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EVALUATION OF LATVIA'S RE-EXPORTS USING FIRM-LEVEL DATA

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CONTENTS

ABBREVIATIONS

CIF – cost, insurance and freight
CN – Combined Nomenclature
CSB – Central Statistical Bureau of Latvia
EU – European Union
FOB – free on board
GDP – gross domestic product
HS – Harmonised System
ID – identification number
IMF – International Monetary Fund
UK – United Kingdom
US – United States

ABSTRACT

We use an anonymised firm-level trade database provided by the CSB to evaluate Latvia's re-exports. We obtain estimates of re-export flows and the corresponding re-export mark-ups by solving a linear maximisation problem for each firm-product pair. We find that the share of re-export flows in the total merchandise exports and imports is significant and follows an increasing trend. The share of re-exports is especially important in product groups, such as transport vehicles, plastics, mineral products, as well as machinery and electrical equipment. The majority of re-export flows is directed to Latvia's closest neighbours Lithuania and Estonia, suggesting that the country serves as a sort of a regional transport hub. We also find that the average re-export mark-ups were sizeable allowing us to conclude that re-export operations may also provide an important contribution to Latvia's GDP.

Keywords: re-exports, firm-level data, Latvia, simplex

JEL codes: D22, F14

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The views expressed in this paper are those of the authors and do not necessarily reflect the stance of Latvijas Banka. The authors assume sole responsibility for any errors and omissions.

INTRODUCTION

The world economy is getting more and more globalised, and Latvia is becoming steadily more integrated within it. This makes the external trade analysis increasingly complicated, since the production chain becomes longer and incorporates many intermediate stages that can be located in different countries. Therefore, exports can no longer be viewed as something mainly produced domestically. The most extreme case of decoupling between exports and domestic production is re-exports.

According to the IMF (2009), "re-exports are foreign goods (goods produced in other economies and previously imported) that are exported with no substantial transformation from the state in which they were previously imported" (Chapter 10, paragraph 10.37, page 157). The domestic value added contribution to re-exports is small. In this particular case, the increase in exports is mirrored by a similar rise in imports, thus leaving GDP almost unchanged. This calls for distinguishing between re-exports and domestically produced exports for deeper and more precise analysis.

The reasons behind re-export activities (also called *entrepôt* trade) are numerous. One of them is related to transport hubs especially pronounced in the presence of big harbours. For example, according to Mellens et al. (2007), the share of re-exports in total goods exports in the Netherlands exceeds 50%. Hong Kong is an even more striking example with 53% of Chinese exports shipped through Hong Kong in 1988–1998 (see Feenstra and Hanson (2004)). However, logistics is not the only reason for re-exports. Feenstra and Hanson (2004) argue that information costs, which arise if counterparts are informed imperfectly about the other party, could be another incentive. For example, Hong Kong traders provide a range of services in matching foreign buyers with Chinese supplies. Feenstra and Hanson (2004) and Fisman et al. (2008) also stress the role of tax and tariff evasion in relation to the phenomenon of indirect trade.

Although the domestic contribution to re-exports, as compared to the rest of exports, is small, it does not equal zero. Feenstra and Hanson (2004) report that the average mark-up on Hong Kong re-exports of Chinese goods was 24% during 1988–1998. Moreover, mark-ups of re-exports provided a significant contribution to Hong Kong's GDP. Although Hong Kong is quite a special case, this example suggests that one should not only quantify the share of re-exports in total exports but also track the level of re-export mark-ups.

Unfortunately, there are no official statistics on re-export activity in Latvia (unlike in Hong Kong, as used by Feenstra and Hanson (2004) and Fisman et al. (2008) or Lithuania[1]). Thus, an indirect estimation needs to be carried out. The first attempt to evaluate re-exports in Latvia was made by Bērziņa (2013). She used anonymised annual data on the value of enterprises' exports and imports by very detailed product categories. The author's approach was simple and intuitive, i.e. if a particular enterprise exports and imports the same product within a given year, re-exports are defined as the smallest of the two trade flows. In a way, this approach is similar to the one used by Mellens et al. (2007).

[1] Lithuania's re-export figures are provided by Statistics Lithuania. See, e.g. Box 1 in Lietuvos bankas (2014).

In this paper, the authors follow the approach by Bērziņa (2013) in spirit, although taking advantage of an even more detailed anonymised firm-level trade database provided by the CSB. In particular, monthly frequency data are used, and re-exports are evaluated based on volumes rather than values. This allows assessing the level of Latvia's re-exports by product groups, countries of origin and destination, leading to useful conclusions about domestically produced exports. Furthermore, we are able to estimate mark-ups of re-export operations, proving that re-export activity, despite low domestic content, provides a significant contribution to Latvia's GDP.

The rest of the paper is organised as follows. Section 1 briefly describes the anonymised firm-level trade database. Section 2 is devoted to the methodology and stresses the improvements in comparison with the previous approach by Bērziņa (2013). Section 3 examines Latvia's re-export activities by products and countries, while the last Section concludes.

1. DESCRIPTION OF THE FIRM-LEVEL EXTERNAL TRADE DATABASE

In this paper, we make use of the anonymised firm-level external trade database provided by the CSB. This database provides the following information: the anonymised ID number of the enterprise, indication of the flow (exports/imports), product number according to the eight-digit CN (CN8) classification, statistical value of transaction (in FOB prices for exports and CIF prices for imports), net weight of the traded product in kilograms, product volume in supplementary measurement units (if available), country of destination (for export flows) or origin (for import flows), and the time period of the trade flow (the year and month). The source of the database is twofold, since information on Latvia's trade with EU countries is obtained from Intrastat surveys, while information on trade with other countries comes from custom declarations. The abovementioned dataset provides the most detailed information yet on Latvia's external trade, e.g. it contains more than 1 700 000 entries for 2013. Altogether, the database contains information on all recorded external transactions between 2005 and 2013.

The use of the most detailed CN8 classification has one significant drawback that may affect our results, i.e. the CN is regularly revised. Each year a significant number of CN codes are subject to reclassification, which means that some product codes are relabelled and moved between sections, while others are split or merged.[2] Pierce and Schott (2009) analysed the reclassifications in the ten-digit US HS and illustrated the importance of tracking these changes when conducting empirical research; therefore, we cannot ignore this issue. The most problematic cases are splits or mergers of product codes. The feasible solution is to merge values and volumes of respective categories. Although this leads to broadening of several categories and related problems, it helps to retain the consistency of analysis over time.

[2] More information on reclassifications of the CN is available at http://ec.europa.eu/eurostat/ramon/nomenclatures/.

