Danmarks Statistik
MODELGRUPPEN

Arbejdspapir*

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3 November 2014

Danish Trade with Central and Eastern European Countries

Resumé:

The paper looks at the trade impacts of the Eastern enlargement of the EU. Danish trade with CEECs has been increasing continuously reaching 6.8% of total goods exports and 9.3% of total goods imports in 2013. Trade with Poland is particularly important constituting about 40% of the total Danish trade with CEECs. In general, Denmark has a revealed comparative advantage in agriculture and a general disadvantage in manufacture vis-à-vis the CEECs. However, within manufactures, Denmark maintains a comparative advantage in chemicals and pharmaceuticals. A modest overall export market share signals a limited market penetration in the CEECs market, and Danish trade with CEECs is also characterized by annual deficits especially after the world-wide financial crisis in 2009. Finally, a gravity analysis shows that Danish imports from the CEECs are converging rapidly to the potential level, while Danish exports to CEECs stopped converging in the mid-2000s and has remained at least 50 per cent below the potential levels.

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Keywords: CEECs, exports, imports, gravity equation

1. Introduction

The accession process for the Eastern enlargement of the European Union begun in the 1990s and in the mid-2000s a number of Central and Eastern European Countries (CEECs) joined the EU. The socio-economic impacts of the enlargement on the EU member states have been widely studied, see e.g. Gual and Martín (1995), Baldwin, Francois and Portes (1997), Brülhart and Kelly (1999), Boeri and Brücker (2000), Kristensen and Jensen (2001) and Pedersen and Pytlikova (2008).

The enlargement has brought in a wide change in terms of trade, foreign direct investment, migration; as well as political, institutional and fiscal implications. The effect of the enlargement on the EU members varies between countries. Countries like Germany and Austria are geographically close to the CEECs and exhibit some cultural similarities, and the enlargement has had a great impact on these countries. On the opposite end are countries like Ireland that are not significantly affected, and in between are countries like Denmark and Sweden, cf. Boeri and Brücker (2000).

The purpose of this paper is to revisit the trade impacts of the Eastern enlargement on Denmark. Previously the case of Denmark has been studied by Kristensen and Jensen (2001) and Madsen and Sørensen (2002), among others. These studies are, as many similar studies of other EU countries, *ex-ante* studies, i.e. they are made before the CEECs became full members of the EU. It has now been almost a decade since the CEECs became members of the EU, and the present paper is an *ex-post* study. It benefits from an updated sample period 1993-2013 that includes the period after the CEECs joined the EU. Actually, the demarcation of ex-ante and ex-post is a little unclear when studying the EU-CEECs trade, because under the European Agreement, tariff and quota restrictions were eliminated by the EU already in the early 1990s, with the exception of agricultural industries. Trade restrictions on agricultural products were lifted when the CEECs became full-fledged EU members in the mid-2000s and the present study tries to shed light on the impact of free agricultural trade.

The enlargement creates new trade opportunities for Danish exporters, but at the same time old trade might be diverted. For example, Germany has been a major trading partner to both Denmark and Poland, the largest of the CEECs; and in recent years a decline in German imports from Denmark and a rise in German imports from Poland have been observed. Although it is difficult to establish a one-to-one correspondence where imports from Poland crowds out imports from Denmark, the possibility of trade diversion cannot be ruled out. In principle, the trade diversion should be higher, the higher the export similarity between Denmark and CEECs.

In order to address the development in trade pattern, the paper uses the well-known gravity equation to assess, whether Danish trade with CEECs is above or below potential level. The rest of the paper is organized as follows. Section 2 provides a brief survey of trade between Denmark and CEECs. Section 3 demonstrates the implication of including the CEECs in the market share

measures for Denmark. Section 4 presents potential trade estimates based on gravity equation. Section 5 concludes.

2. Trade pattern

The pattern of Danish trade has been changing considerably over the last two decades. Trade with emerging economies has grown crowding out trade with developed countries. This can be easily illuminated by examining foreign trade by country of origin and destination. For simplicity partners are grouped into four regions, table 1 demonstrates. The first group of countries is OECD which consists of 21 OECD countries that are the major Danish trading partners.[1] The other groups are BRIICS[2], thirteen CEECs (hereafter "CEEC-13")[3] and rest of world, ROW. The sample is restricted to 1993-2013 because of lack of data for Eastern Europe.

