NORTH EUROPEAN LOGISTICS FLOWS
WITH RIC: SPARSE AND UNBALANCED VOLUME

Introduction

After IT bubble burst in the early 2000\(^1\) (liberalization of free trade was taken to new level with enlargement of World Trade Organization and trade agreement with China (Dec. 2001)). From significant emerging countries, India joined WTO in Jan. 1995 as did also Brazil. Important for Europe, Ukraine joined organization in May 2008, while Russia is still negotiating from the membership (anticipated to realize in 2012-2013). Fostered by housing bubble burst in USA and partially Europe, along with in recent years followed sovereign debt problems swelling all over the developed world, it becomes apparent and vital to have all enlargement in world’s free trade area (and emerging countries, particularly China has been analyzed to benefit greatly from this process\(^2\). Like it or not, world GDP growth depends on trade growth, and actually in recent decade we have needed 2.5% growth in trade to have one percent growth of GDP\(^3\). This greatly concern global services sector, which logistics is important part of\(^4\).

USA led credit crunch had significant effect on long-term growth path of transportation logistics, and companies have still today difficulties to assure shareholders that growth is ahead. For example, largest sea container operator Møller – Maersk was able to turn its profitability higher than pre housing crisis level (during period of 2010-2011), but it lacks growth in revenue (and also cre-

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\(^3\) United Nations: *Regional Shipping and Port Development Strategies (Container Traffic Forecast).* Economic and social commission for Asia and the Pacific 2005.

dible growth path in profits). Still today plain container transportation at sea is barely profitable, but terminal operations, as well as oil and gas related activities make the profit for Møller – Maersk. As growth story is missing, it is not surprising to find out that shareholder value from late 2007 has declined by 50%. Similar change is present in other shippers, such as K-line, Hanjin Shipping and China Cosco. Efficiency improvement keeps alive profitability for short period of time in for-profit companies, but as world economic model was earlier based on rigid growth of trade (and in very bold investment with debt finance, also in shipping), it is very difficult to assure globally that currently we are going back to earlier growth days again. Also freight rates (e.g. Baltic indexes) have declined very severely from peak values of 2008, and currently these are at 50-90% lower level (highest decline in dry bulk). Implications of this situation could already been seen, e.g. Møller – Maersk has introduced daily departures from most important Asian and European sea ports. So, waiting times at sea ports are going to be minimized, but on the other hand sea transportation fleet is planned to be sailing with slow and economical speed. This sort of strategy is only enabled by high capacity at hand, and pressure from markets to provide most efficient service possible.

Severe economic crises typically change structures for better efficiency and enabling future growth. Our interest lies in this regarding to North European companies having significant material flows at their disposal. In interest is to gain understanding from three emerging markets (RIC, namely Russia, India and China), and their interaction with Europe. As is well known, typically this interaction in the early stages starts with export activity from more advanced areas, but could change in other direction too as markets in emerging country grow large enough and possibly in the meantime provide low manufacturing cost. This kind of change path has occurred with China, and we are interested to know, how companies see situation with it as well as with Russia and India. Two latter mentioned countries are different from Chinese manufacturing engine of the world as Russia is specialized in raw material exports and India is having current competence in service sector and IT. If companies in Northern Europe are offshoring, outsourcing or subcontracting more factory work from these two regions, it is going to be a global change path as well.

8 This process has already caused in global scale great imbalances in container transport, like reported in Lopez, 2003 and Lun et al., 2009.
countries too, then this sort of operating mode could produce enormous trade deficit problems. We are not only interested to company reported transport flow balances, and volumes, but also use secondary data from container sea ports and trade accounts to build up accurate situation awareness.

This manuscript is structured as follows: In Section 2 we introduce the reasons for the growing importance of emerging nations, and motivate our research work. This is followed with research methodology of completed survey for North European companies in Section 3. Research environment is introduced in Section 4. Empirical data analysis of completed longitudinal survey is provided for all three RIC countries in Section 5. Discussion follows in Section 6. Conclusions are given in final Section 7.