2. METHODOLOGY TO EVALUATE RE-EXPORTS

Access to firm-level external trade data provides information enabling the evaluation of re-export flows. The approach used by Bērziņa (2013) is based on the idea that if a single firm both imports and exports a specific product in a particular year, this product is likely not to have been processed domestically, and exports (or at least part of them) should be treated as re-exports rather than domestically produced exports.

Bērziņa (2013) uses anonymised annual data on the value of enterprises' exports and imports by CN8 product categories. If a particular enterprise exports and imports the same CN8 product category within a given year, the enterprise's re-exports are defined as the smallest of the two trade flows. Namely, if imports of a CN8 product category exceed exports, re-exports are assumed to equal firms' exports. In this case it is assumed that some part of imports is consumed domestically. If imports of a CN8 product category are smaller than exports, re-exports equal imports.

Although the abovementioned approach is straightforward and simple, it has several serious drawbacks that may bias the estimates of re-exports. The first drawback is related to the use of value data. Bērziņa (2013) acknowledges that nominal exports can exceed nominal imports of the same product if the price of exports is higher than that of imports (in other words, the re-export mark-up is positive). In this case, the size of re-exports would be underestimated. The findings of Feenstra and Hanson (2004) on re-export mark-ups in Hong Kong suggest that this bias could be quite sizeable, thus the evaluation of re-exports based on volume data is imperative.

Second, the use of annual data can bias the estimate in either direction. If a firm imports a product in December of the previous year and exports it in January of the current year, this approach will not identify the activity as re-exports. On the other hand, if a firm exports in January and imports in February of the same year, this activity will be erroneously classified as re-exports, despite the fact that for re-exporting to take place, export activity should occur after importing.

The third significant drawback is related to the fact that firm-level data on external trade does not contain any product-level information on domestic transactions of the firm. Thus, if a domestic firm A imports a particular product and sells (without any substantial transformation) this product to a domestic firm B that performs an export operation, we are unable to detect re-export activity.

In this paper, we suggest to modify the approach used by Bērziņa (2013) in order to overcome at least two of the aforementioned shortcomings. The dataset at hand contains both value and volume data on trade flows. Most of the volume data are in kilograms, although for some products supplementary measurement units are also available (e.g. number of items, m^3, etc.). This allows us to overcome the first of the above-mentioned drawbacks and provides useful information about the level of re-export mark-ups. In addition, we use monthly firm-level external trade data, which by the virtue of being of the highest frequency available, goes a long way to addressing the second drawback.

However, monthly frequency of the data calls for a different, more complicated mechanism of re-exports evaluation, since now we cannot assume that imports and exports should occur in the same period of time. Instead, we have a limitation that import activity should happen prior to export activity. We solve the following

maximisation problem for each firm-product pair (note that firm and product subscripts are omitted for simplicity):

$$\sum_{\tau}\sum_{t}\beta^{t-\tau}R_{\tau,t} \xrightarrow[R_{\tau,t}]{} \max \quad (1),$$

$$\tau \le t \quad (2),$$

$$\tau + h > t \quad (3),$$

$$\sum_{t} R_{\tau,t} \le M_{\tau} \quad (4),$$

$$\sum_{\tau} R_{\tau,t} \le X_{t} \quad (5),$$

$$R_{\tau,t} \ge 0 \quad (6)$$

where $R_{\tau,t}$ is the re-export flow (in volume terms) imported in period τ and further exported in period t, M_{τ} is imports (in volume terms) in period τ, X_t is exports (in volume terms) in period t, h is the maximum re-exporting lag, and $0<\beta<1$ is the discount parameter.

Equations (2)–(6) contain a set of restrictions. Equation (2) provides a natural limitation that a firm should import a product in the same month or before selling it abroad. Moreover, we add another limitation in equation (3) telling that the time period between importing and exporting activity cannot exceed h, which is assumed to be 12 months.[3] Also, according to equation (4), the sum of products imported in period τ and re-exported afterwards at any time cannot exceed the total amount of imports in period τ. Analogically, equation (5) states that the sum of all re-exports of a product at time t cannot exceed total exports of that product at time t. Finally, all re-export flows should be non-negative.

By maximising the sum of all re-export activities for a particular firm-product pair in equation (1), we look for the best possible match between export and import data, subject to the above restrictions. This is similar to the approach by Bērziņa (2013), who maximised the size of re-exports for a given firm-product pair within a given year. We also introduce a discount parameter β that prioritises a smaller lag between exports and imports. In other words, if we have two alternative solutions when a firm imports 50 kilograms of a product both in January and February and exports 50 kilograms of the same product in March, our approach will assume that the product was imported in February and re-exported in March.

The system of equations (1)–(6) is a linear programming problem and can be efficiently solved with simplex algorithm. In case a firm exports or imports a product to/from various countries in the same month, we assume that the ratio of re-exports to exports or imports is the same for all destinations/origins.

As discussed above, the use of volume data (mostly in kilograms, although supplementary measurement units were preferred for some products) enables the

[3] Alternative levels of the re-export lag (h) do not affect our results significantly. The results are available upon request.

calculation of re-export mark-ups as the difference between the price of exports and the weighted price of imports for each re-export flow:

$$\mu_{\tau,t} = \ln P_t^X - \sum_{\tau} \frac{R_{\tau,t}}{\sum_{\tau} R_{\tau,t}} \ln P_{\tau}^M \quad (7)$$

where $\mu_{\tau,t}$ is the mark-up of the re-export flow that was imported in period τ and further exported in period t.

Evaluated re-export mark-ups provide useful information for the analysis (see Subsection 3.6) and also improve the accuracy of re-export evaluation. Although the use of the most detailed CN8 classification drills down to the individual products in most cases, it is still possible that we analyse two very similar, but still different products. Very large (positive and negative) mark-ups will flag those cases that cannot be attributed to re-exports. We proceed as follows. First, we evaluate re-export flows solving the maximisation problem in equations (1)–(6) and calculate re-export mark-ups using equation (7). Then we detect outlier cases with too high or too low mark-ups. The limits were set to –0.5 and 1.0 that correspond to mark-ups of –39.3% and 171.8% respectively.[4] Afterwards, we solve the maximisation problem (1)–(6) once again excluding re-export flows with extreme mark-ups.[5]

Finally, one more adjustment should be made. The CSB makes a mathematical adjustment to Intrastat firm-level data on non-response and on those enterprises that are not subject to Intrastat reporting due to the small size of trade volume. In aggregate figures reported below we assume that the share of re-export activities to total exports is the same for missing enterprises (accounting for the country of destination and product group).

[4] These limits roughly correspond to the Q_1–1.5 (Q_3–Q_1) and Q_3+1.5 (Q_3–Q_1) where Q_1 and Q_3 are the 1st and 3rd quartiles of the re-export mark-ups distribution that was obtained in the first step.

