor-intensive manufacturing and some services products. Slovenia shows the largest net addition of RCA in products followed by Romania relying on services sectors.

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[1] The analysis excludes Croatia due to unavailability of value added trade data.

Annex II. Table 1. NMS: Revealed Comparative Advantage Relative to the EU, 2011

	Czech Republic	Hungary	Poland	Bulgaria	Romania	Slovak Republic	Slovenia	Estonia	Latvia	Lithuania
Agriculture, Hunting, Forestry and Fishing	0.49	1.05	0.65	1.62	0.57	0.84	0.57	0.68	1.47	1.80
Mining and Quarrying	0.86	0.65	1.34	4.04	0.58	1.01	0.62	2.17	1.41	0.66
Labor-intensive manufacturing										
Manufacturing, Nec; Recycling	1.49	0.56	2.13	1.05	1.97	1.38	1.27	2.10	1.61	2.46
Textiles and Textile Products	0.80	0.46	1.11	2.38	2.75	0.83	0.80	1.94	0.71	1.70
Leather, Leather and Footwear	0.77	0.85	0.61	0.85	5.79	1.27	1.60	0.75	0.36	0.66
Capital-intensive manufacutring										
Food, Beverages and Tobacco	0.71	0.74	1.19	1.26	0.60	0.74	0.46	1.03	1.31	1.73
Wood and Products of Wood and Cork	1.43	0.87	2.20	0.92	1.26	1.61	2.37	3.19	4.95	5.23
Pulp, Paper, Paper , Printing and Publishing	1.07	0.50	0.89	0.46	0.38	0.99	0.82	0.86	0.61	0.63
Coke, Refined Petroleum and Nuclear Fuel	1.02	0.67	0.90	0.84	0.58	0.59	0.31	0.61	0.50	1.36
Rubber and Plastics	1.14	1.29	1.42	0.59	0.62	0.85	1.69	0.92	0.55	0.59
Other Non-Metallic Mineral	1.34	0.97	1.14	2.11	1.15	1.21	1.44	0.87	0.89	0.66
Basic Metals and Fabricated Metal	1.05	0.66	1.25	1.22	0.66	1.12	1.33	0.86	0.56	0.47
Knowledge-intensive manufacturing										
Chemicals and Chemical Products	0.49	0.71	0.57	0.51	0.48	0.39	1.21	0.29	0.38	0.50
Machinery, Nec	1.06	1.43	0.83	1.03	0.96	0.89	1.46	0.61	0.41	0.53
Electrical and Optical Equipment	1.38	1.83	0.99	0.60	1.26	1.85	1.00	1.11	0.69	0.66
Transport Equipment	1.25	1.07	1.10	0.42	0.84	1.08	1.31	0.45	0.56	0.35
Labor-intensive services										
Construction	1.14	1.04	1.12	1.26	1.11	1.31	1.20	1.90	1.83	1.09
Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel	1.03	1.14	1.08	0.79	1.01	0.96	1.41	0.76	0.71	0.74
Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles	0.89	0.96	1.30	1.22	0.94	1.47	0.86	1.20	1.46	1.26
Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods	1.01	1.03	0.86	1.16	1.00	1.13	0.86	0.96	1.33	1.06
Hotels and Restaurants	1.47	1.05	0.68	1.65	1.52	1.03	0.81	0.78	1.01	1.11
Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies	0.77	1.26	1.05	1.41	1.19	1.00	1.03	3.19	4.17	2.26
Private Households with Employed Persons	0.68	0.72	0.50	0.65	2.04	0.34	0.71	0.70	1.16	0.83
Capital-intensive services										
Electricity, Gas and Water Supply	1.41	1.05	0.97	2.48	0.90	0.77	1.28	1.28	1.22	1.19
Inland Transport	1.24	1.47	1.14	1.50	2.42	1.12	1.52	1.20	2.14	2.64
Water Transport	0.51	0.84	2.02	1.56	0.99	0.39	0.88	1.72	2.13	1.35
Air Transport	0.95	1.09	0.72	1.52	1.25	0.31	0.66	1.35	1.87	0.88
Post and Telecommunications	0.98	1.39	0.79	1.30	2.25	1.26	0.89	0.89	1.21	0.82
Real Estate Activities	0.91	1.01	0.98	1.16	0.89	1.25	0.89	1.90	1.89	1.11
Knowledge-intensive services										
Financial Intermediation	0.53	0.54	0.45	0.51	0.68	0.52	0.41	0.78	1.23	0.46
Renting of M&Eq and Other Business Activities	0.72	0.97	0.58	0.47	0.57	0.87	0.69	1.01	1.29	0.52
Other services										
Public Admin and Defence; Compulsory Social Security	1.04	0.96	0.86	0.96	1.02	0.90	0.86	1.16	1.17	0.87
Education	1.07	0.96	0.94	1.15	0.93	1.04	0.85	1.63	1.45	1.21
Health and Social Work	0.81	0.92	0.74	0.79	0.73	0.85	0.85	0.81	0.71	0.78
Other Community, Social and Personal Services	1.08	1.26	0.86	1.02	0.84	1.27	0.75	1.16	0.97	0.88
Number of manufacturing products	10	4	8	6	6	7	10	5	3	5
Number of services products	9	11	6	13	11	10	5	12	16	10
Total number of products	19	15	14	19	17	17	15	17	19	15
Number of labor-intensive products	5	5	6	7	9	7	5	5	7	7