**Research Area Motivation**

Most of the demand and structures have changed due to credit crunch crisis of 2008-2009\(^9\). However, emerging economies, like Brazil, Russia, India and China remained in the previous growth track briefly after going through economic discontinuity. In the case of Northern Europe, most influential BRIC nations are Russia and China. Former for the reason of raw material export dominance (and very close proximity), and China as it has developed as the factory of the world. During previous decade these two countries have gained very influential position in world economy; China got boost from WTO membership during year 2001 (affected in two ways: opened up their domestic market for global brands, but also gave global markets for Chinese manufacturers to export), and Russia for raw material export prices from very low interest rates of developed nations (USA, Japan and EU), extra liquidity provided by central banks as well as strong global demand. It is known that Russian GDP is totally dependent on export of oil (total value), and if this rapidly changes, so does GDP\(^{10}\). However, it should be reminded that Chinese appearance as important economic actor is having also long-term story, which probably started already in the early 80’s\(^{11}\).

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Nowadays still old developed nations (EU, Japan and USA) hold considerable influence on global GDP, but structural change has been ongoing during last decade (and change for emerging economy dominance will start around 2020-2030). Best illustration for this change is given in tables 1 and 2. Northern Europe is known to be advanced and industrialized region, having strong trade surplus performance. However, from mid of previous decade this all have changed, particularly in Finland (trade surplus of 7-8 bill. USD has declined to the level of 1-2 bill. USD). Interestingly, this worrying declining performance is caused by two countries, and comparative disadvantage of Finland to their structures. So, if we exclude import and export data of China and Russia, trade performance has barely changed at all.

Table 1

Finnish export and import account with trade balance from total trade and trade balance without taking China and Russia into account

<table>
<thead>
<tr>
<th>Year</th>
<th>Export</th>
<th>Import</th>
<th>Trade balance</th>
<th>Trade balance (without China and Russia)</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>$55,238,316,354.00</td>
<td>$58,472,542,439.00</td>
<td>$6,765,774,015.00</td>
<td>$9,384,756,972.00</td>
<td>38.7%</td>
</tr>
<tr>
<td>2006</td>
<td>$77,279,102,962.00</td>
<td>$69,427,442,555.00</td>
<td>$7,851,660,407.00</td>
<td>$12,557,054,983.00</td>
<td>59.9%</td>
</tr>
<tr>
<td>2007</td>
<td>$89,796,864,876.00</td>
<td>$81,576,271,859.00</td>
<td>$8,222,613,017.00</td>
<td>$13,657,354,848.00</td>
<td>66.1%</td>
</tr>
<tr>
<td>2008</td>
<td>$96,896,070,517.00</td>
<td>$92,189,842,878.00</td>
<td>$4,706,227,639.00</td>
<td>$11,846,001,080.00</td>
<td>151.7%</td>
</tr>
<tr>
<td>2009</td>
<td>$62,886,462,542.00</td>
<td>$60,830,316,844.00</td>
<td>$2,030,146,698.00</td>
<td>$8,459,697,271.00</td>
<td>316.7%</td>
</tr>
<tr>
<td>2010</td>
<td>$69,404,781,172.00</td>
<td>$68,246,053,482.00</td>
<td>$1,158,727,690.00</td>
<td>$8,530,127,174.00</td>
<td>636.2%</td>
</tr>
</tbody>
</table>


Table 2

Swedish export and import account with trade balance from total trade and trade balance without taking China and oil into account