[5] The exclusion of extreme mark-ups has a marginal effect on the estimated level of re-exports. The results are available upon request.

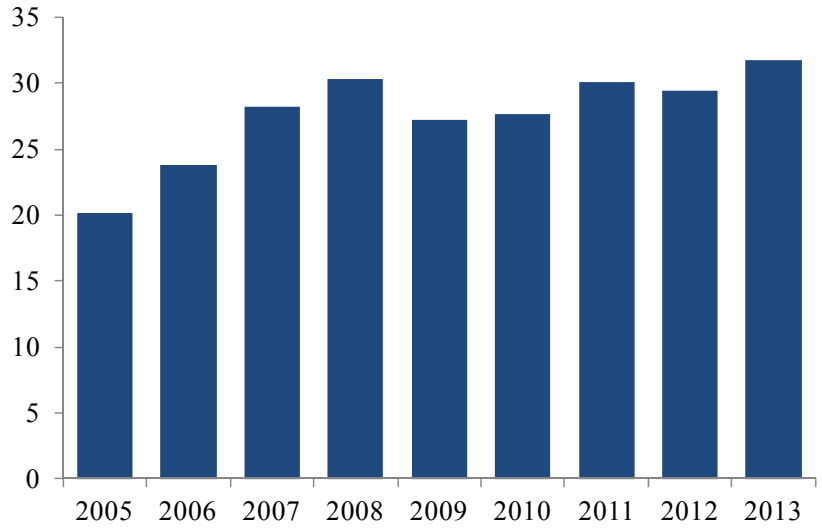
3. RESULTS

We solve the maximisation problem (1)–(6) for the period between January 2005 and December 2013. The total number of unique firm-product pairs is 99 206 (5 855 unique firms and 7 047 unique CN8 product categories, taking into account reclassification issues). We report the aggregated results of our analysis below. Subsection 3.1 describes the importance of re-exports and domestically produced exports in total Latvia's exports, while the next Subsection goes into more detail, providing the composition of re-exports by countries and products. Subsection 3.4 briefly touches the issue of re-exported imports. We focus on two of the largest re-export product groups in Subsection 3.5. Finally, we report our main findings regarding mark-ups of re-export operations.

3.1 Aggregate re-exports and domestically produced exports

According to our estimates, the share of re-exports in the total merchandise exports was on average 28% during the period between 2005 and 2013 (see Chart 1). Following a steady rise during the boom years, the share of re-exports saw a slight decline during the crisis (around 27% in 2009–2010). This decline to some extent goes in line with the findings of Los et al. (2015), who suggest that the global crisis caused a temporary hiccup in the tendency of increasing international fragmentation of production. Re-exports, being one of the fragmentation forms, followed a similar pattern. Indeed, the post-crisis period is again characterised by an upward trend in the share of re-exports, reaching its highest point (32%) in 2013.

Chart 1
Share of re-exports in total merchandise exports
(%)



Our estimate of the re-export share in total exports is rather high, but not exceptional. The previously mentioned example of the Netherlands by Mellens et al. (2007) with more than 50% of exports can be supplemented by the analysis carried out by Lietuvos bankas in 2014. It shows a rapid increase in the share of re-exports from 26% of total exports in 2004 to 48% in 2013. This suggests that Latvia's trends are in line with international tendencies for small and coastal

countries. In addition, one should not forget about the possible downward bias in our estimates due to absence of information on domestic transactions.

The average annual growth of total exports was 11.8% between 2006 and 2013 (even accounting for the strong decline during the trade collapse in 2009; see Chart 2). Although re-export activities expanded on average at a faster pace than total exports, the exclusion of re-export activity does not substantially change the conclusions on export development in Latvia (the average growth of domestically produced exports was 9.6%).

Domestically produced exports were the driving force of the strong export growth during the recovery from the crisis in 2010–2012 (see Chart 3). This suggests that gains in external competitiveness supported the export-led recovery after the crisis. While the renewed foreign demand boosted both domestically produced exports and re-exports, the regained competitiveness induced by the reduction in labour costs and enhanced labour productivity resulted in healthy development of domestically produced exports. In 2013, despite sustained exporter competitiveness, weak external demand took its toll on both domestic exports and re-exports. The growth rate of re-exports diminished, while domestic exports even slightly declined. Stagnation in domestically produced exports was also adversely affected by the wind-up of the largest metal production company.

Chart 2
Annual growth rate of exports
(%)

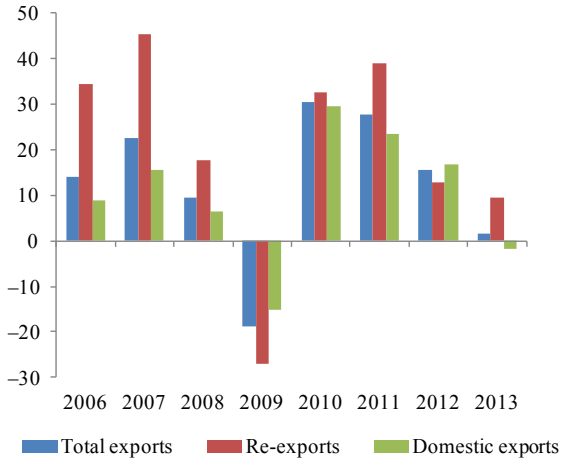
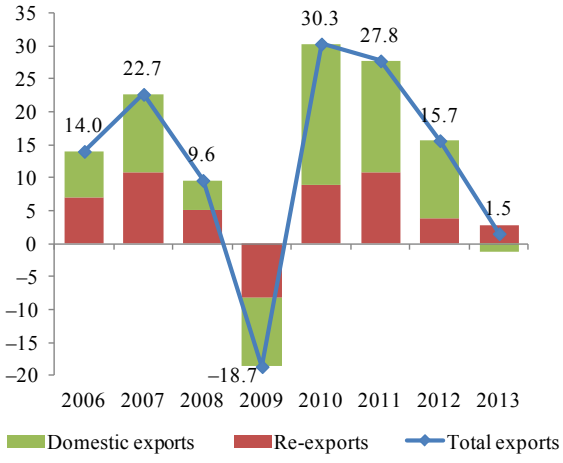


Chart 3
Annual growth rate of exports and contributions from domestic exports and re-exports
(%; percentage points)



3.2 Re-exports by products and countries

We begin a more detailed analysis of the results by looking at the structure of re-exports both by product group and by country. The product groups with the largest share in total re-exports are machinery and mechanical appliances; electrical equipment (hereinafter, machinery and electrical equipment), mineral products, base metals and transport vehicles (see Chart 4).