Note: A value greater than 1 indicates revealed comparative advantage relative to other exporters. Greater value indicates higher advantage.

Source: Staff's calcualtion based on World Input- Output table.

Annex II. Table 2. NMS: Sectoral Gains and Losses in RCA in the EU, 1995—2011

|	Czech Republic	Hungary	Poland	Bulgaria	Romania	Estonia	Latvia	Lithuania	Slovak Republic	Slovenia
Agriculture, Hunting, Forestry and Fishing										
Mining and Quarrying										
Labor-intensive manufacturing										
Manufacturing, Nec; Recycling										
Textiles and Textile Products										
Leather, Leather and Footwear										
Capital-intensive manufacutring										
Food, Beverages and Tobacco										
Wood and Products of Wood and Cork										
Pulp, Paper, Paper , Printing and Publishing										
Coke, Refined Petroleum and Nuclear Fuel										
Rubber and Plastics										
Other Non-Metallic Mineral										
Basic Metals and Fabricated Metal										
Knowledge-intensive manufacturing										
Chemicals and Chemical Products										
Machinery, Nec										
Electrical and Optical Equipment										
Transport Equipment										
Labor-intensive services										
Construction										
Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel										
Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles										
Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods										
Hotels and Restaurants										
Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies										
Private Households with Employed Persons										
Capital-intensive services										
Electricity, Gas and Water Supply										
Inland Transport										
Water Transport										
Air Transport										
Post and Telecommunications										
Real Estate Activities										
Knowledge-intensive services										
Financial Intermediation										
Renting of M&Eq and Other Business Activities										
Other services										
Public Admin and Defence; Compulsory Social Security										
Education										
Health and Social Work										
Other Community, Social and Personal Services										
Number of products experiencing a loss of RCA	-10	-14	-7	-5	-3	-5	-4	-6	-9	-1
Number of products experiencing a gain in RCA	4	4	7	6	6	2	4	1	3	9
Net change	-6	-10	0	1	3	-3	0	-5	-6	8

Note: Orange cells show loss in RCA and green cells show gains in RCA

Annex III. EU Services Directive: Reduction in Barriers

The European Commission assessed the economic impact of the Services Directive (SD) in 2012 (Monteagudo *el al.,* 2012). The focus of the assessment was on the quantification of changes in barriers since the implementation of the SD. The barriers across member states and services sectors have significantly decreased since the implementation of the SD – about 30 percent reduction across the EU. But the reduction varies across member states as well as sectors (Table 1) – from very low barrier reductions in Austria and United Kingdom to more than 50 percent reductions in Spain and Sweden; also from a 14 percent reduction in Tax Advisers to a 50 percent reduction in Travel Agency. This partly reflects initial conditions: a higher level of initial restriction is associated with a higher level of reduction in barriers, at both country and sector levels (Figure 1).

Annex III. Figure 1. Patterns in Barriers Reduction

Source: Monteagudo et al. (2012)
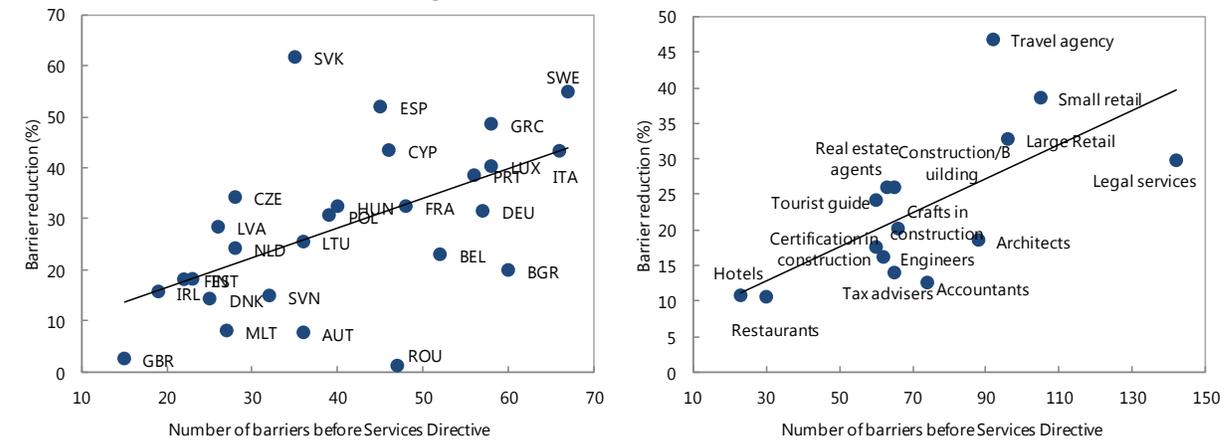
Annex III. Table 1. Barrier Numbers of 15 Selected Services Sectors in the 27 EU Member States