<table>
<thead>
<tr>
<th>Year</th>
<th>Export</th>
<th>Import</th>
<th>Trade balance</th>
<th>Trade balance (without China and Oil)</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>$130,263,720,466.00</td>
<td>$111,951,347,748.00</td>
<td>$18,312,372,718.00</td>
<td>$26,946,371,503.00</td>
<td>42.5%</td>
</tr>
<tr>
<td>2006</td>
<td>$147,370,407,950.00</td>
<td>$127,100,924,462.00</td>
<td>$20,269,483,488.00</td>
<td>$30,248,136,110.00</td>
<td>49.2%</td>
</tr>
<tr>
<td>2007</td>
<td>$169,061,476,944.00</td>
<td>$152,822,698,820.00</td>
<td>$16,238,778,124.00</td>
<td>$27,358,269,116.00</td>
<td>68.5%</td>
</tr>
<tr>
<td>2008</td>
<td>$183,880,641,872.00</td>
<td>$168,981,675,433.00</td>
<td>$14,898,966,439.00</td>
<td>$29,905,375,747.00</td>
<td>100.7%</td>
</tr>
<tr>
<td>2009</td>
<td>$131,116,175,379.00</td>
<td>$119,948,706,612.00</td>
<td>$11,167,468,767.00</td>
<td>$18,939,626,265.00</td>
<td>69.6%</td>
</tr>
<tr>
<td>2010</td>
<td>$158,079,152,968.00</td>
<td>$148,421,217,963.00</td>
<td>$9,657,935,005.00</td>
<td>$21,155,128,789.00</td>
<td>119.0%</td>
</tr>
</tbody>
</table>

Source: Ibid.

Similar situation, but within lower magnitude, is present in Swedish trade account. Surplus overall has lost half of its performance in observation period of six years. If we exclude China and oil from statistics, then half of this decline is taken away (oil, and not Russia, since Sweden has imported oil in recent years from Russia, Norway, UK and Algeria). In Finland dependency on Russian oil is more than 90% from oil imports (actually Finland is 100% dependent on oil, coal, uranium, and natural gas imports\textsuperscript{15}. It is interesting to find out that Sweden is performing much better in high oil price environment – most probably this is caused by stronger export industry, since oil consumption in both of the countries has been declining in the observation period by 8%.

So, question remains, whether this shown restructuring of developed economies is going to develop in the future. We do not see any major threat for it in macro-scale: (1) China has reached critical mass in manufacturing operations, and offers extensive market for sales of products too, while having still comparative advantage in salaries and total costs, and (2) Russia enjoys from very loose monetary policies in developed economies (resulting on inflationary price increases in raw materials, like oil from mid 90’s is nowadays ten times more expensive, having similarity with gold), and increased demand caused by underdeveloped emerging economy energy production systems (which are starved for primitive fossil fuels, like coal and oil). Many nations have sought remedies to change BRIC dominance, like free valuation of Chinese currency Yuan. However, in 70’s similar currency strengthening was demanded from Japan, and it only stopped their manufacturing sector export growth – Japanese manufacturing is still alive and well in global scale\textsuperscript{16}. In Russian case their export surplus is caused mostly by oil and partially by gas and other commodities. Even if global demand for oil would cool down, it is known fact that major producers (Russia and Saudi Arabia) have had declining oil production volumes in the recent years. Some researchers argue that major producers have reached their peak in production (like Russia\textsuperscript{17} in 2009; entire world is having production peak soon\textsuperscript{18}), like USA reached in 70’s, and is currently producing only one third of its oil need domestically\textsuperscript{19}. If loose monetary policies will continue due


\textsuperscript{17} D.B. Reynolds, M. Koledziej: \textit{Former Soviet Union oil production and GDP decline: Granger causality and the multi-cycle Hubbert curve}. “Energy Economic” 2008, No. 30:2, pp. 271-289.


to developed nations economic problems, then even in very mild demand of oil, prices will sustain (and should not have major decreases, like they did in 80’s, after inflation and Bretton Woods monetary system abandonment during 70’s\textsuperscript{20}).

**Research Methodology**

The aim of this study is to use second hand statistics (trade as well as container handling), and logistics flow survey completed during four occasions between years 2006-2011. We concentrate in this research work on the national economies of Sweden and Finland, but also on the actor level decisions related to logistics flows and supply chain configuration.

Survey part of the research work was conducted by utilizing a web-based questionnaire, which was translated into English, Finnish and Swedish. The research sample was gathered from two leading economical magazines, Talouselämä from Finland and Affärsdata from Sweden. Both magazines gather TOP500 company listings, giving good base for our research. We either sent survey form link to directly logistics director of these respective companies or in a case of not having direct contact, sent email to respective company’s info address. This practice has been seen as workable way to move forward as survey has been repeated so many times. As strategic information from logistics flows is difficult to obtain, we sent in each year initial contact email and in many cases three remainders (each respondent had own code in answering, further increasing reliability of our sample).