The largest destination countries in terms of re-exports of goods are broadly the same as Latvia's largest merchandise export partners identified in macroeconomic data: Lithuania, Estonia, Poland, Russia and Germany. When it comes to overall goods exports, these trading partners accounted for more than 50% of the total goods

exports, while they constituted an even larger share of re-exports (above 70%; see Chart 5).

Chart 4
Re-export structure by product group
(2005–2013; %)

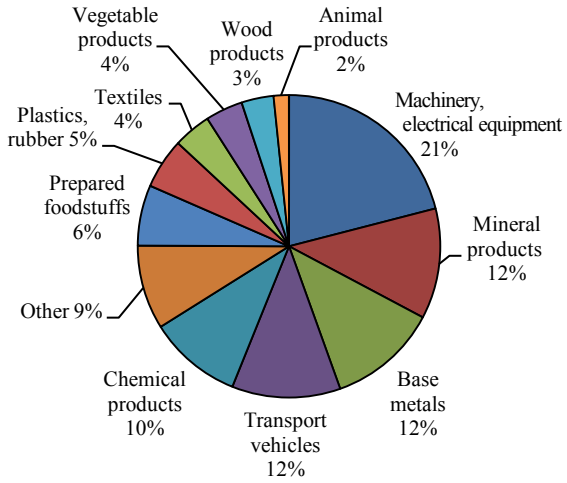
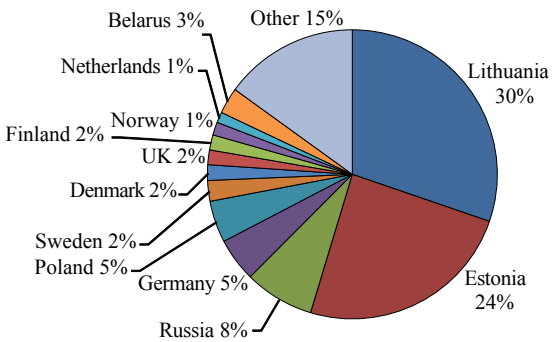


Chart 5
Re-export structure by destination country
(2005–2013; %)



In addition to the largest groups of products being re-exported and the biggest re-export partner countries it is also important to identify the share of re-exports in the total exports of a particular product group or country. Analysis of re-exports by merchandise product groups shows that re-exports form a large part (more than 40%) of total exports of the following product groups of: transport vehicles (53% during 2005–2013), plastics and articles thereof (hereinafter, plastics; 50%), mineral products (48%), machinery and electrical equipment (47%; see Chart 6). At the same time, one of the largest product groups in Latvia's exports – wood and articles of wood (hereinafter, wood products) – contains the lowest share of re-exports (around 5%).

Macro data already suggest that exports of a number of product groups are likely to contain significant amounts of re-exports, since, e.g. Latvia exports but does not produce either passenger cars or oil. Furthermore, among the 25 largest exporting companies in Latvia one can find a number of non-manufacturers, such as LG Electronics Latvia, Samsung Electronics Baltics, Rimi Latvia, Moller Baltic Import, MMD Serviss, Gulfstream Oil, *Kurzemes Degviela* and *Elko Grupa*.[6]

There are some cases though where anecdotal evidence overwhelmingly suggests the presence of re-export activity, while firm-level trade data do not confirm this. For example, less than 10% of exports of wine of fresh grapes is identified as re-exports in the post-crisis period, although it is known that Latvian companies do not produce either *Bordeaux* or *Mosel*. The most likely cause of this underestimation is the previously described methodological drawback (see Section 2), i.e. firm-level data on external trade do not identify re-exports if transactions between companies have been carried out domestically after importing and prior to exporting the product.

[6] Reported by Bērziņa (2013) based on information provided by the CSB.

When comparing our results with the figures reported by Lietuvos bankas (2014), we can observe some similar patterns. Namely, the share of re-exports is high in the groups of transport vehicles and machinery and electrical equipment in Lithuania (exceeding 70% in 2011–2013), while the share of re-exports in wood products is relatively low (slightly above 20% in 2011–2013).

Chart 6
Share of re-exports in total exports by product group
(%)

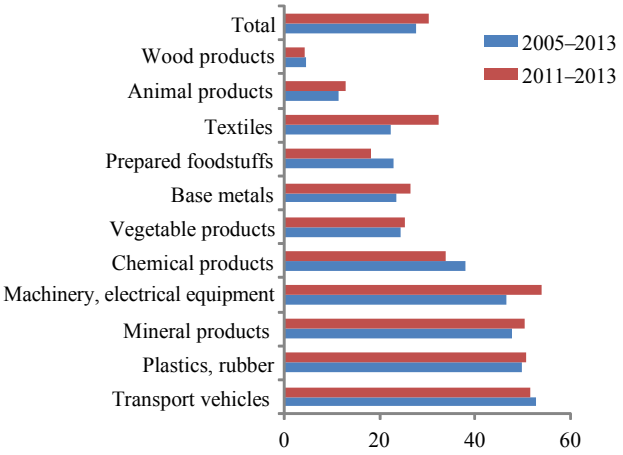
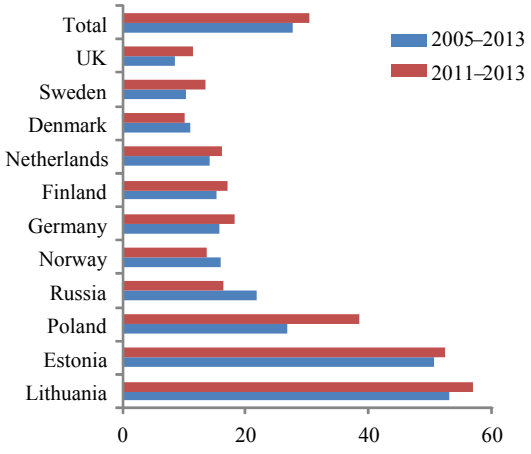


Chart 7
Share of re-exports in total exports by destination country
(%)



Analysis of re-exports by destination shows that the largest share of re-exports in Latvia's total exports to a particular country is for Latvia's neighbours Lithuania and Estonia. Re-exports to these countries constitute more than 50% of the total export activity (see Chart 7). This is not surprising and is consistent with the existence and development of logistics chains that, given the small size of the countries, treat the Baltics as one region. Firms often operate warehouses serving more than one of the Baltic States (this corresponds to one of the intermediation theories used by Feenstra and Hanson (2004) to explain *entrepôt* trade, taking advantage of hubbing in international shipping). Re-exports also account for a significant part of total exports to Poland and Russia. This finding was previously suggested by macro-level evidence. For example, one of the key export products to Poland is heavy gas oils, which are not produced in Latvia. The list of the main re-export destinations is similar to that assembled by Lietuvos bankas (2014) for Lithuania. The main destinations in 2011–2013 were Lithuania's closest neighbours Russia (around 45% of total re-exports), Belarus, Latvia and Estonia.