Table 1. Danish exports and imports by region, SITC-09 (%)

	1993		2003		2013	
	Export	Import	Export	Import	Export	Import
OECD	83.50	83.09	83.10	81.38	73.97	71.91
BRIICS	2.04	4.61	3.57	5.94	7.54	11.09
CEEC-13	2.93	2.83	4.50	5.40	6.84	9.32
ROW	11.53	9.46	8.82	7.28	11.64	7.67

Source: Statistics Denmark, StatBank

Total goods exports to OECD have not changed over the first half of the sample but imports declined by about 2%. Over the second half of the sample exports (imports) to (from) OECD countries declined from 83% (81%) in 2003 to 74% (72%) in 2013. It is also in this period that a major increase in trade with BRIICS and CEECs is observed and the percentage increase is larger in imports than in exports. The reorientation of Danish trade towards CEECs and BRIICS has been accompanied by a decline in trade with OECD countries.

This change in the trade pattern is not unique to Denmark, it is also observed in other EU countries. The falling Danish export to the OECD market does not necessarily imply a falling market share in the OECD market. The Danish market share in the intra-OECD trade looks stable, cf. Sisay (2014). The increasing presence of emerging economies in the OECD market with low-cost advantage tends to crowd out the least competitive countries from the OECD market. However, Danish exporters are able to maintain a stable share of the OECD market. The case of Danish trade with BRIICS and OECD is dealt in a separate paper, the rest of the paper focuses on trade with CEECs.

[1]OECD consists of the major 21 OECD trading partners: Australia, Austria, Belgium-Luxembourg, Canada, Switzerland, Germany, Spain, Finland, France, Great Britain, Greek, Ireland, Iceland, Italy, Japan, Netherland, Norway, New Zealand, Portugal, Sweden and United States.

[2]Brazil, Russia, India, Indonesia, China and South Africa.

[3]CEEC-13 consists of twelve CEECs that are EU members: Poland, Hungary, Czech Republic, Estonia, Slovenia, Latvia, Lithuania, Slovakia, Malta, Cyprus, Bulgaria and Romania; and Turkey that is not EU member. Turkey is included because of its relevance for Danish trade.

2.1. Trade with CEECs

Danish trade and in general EU trade with CEECs has been increasing already before the CEECs became formal members of the EU in the mid-2000s. The Europe Agreement (EA) was enacted in the early 1990s to initiate the integration of goods markets between the EU and potential entrants from Central and Eastern Europe. Under the EA, tariffs and quotas have been eliminated by the EU, except in agriculture-related sectors.

Table 2 shows that Danish trade with the CEECs has been increasing continuously. The larger the share, the larger will be the impact of the CEECs on Danish wages and employment. Poland is distinctively the largest Danish trade partner among the CEECs. Exports (imports) to (from) Poland have increased from 1.27% (1.51%) in 1993 to 1.51% (1.80%) in 2003 to 2.67% (3.43) in 2013. Czech Republic is the second largest trading partner. About two-third of the Danish trade with the CEECs is with the five front runners in the accession process (CEEC-5: Poland, Hungary, Czech, Estonia and Slovenia). Trade with Turkey (not an EU member) is more relevant than some of the CEECs. Note also the following notations that are used in the text: (CEEC-10: CEEC-5, Bulgaria, Latvia, Latvia, Lithuania, Slovakia, Romania) and (CEEC-13: CEEC-10, Malta, Cyprus, Turkey). Appendix Ia-Ic show a detailed version of table 2.

Table 2. Danish trade with CEECs, SITC-09

	1993			2003			2013		
	Export %#	Import %#	Balance mil. Kr*	Export %#	Import %#	Balance mil. Kr*	Export %#	Import %#	Balance mil. Kr*
Poland	1.27	1.51	313	1.55	1.80	360	2.67	3.43	-1719
Hungary	0.23	0.14	319	0.43	0.52	-7	0.55	0.78	-779
Czech R	0.30	0.22	371	0.46	0.46	413	0.88	1.32	-1598
Estonia	0.09	0.10	31	0.25	0.33	-81	0.24	0.42	-788
Slovenia	0.08	0.09	29	0.10	0.22	-449	0.08	0.25	-903
Bulgaria	0.08	0.05	114	0.12	0.05	392	0.10	0.12	-24
Latvia	0.07	0.28	-377	0.23	0.41	-549	0.29	0.67	-1880
Lithuania	0.08	0.15	-92	0.43	0.54	-61	0.46	0.59	-268
Slovakia	0.07	0.04	116	0.16	0.20	-39	0.25	0.43	-721
Romania	0.08	0.03	160	0.16	0.06	586	0.42	0.25	1370
Malta	0.12	0.01	295	0.04	0.01	197	0.07	0.06	95
Cyprus	0.10	0.01	259	0.10	0.01	497	0.07	0.03	259
Turkey	0.36	0.23	493	0.46	0.79	-984	0.75	0.96	-456
CEEC-5	1.97	2.05	1063	2.79	3.34	237	4.43	6.21	-5788
CEEC-10	2.35	2.59	983	3.89	4.59	567	5.95	8.27	-7311
CEEC-13	2.93	2.83	2030	4.50	5.40	277	6.84	9.32	-7412

Source: Statistics Denmark, StatBank.