As not all companies listed in TOP500 lists do not have significant logistics flows at their disposal (e.g. financial, software, and insurance), the total sample was less than 1000 companies: During years 2009-2011 survey was sent roughly to 500 respondents (both Sweden and Finland together), while in the base year 2006 we contacted 768 companies. Response amounts have not been that great as in each year we have achieved below 10% response rate. Interestingly during first survey round we achieved approx. 8% response rate (maximum), and during years 2010 and 2011 response rate of 5% (minimum). However, absolute amount of answers have been above 25, giving some confidence over the analysis results.

All respondents were managers or in such a position, that were having a strong experience in the field of logistics. Due to this information, the sample’s reliability is strong. Furthermore, the fact that same questionnaire was utilized in previous studies, confirms the survey’s validity. We have also visited companies

and have completed case studies during years 2006 and 2010. These site visits confirmed that our research area is valid, interesting, and used survey form applicable to its purpose.

**Research Environment: Foreign Trade Analysis from Period of 2002-2010**

Trade of Finland and Sweden with RIC is far from homogenous. Most beneficial in terms of surplus is Indian trade, where in observation period both countries have enjoyed from surpluses of 20-60% (fig. 1). This is clearly driven by own export activity in boom period, and growth bypassing credit crunch year 2009 with significant growth of 2010 (fig. 2). Finnish export is more than three times higher than in base year, while Swedish growth shows above two times higher numbers.

![Fig. 1. Finnish and Swedish foreign trade deficit (from total trade) with RIC countries during period of 2002-2010](source)

Chinese and Russian trade are both problematic for Finland and Sweden – their magnitude is so important, but they have also shown to be producing endless deficits during the observation period (fig. 1). A bit delightful is Chinese trade deficit recovery to level of −10-20% in the most recent year. However, as volumes in trade are so high, this still corresponds in absolute terms nearly 1 billion euros of trade deficit. Even if there is some hope in Chinese trade, Russian proportional trade deficit is all the time growing, and declines in Swedish case to −40% in the most recent observation year (in Finland it is −32.5%). Deficits are in range of 3-4 billion euros – higher absolute deficit for Finland, as its trade is having higher volume.

Fig. 2. Finnish and Swedish export development with RIC countries during period of 2002-2010 (base year 2002 is 1.000)

Source: Ibid.

Divergence between India and China vs. Russia could be further analyzed in fig. 2 through export’s total value development. Chinese and Indian markets give some positive volume development for two North European countries, but in Russia after credit crunch recovery has been really slow. This sluggish development is especially problematic for Finland, which needs to go back nearly six years to find similar low level of exports. As negative world-wide effects of sudden US led credit crunch were eased with low interest rates, infrastructure building based stimulus and quantitative easing (money printing), it was not that surprising to see raw material prices to recover. This helped Russian economy particularly, and raw material exports combined to increased amount
of foreign direct investments on factories have benefitted Russian exports. Also many Finnish and Swedish companies have invested on factories in Russia, and this among raw material price appreciation, explains trade deficits by most part (as these products are not only distributed to Russian markets, but also to European Union).

**Empirical Research Results**

**Northern Europe and Russia**

Some indication from larger scale change of other than raw material product flows could be detected from survey responded by Finnish and Swedish manufacturers, all of which are having significant material flows at their disposal (fig. 3). During year 2006 these companies responded that Russian market is mostly going to be served from European factories (balance is approx. 70%, so on the average 85% from the flows are in eastbound, while 15% are westbound). However, level of westbound dominance declined considerably during survey years 2009 and 2010. Most recent survey year 2011 did not show continuum in this respect (actually it was reverse), but indicated that companies are still thinking that Russian originating flows are about to increase in the future.

![Fig. 3. Transportation flow balance (positive indicates more transport from Europe) between Europe and Russia among respondent companies during four different surveys (2006-2011)](image-url)
If we think about transportation balance through volume (e.g. TEUs), then situation is in large parts unchanged during the most recent survey round (table 3). Of course there is clearly notable that Russian based volumes are about to increase very significantly within near future, but as very high level European based volume more than sustains, leading absolute difference to even widen. Please note the estimated volume of above 130 000 TEU within near future, which is much higher than India and China combined together (analyzed in the following sub-sections). Situation would not be so in favour of Europe, if years 2009-2010 would be used.