Overall, in the past few years the weight of re-exports in total exports from Latvia has increased, pointing to further expansion of globalisation. The increase in the weight of re-exports during the post-crisis years has been the largest in exports to Poland, driven by a sharp increase in re-exports of mineral products. On the other hand, re-exports as a percentage of total exports to Russia, Norway and Denmark have decreased. When it comes to Russia, the explanation can at least partly be linked to methodological problems pointed out earlier. Developments in the main product groups show that the share of re-exports in the total exports of prepared foodstuffs and beverages to Russia has decreased markedly since 2010, reaching only 7% in 2013. Given the fact that the share of exports of wine in the total prepared foodstuffs and beverages that same year was almost 11% and, as

previously mentioned, Latvia does not produce wine in such quantities, the weight of re-exports is likely to have been underestimated in this particular case.

In terms of product groups, the highest increase in the share of re-exports during the post-crisis period (2011–2013) in comparison with the whole period of 2005–2013 was in textiles and textile articles (hereinafter, textiles), as well as machinery and electrical equipment. The strongest decline in the share or re-exports is observed in prepared foodstuffs and chemical products.

The increase in re-exports should not be regarded as a negative tendency, since re-exports also contribute to domestic economic activity by creating jobs and incomes, ensuring growth of logistics and transportation activities (we will come back to this issue in Subsection 3.6). However, domestic production is likely to add a higher value to GDP, resulting in a more sustainable economic growth in the medium and long term. Therefore, the focus on domestically produced exports is of key importance.

3.3 Domestically produced exports by products and countries

Due to the presence of re-exports, the total export structure does not represent domestic production activities intended for exports. The structure of domestically produced exports can be obtained by excluding the re-export activity from total exports. The net-of-re-export approach to export structure allows us to obtain a better assessment of the potential impact of shocks to different commodities (changes in global prices or demand) on the domestic economy.

The largest difference in export and re-export structures can be observed for wood products. The importance of wood in the domestically produced export structure significantly exceeds that in the structure of total exports (see Chart 8). The second largest difference is evident for machinery and electrical equipment. Even though several companies in Latvia produce machinery and electrical equipment, and Latvia is well integrated in global value chains at the final production stage, our analysis points to a rather high presence of re-exports in this product group. Some export product groups like electric motors and generators are largely domestically produced, while in subgroups, such as telephone sets, re-exports account for around 80% of total exports. Mineral products and transport vehicles play a substantially smaller role in the domestically produced export structure than in the total export structure. In the mineral products group, alongside resources that are likely to be of domestic origin, such as peat and electrical energy, there are also products, such as petroleum gases, for which 100% of export flows are re-exports. Regarding transport vehicles, firm-level trade data indicate that within the subgroup "motor cars designed for the transport of persons" re-exports account for close to 80% of the total exports which, despite being a large number, is still likely to be an underestimation, since this type of vehicles has been produced in Latvia only on a small scale.

The net-of-re-export approach to export structure indicates that Latvia's economy is much more dependent on wood product shocks than previously thought. Thus, slack in the construction sector in Europe (Latvia's largest export markets for wood products are the following EU countries: the UK, Sweden, Germany, Estonia, Denmark, Lithuania) can have a much greater impact on domestic activity than it could be gauged from official external trade statistics.

The newly available estimation of re-exports also allows the evaluation of the weight of each of Latvia's trading partner in terms of exports of domestically produced goods. Despite the fact that re-exports can encompass many activities, for example, sorting, packaging, marketing and transport services, exports of domestically produced goods are likely to bring a higher added value to Latvia's economy than re-exports of goods. Therefore, if a trading partner's weight in the exports of domestically produced goods is significantly larger than the country's weight in total exports, the specific developments impacting this partner economy are likely to have a higher impact on the overall growth of the Latvian economy than previously assumed.

The overall structure of exports does not change markedly when only domestic exports are taken into account (see Chart 9). There are certain differences though. The combined weight of the largest export partners decreases, pointing towards the fact that exports of domestically produced goods are more diversified in terms of partner countries than the figures on Latvia's total exports suggest. Markedly, the other two Baltic States lose some of their significance in Latvia's export structure. This is no surprise given the geographical proximity and the importance of the transport hub effect. Moreover, one of the key products exported to Lithuania and Estonia is machinery and electrical equipment – a product group that has one of the largest shares of re-exports. Lithuania's share in exports of domestic origin is 5.6 percentage points smaller than in total exports. The weight of Estonia in domestic produce exports is lower as well (by 4.2 percentage points), resulting in the country sliding down to the 4th place on the list of Latvia's trading partners. The weight is increasing though for countries, such as Sweden, Germany and the UK. These countries are also Latvia's key partners for exports of its main domestic export – wood products.

Chart 8
Structure of total and domestically produced exports by product group
(2005–2013; %)

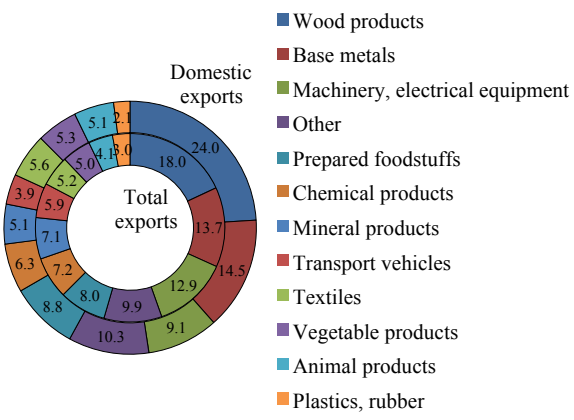
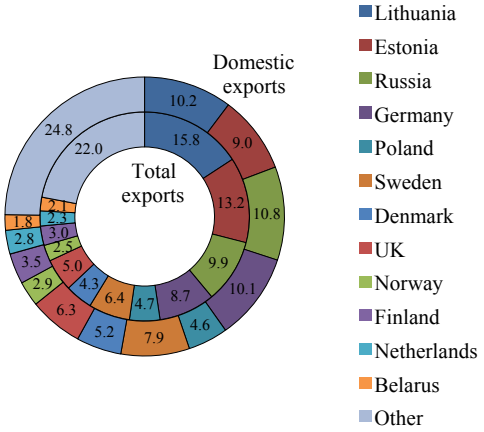


Chart 9
Structure of total and domestically produced exports by destination country
(2005–2013; %)



Recently, re-export operations have shown slightly stronger growth rates than domestically produced exports in most product groups (for the average growth rates of total and domestically produced exports over 2011–2013 see Chart 10). However, some of the largest product groups show the opposite trend, i.e. animal and vegetable products, prepared foodstuffs, as well as mineral products and plastics had

larger growth rates of domestically produced exports than those of re-export activities.