	0	0 - 1	1 - 3	3 - 8	>= 8

Before the Services Directive

After the Services Directive

	AUT	BEL	BGR	CYP	CZE	DEU	DNK	EST	ESP	FIN	FRA	GRC	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	POL	PRT	ROU	SWE	SVN	SVK	GBR
Barrier reduction (%)	8	23	20	43	34	32	14	18	52	18	33	49	33	16	43	26	40	28	8	24	31	39	1	55	15	62	3
Number of fully-abolished barriers	0	7	5	14	7	12	1	0	19	0	9	21	7	0	24	5	20	3	0	3	8	15	0	33	0	19	0
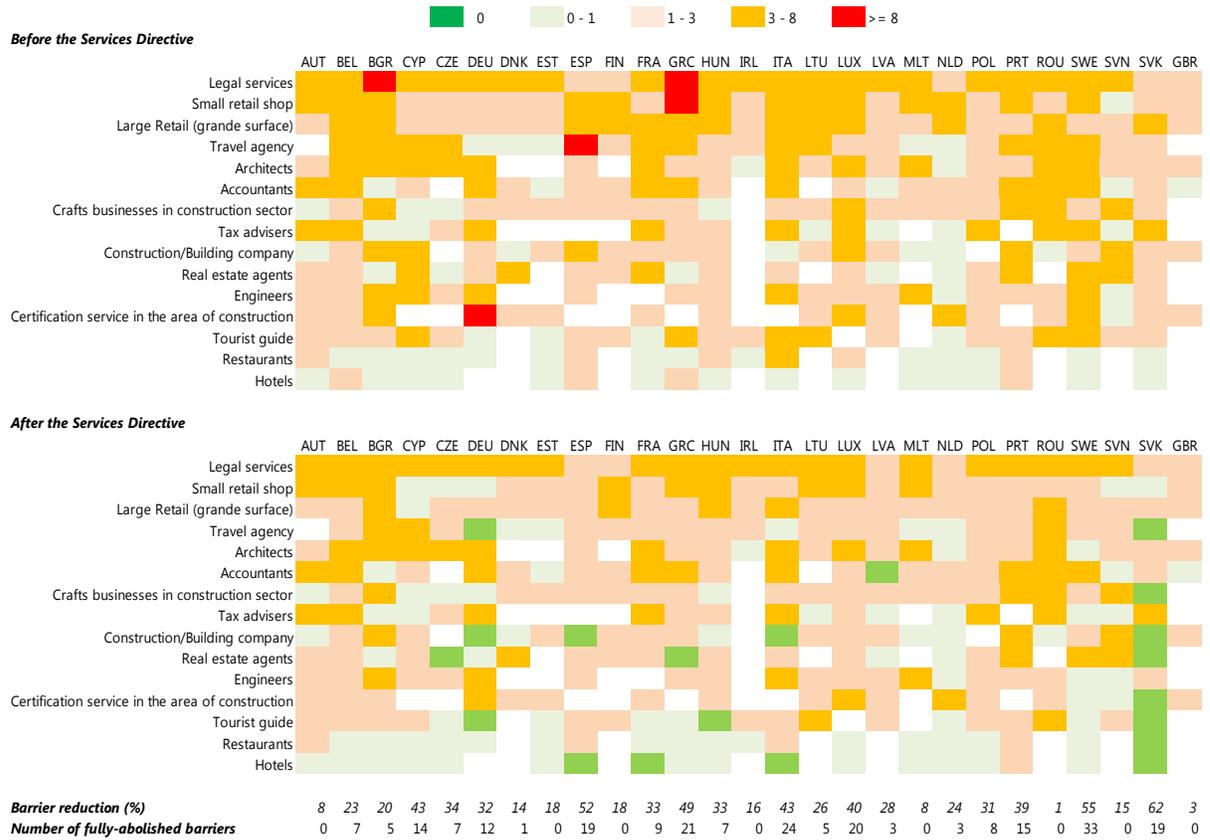
Source: Monteagudo et al. (2012)

Notes: Barrier indicators are constructed based on the qualitative data on barriers in 15 sectors pre- and post- Services Directive. Restrictions were coded as 0 if non‐existing, 0.8 if reduced, and 1 if fully maintained following the implementation of the Directive.

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