### Northern Europe and India

As macro-economic export statistics clearly showed, Finland and Sweden both enjoy from healthy trade relationship with India – in other words export from Northern Europe is much higher than from India to other direction. This has been supported by actual product flows within varying degree. As fig. 4 shows, during survey years 2009 and 2010 flows have originated a bit more from Europe to India than other way around. However, in year 2006 situation was more or less entirely balanced, and future did not hinder then any large-scale changes in current modus operandi. However, during years 2009 and 2010 already companies reported to start to import more items from India, and especially during year 2009 export dominance trend of Northern Europe was shrinking. These early indications from possible occurring change were turned into reality within last survey, where companies reported to already use extensively Indian suppliers/factories in their material flows. So, based on this export surplus of Sweden and Finland would be experiencing the discontinuity at the moment, and actually trade would be starting to potentially repeat Chinese type of deficit pattern.
Fig. 4. Transportation flow balance (positive indicates more transport from Europe) between Europe and India among respondent companies during four different surveys (2006-2011)

Table 4

Volumes in TEUs within respondent companies (Finland and Sweden) during most recent survey to/from India (calculated with flow balance and responded class average of TEU vol.; n = 15)

<table>
<thead>
<tr>
<th></th>
<th>Past</th>
<th>Current</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Europe to India</td>
<td>763.0</td>
<td>708.0</td>
<td>688.0</td>
</tr>
<tr>
<td>From India to Europe</td>
<td>1438.5</td>
<td>1493.5</td>
<td>1513.6</td>
</tr>
<tr>
<td>Total</td>
<td>2201.5</td>
<td>2201.5</td>
<td>2201.5</td>
</tr>
<tr>
<td>Difference (EUR-IND)</td>
<td>-675.5</td>
<td>-785.6</td>
<td>-825.6</td>
</tr>
</tbody>
</table>

In earlier we were analyzing more than hundred thousand TEUs in Russian case, but Indian overall volumes are roughly 50 times lower (see table 4). So, this market is rather underdeveloped in the respondent organizations, and even if flows from India to Europe dominate the whole three point time-scale, differences are very low (in the end below 1000 TEU).
As earlier research environment analysis showed, trade in value between China and two examined North European countries started to be deficit oriented from year 2004 onwards. This is apparent from our survey findings out of two North European country’s companies, shown in fig. 5. During years 2006 and 2009 situation was still in some sort of control, and having some standard deviation around entirely balanced transportation flows. However, even then companies were reporting to use more extensively Chinese originated flows to Europe in future. Regarding to credit crunch and economic crisis, companies decided to source and manufacture more from China, and flows even in Swedish and Finnish companies have heavily turned as significantly deficit oriented. Striking is the fact that level of 50% is reached in most recent survey year 2011. Based on the last survey round, there is some indication that Chinese led sourcing and manufacturing is a bit easing in the future, but only in very small extent.

Fig. 5. Transportation flow balance (positive indicates more transport from Europe) between Europe and China among respondent companies during four different surveys (2006-2011)
Volumes in TEUs within respondent companies (Finland and Sweden) during most recent survey to/from China (calculated with flow balance and responded class average of TEU vol.; n = 15)

<table>
<thead>
<tr>
<th>Past</th>
<th>Current</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Europe to China</td>
<td>7717.1</td>
<td>10753.7</td>
</tr>
<tr>
<td>From China to Europe</td>
<td>4935.4</td>
<td>33350.8</td>
</tr>
<tr>
<td>Total</td>
<td>12652.5</td>
<td>44104.5</td>
</tr>
<tr>
<td>Difference (EUR-CHI)</td>
<td>2781.6</td>
<td>-22597.1</td>
</tr>
</tbody>
</table>

In volume terms, companies experience at the moment peak in Chinese based volumes (table 3) as in total transportation flows are more than 44 thousand TEU. However, for the near future companies expect this to nearly halve. Surprisingly, Chinese originating volumes are going to experience very significant drop, while European based volumes are going to decrease only a bit. This change is apparent in the final row of table 5, where very unbalanced situation of current situation changes to just slightly unbalanced. We may not see this forthcoming possible change yet from fig. 5 as it does not incorporate volumes, and gives each answer equal amount of voting power. So, this contrast between table 3 and fig. 5 could be explained with basically one respondent, which is evaluating to have some growth in European based volumes to China, and in same time reports that its container flows between these two continents is about to ease in the future.