The growth of re-exports in the post-crisis period seems to have been more pronounced than that of exports of goods of domestic origin for most of the important destination countries as well (Lithuania, Estonia, Germany, Poland, to name a few; see Chart 11). For Russia, Denmark, Norway and the Netherlands we see a larger growth of domestic exports in comparison with re-exports. However, this can be partly linked to the abovementioned methodological issues (our approach simply fails to pick up part of re-exports, so they appear to be underestimated in some sectors and destinations).

Chart 10
Average annual growth rates of total and domestically produced exports by product group
(2011–2013; %)

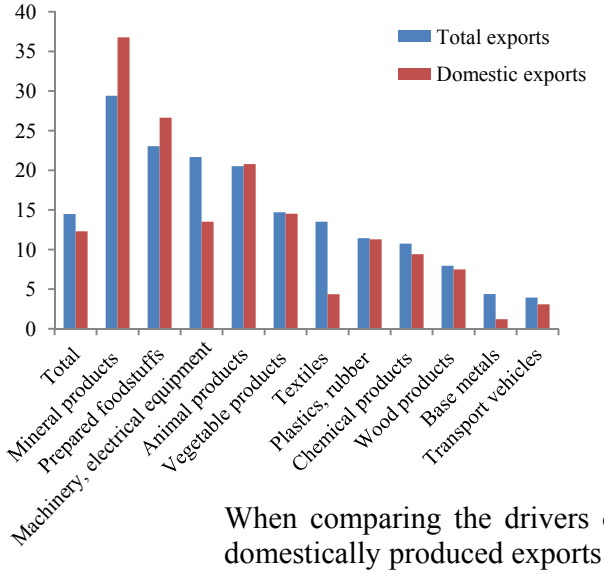
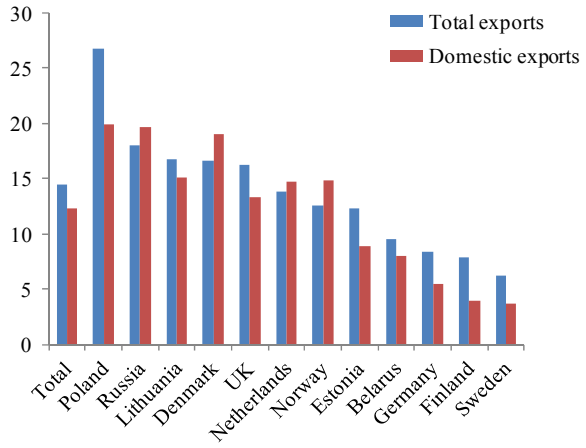


Chart 11
Average annual growth rates of total and domestically produced exports by destination
(2011–2013; %)



When comparing the drivers of growth in the recent period for total exports and domestically produced exports (see Chart 12), several issues can be noted. While for total exports, the largest contribution to growth came from machinery and electrical equipment, taking into account only domestically produced exports, the largest contributor was prepared foodstuffs. Even though the firm-level data are available only up to 2013, some conclusions can be drawn regarding the impact of recent geopolitical tensions on the domestic economy. An in-depth analysis confirms that the products under Russian sanctions are largely domestically produced (e.g. in 2005–2013, exports of cheese and curd, as well as sausages to Russia contained almost no re-exports). Similarly, exports of Latvian fish products are under an official ban from Russia. These products are also domestically produced (e.g. re-export trade flows were not identified for the prepared or preserved fish product group in 2005–2013). Therefore, the halt of exports of these products to the Russian market has a full impact on domestic production.

In terms of drivers of export growth by destination country in the recent years, results for total exports indicate Lithuania as the export destination that contributed the most to the rise in exports, while its contribution to the increase in domestically produced exports is much less pronounced (see Chart 13). The largest contribution to export growth for domestically produced exports came from Russia. However, as explained above, these estimates might be biased. Despite the lack of more recent

data, it can be assumed that given the sanctions imposed on and by Russia, as well as the current sluggishness of the Russian economy, this country is no longer the key driver of domestic export growth.

Chart 12
Cumulative growth of total and domestic exports in 2010–2013, contributions by product group
(%; percentage points)

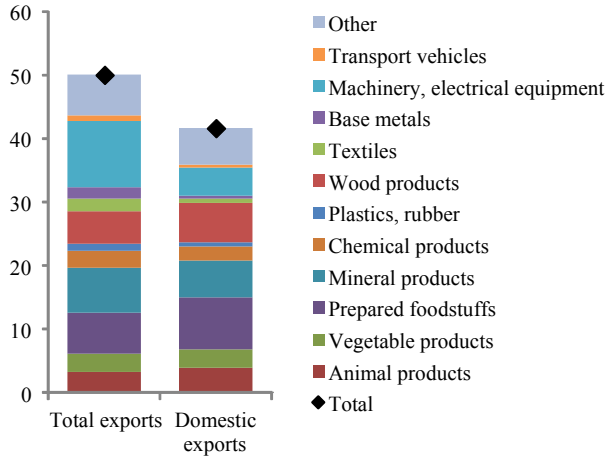
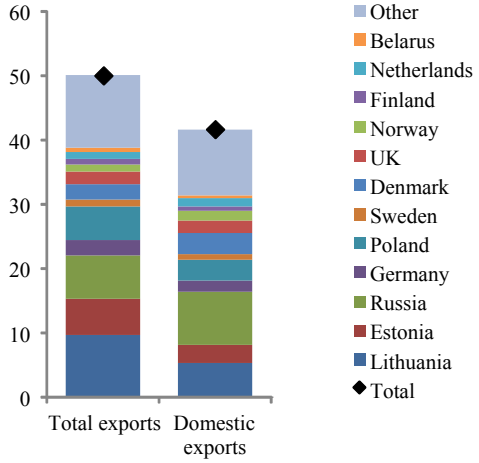


Chart 13
Cumulative growth of total and domestic exports in 2010–2013, contributions by destination country
(%; percentage points)



3.4 Re-exported imports

The share of re-exported imports in total imports was on average 16% during 2005–2013. This share had a tendency to increase until 2011; however, in the last two years of our sample period, the share of re-exported imports slightly declined (see Chart 14). To some extent, the decline in the share of re-exported imports in 2013 is related to the estimation methodology. Some goods were imported at the end of 2013 and re-exported in 2014. These flows were not marked as re-exports by the algorithm, since our dataset ends in December 2013. We argue that this has not led to a significant downward bias in estimates of re-exported imports for 2013, since the majority of re-export operations occur in the same month or with a one-month lag. However, one needs to take this caveat into account.

The rates of growth for re-exported imports were above those recorded for imports intended for domestic use or processing. The fall in re-exported imports during the crisis was less pronounced than that of imports for domestic use. For example, if imports for domestic use fell by 39% in 2009, those for re-exports decreased only by 29%. It is only in the final two years of the sample period that the growth of re-exported imports lags behind the growth of imports for domestic use, even recording a fall in re-exported imports in 2013.

When analysing re-exports, it is also important to look at the source of these flows of products. The structure of imports of re-exported goods by country is very similar to Latvia's total import structure (see Chart 15). The largest import (and re-exported import) origins during 2005–2013 were Lithuania, Germany, Russia, Poland and Estonia. The major differences have to do with Belarus and Finland. Belarus is much more important in the imports of further re-exported goods than in total imports, while it is the opposite case for Finland.

Chart 14
Re-exported imports as a share of total imports
(%)

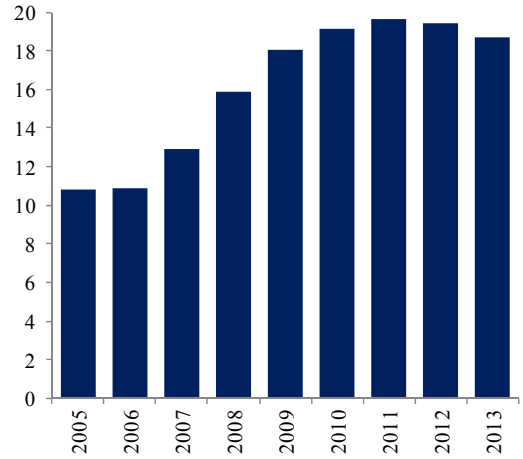
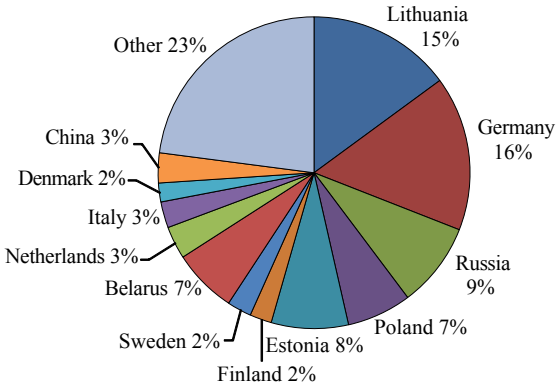


Chart 15
Structure of re-exported imports by country of origin
(2005–2013; %)



When looking at the dynamics, even though still among the largest import partners, Germany up to 2013 lost its weight in Latvia's structure of imports, and even more so – in re-exported imports. Poland, on the other hand, was increasing its share in imports and re-exported imports of Latvia. This is mostly due to a marked increase in imports of machinery and electrical equipment from Poland. It is also important to note that China has become a more and more prominent import partner (due to rising imports of machinery and electrical equipment, like Poland), and its share in imports of re-exported products rose even faster. Overall though in 2013, China was still behind important historical trade partners, such as Russia and Belarus.

The structure of source countries of products imported for the purpose of re-exporting is more diversified than their re-export destination country structure (compare Charts 7 and 15). In terms of product groups, for re-exported mineral products the main import partner is Belarus, followed by Lithuania; for re-exported base metals – Russia; for transport vehicles – Germany; and for machinery and electrical equipment – Poland, followed by China.

3.5 Re-exports of mineral products, machinery and electrical equipment

We take the two largest product groups in order to analyse the origin and destination countries, thus uncovering the direction of the main re-export flows passing through Latvia. Machinery and electrical equipment is the largest product group in re-exports (see Chart 16). During 2011–2013, the latest period for which the data are available, the re-exported goods were mainly imported from Poland (17%), China (13%), Slovakia (13%) and Germany (9%). These products were further re-exported to our neighbouring countries Lithuania (45%) and Estonia (23%), followed by significantly smaller amounts shipped to Russia. It is likely that neither Lithuania nor Estonia was the final destination for all of the re-exported machinery and electrical equipment, pointing to the complexity of production and logistics chains.

Unsurprisingly, the chief source countries of mineral products were Belarus (39%), Lithuania (28%) and Russia (14%), while the main re-export destinations of mineral products were Lithuania (34%) and Poland (31%; see Chart 17). Lithuania was both one of the key source countries of re-exported imports and the key destination of re-exports of oil products due to the fact that the public company *Orlen Lietuva* is the

only petroleum refinery and the key supplier of petrol and diesel fuel in the Baltic States.

Chart 16
Structure of re-exported imports and re-exports of machinery and electrical equipment by country
(2011–2013; %)

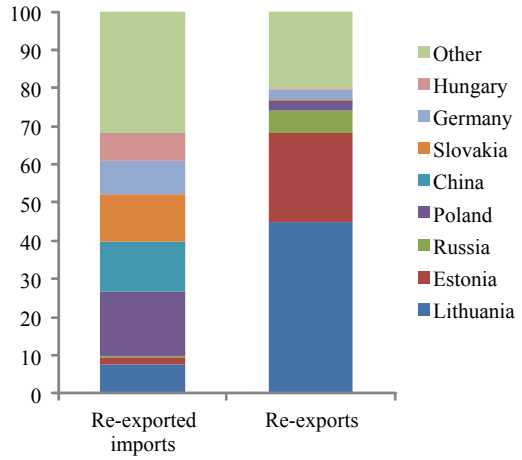
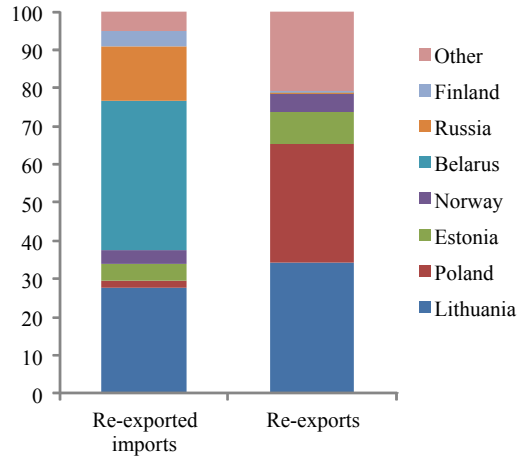


Chart 17
Structure of re-exported imports and re-exports of mineral products by country
(2011–2013; %)



3.6 Mark-ups on re-export operations

According to our estimates, the average re-export mark-ups (the difference between the export price and weighted import price) were 15% in 2005–2013.[7] Among three groups with the largest mark-ups, one can observe two very small product groups within the total export structure, i.e. optical instruments, apparatus, clocks, musical instruments (with a 32% mark-up in 2005–2013; see Chart 18), stone, plaster, cement, glassware, and ceramic products (28% mark-up). The third product group with the largest mark-ups is wood products (27%); however, the re-export share is very small in this group (see Subsection 3.2). This suggests that larger mark-ups can be attributed to specific products re-exported in small amounts. Among the most important product groups in total exports, one of the smallest mark-ups (3%) has been identified for mineral products – a group that includes a large share and a large amount of re-exports. Small mark-ups for re-exports of mineral products are in line with Feenstra and Hanson (2004), who report that mark-ups tend to be lower for standardised products.