Discussion – Problem of Very Sparse Transport Volumes

During the all four survey years we have experienced similar kind of challenge in responses, where transportation volumes have with average or median numbers remained as low, but statistical sample contains some very active companies too, which transport e.g. 10-100 times more than others. As fig. 6 and 7 illustrate, Chinese and Russian transport demand is dominated by lowest class (or classes, as lowest class of 0-1000 TEU was split in two during year 2011: 0-100 TEU and 101-1000 TEU respectively). So, based on the survey findings, most significant part (70-80%) of transport demand is in the lowest class.
Simultaneously with very low demand from large amount of actors is accompanied with very few companies having extremely high volume. As fig. 6 shows, in both of the years transportation volume between Europe and China has had companies transporting more than 10 001 TEU, also lower class of more than 5 001 TEUs has had actor in it. There does not exist any consistency or explaining factor behind these large volumes; Chinese high classes have been caused by both Finnish and Swedish companies, and they have been from diverse set of respondent classes.
Similarly with Chinese situation, Russian transportation volume is having some limited amount of companies in highest classes (one company in year 2011 even reported to have volume of more than 50 001 TEU). Situation in Russian market is such that Finnish companies do nearly always (in 2010 and 2011 only Finnish ones) have the high volume at their disposal. Swedish companies could be described as inactive regard of this emerging market, and nearly all answers during year 2010 fall into lowest volume class (except for one), and during year 2011 all answers are given for two lowest classes (which correspond lowest class in the year 2010).

**Conclusion**

This research sheds light on the future of global supply chains from the point of view of North European companies. We know that successful Swedish and Finnish companies have in the early on established presence through manufacturing operations in India and China (e.g. Ikea, H&M, Electrolux, Nokia, Kone), but also few examples exist from Russia (e.g. Nokian tyres). Based on
this research work we do not find any end in this decade ago started RIC process: China seems to be in very robust position in manufacturing and subcontracting sense, and India as well as Russia are both emerging. Seems that India is a bit better positioned and already in the action, while Russia is still having its future potential. However, in volume wise order of importance is different, it is being led by Russia, and followed closely by China. In India volumes have not taken any significant level yet, and it remains to be seen, whether companies start to integrate India properly in their global supply chains. Our research illustrated that Russian potential from North European angle is more in the hands Finnish companies, while in some respects Chinese robustness is challenged in the future from responses of high volume companies.

Results of this research work are not only indented to serve for profit companies running global supply chains – our purpose is also a bit macro-economic. As analyzed in research environment, Finland and Sweden as nations have trade surplus only with India, while China and Russia are showing impressive deficits. We do not see any major threat that India will develop like China within near future. Of course traffic flow is starting to be unbalanced, but it lacks volume. So, companies need to have at least three to five years to invest and have factories operational that export surplus in Indian trade will diminish. In contrary, Chinese trade deficit is going to hold, even if in the previous years it has a bit eased. Our research work shows that companies have strong trust on Chinese based manufacturing, and first time in year 2011 survey we identified that companies do not see this activity to increase (imports to Europe). However, respondents didn’t indicate otherwise either, except of one high volume actor, who considers to use China less in the future (and has also emphasis on lower overall transport volume, so producing more inside of continent). So, we assume that trade deficit with China remains. In Russian case trade deficit has developed as enormous to Sweden and Finland due to raw material price inflation in recent years. As Russia is becoming increasingly wealthy, there exists greater possibility that manufacturing activity in the country will pick up too (eventually leading to larger trade deficits). Our survey shows that this scenario is still an option – in some companies this option has already realized, and maybe in the medium term this will change in larger crowd too.

References