Denmark and Sweden are the countries with the highest mark-ups among Latvia's key trading partners (on average above 25% during 2005–2013; see Chart 19). The smallest mark-ups for re-exported goods are observed for destination countries like Poland (9%), Finland, Lithuania (both around 12%) and Estonia (13%). One of the explanations for the smaller mark-ups on re-exports to Lithuania and Poland might be the fact that Latvian transport sector businesses consider their counterparts in these countries to be their most important competitors which is likely to drive down mark-ups for re-exports to those destinations.

[7] These figures were obtained after the exclusion of extreme mark-ups, as mentioned in Section 2.

Chart 18
Mark-ups by product group
(%)

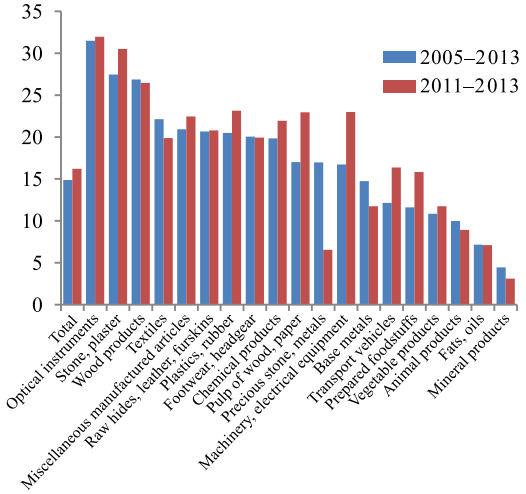
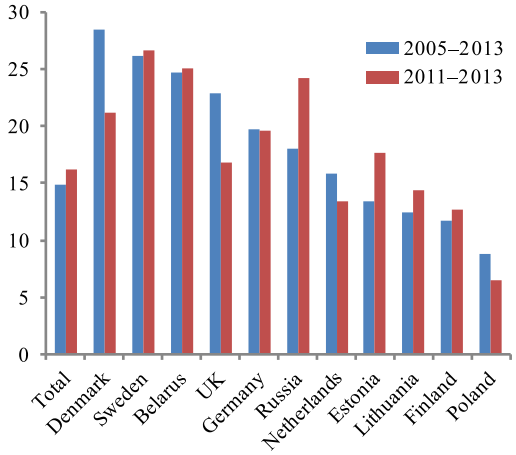


Chart 19
Mark-ups by destination country
(%)



Post-crisis (2011–2013 on average) mark-ups were 1.3 percentage points higher in comparison with the overall sample period (2005–2013). The strongest increase in mark-ups can be observed for product groups, such as machinery and electrical equipment, as well as transport vehicles that also have a high share of re-exports in total exports. At the same time, a similar increase in mark-ups is evident for prepared foodstuffs and pulp of wood and paper that are not groups with a particularly pronounced presence of re-exports.

The largest increase in mark-ups in the post-crisis period was for re-exports to Russia which could be due to a structural change in the composition of re-exports to this country related to the abovementioned methodological problems. Namely, the weight in re-exports of processed food and beverages (a product group with lower-than-average mark-ups) decreased considerably after the crisis. Mark-ups for re-exports to Estonia have also risen significantly following the crisis. This could partly be explained by increased weight in re-exports to Estonia of machinery and electrical equipment in the second half of the sample period (one of the product groups whose mark-ups are higher than the average ones for Estonia and increased the most in the post-crisis period).

The sharpest decrease in mark-ups in the post-crisis period was observed for the UK (–6 percentage points) and Denmark (–7 percentage points). For the UK, this development can be linked to the fact that the three post-crisis years saw an important increase in the weight of metals in re-exports to the UK (from minuscule to around 25%). Mark-ups on goods in this product group were significantly lower than the average mark-ups on products exported to the UK.

According to our estimates, the ratio of total re-export mark-ups to GDP was 2.1% in 2012.[8] This number shows the importance of re-export flows in Latvia and indicates that the input of re-export operations into Latvia's economy is non-negligible. One should note, however, that it does not mean that all mark-ups

[8] We report the figure for 2012 to avoid downward bias in estimates of re-exported imports in 2013, mentioned in Subsection 3.3.

contribute to the domestic value added. A large share of re-export mark-ups (i.e. the difference between import and export prices) could be due to transportation, storage and relabelling performed by Latvia's firms. These operations also require intermediate foreign inputs, which can be rather sizeable in the case of transportation (fuel costs). Thus, the true contribution of re-export operations to Latvia's domestic value added and GDP was below 2.1%. Nevertheless, our findings prove that re-exports should not be viewed as a negative phenomenon.

CONCLUSIONS

We used the anonymised firm-level foreign trade database provided by the CSB to evaluate re-export flows in Latvia. We followed the approach by Bērziņa (2013) in spirit, although taking advantage of a more detailed dataset. More specifically, monthly frequency data were used and re-exports were evaluated based on volumes rather than values. After solving the maximisation problem for each firm-product pair, we obtained estimates of re-export flows and calculated the corresponding re-export mark-ups.

According to our estimates, we found that the share of re-export flows in the total merchandise exports and imports is significant and has a tendency to increase which goes in line with the globalisation trend observed in the world economy. The share of re-exports is especially important in product groups, such as transport vehicles, plastics, mineral products, as well as machinery and electrical equipment. The majority of re-export flows is directed to our closest neighbours Lithuania and Estonia, suggesting that Latvia serves as a sort of a regional transport hub.

We claim one should take into account the share of domestically produced exports and re-exports when analysing exports by product groups and countries. Changes in total export flows may understate/overstate the real impact of shocks to certain commodities or shocks in specific trade partner countries on the domestic economy. This is because domestically produced products add a higher value to the Latvian economy than re-exported goods. Therefore, changes in exports of domestically produced goods will have a more pronounced impact on the domestic economy. However, we should not view re-exports as something of little value. We found that the average re-export mark-ups were sizeable and re-export operations may also provide an important contribution to Latvia's GDP.

This is the first attempt to assess re-exports of Latvia by using the most detailed data on Latvia's external trade available. Clearly, more research should be done in the future to understand the reasons behind the product composition and direction of re-export flows, as well as developments in re-export mark-ups.

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