Note: CEEC-5: Poland, Hungary, Czech Republic, Estonia, Slovenia
CEEC-10: CEEC-5, Bulgaria, Latvia, Lithuania, Slovakia, Romania
CEEC-13: CEEC-10, Malta, Cyprus, Turkey

#Exports and imports are as percentage of total Danish exports and imports, respectively.

*Balance is for trade balance (=export – import) in million krone.

Table 2 reveals that Danish exports to the CEECs have increased less than imports from the CEECs. In values the former is less than the latter in 2013. Figure 1 below shows that the total trade balance for goods was in surplus in the early 1990s, and after a period of stability the trade balance has been deteriorating since 2009. This can be attributed to a number of reasons. In general, there has been a slowdown in Danish exports since the world-wide financial crisis in 2008. On the other hand, CEECs have been able to strengthen their export and marketing policies recently which lead to a growing CEECs export to Denmark. In general, exports have become more reliant on imported inputs, which implies a lower value added per export unit and leads to a trade deficit. Total Danish trade with the world is characterized by surpluses and a deficit vis-à-vis the CEECs is not necessarily a problem. Whether Danish exports to CEECs are below potential levels or CEECs exports to Denmark are above potential levels can be analyzed by using a gravity equation, see below.

2.2. Trade break-down by SITC[4]

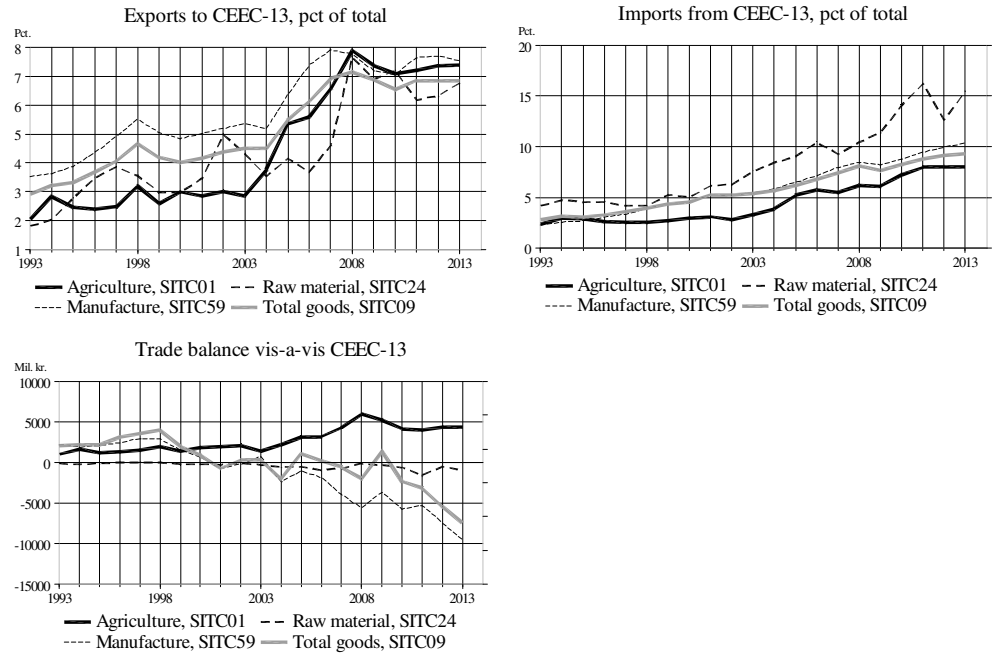
Boeri and Brücker (2000) have shown that the CEECs have a comparative advantage in labor intensive goods and the old EU countries in capital intensive goods, physical and human capital. Further, the degree of capital intensity differs among the EU members. While EU imports from the CEECs look more similar, EU exports to CEECs are more different. Figure 1 shows Danish trade with CEECs by SITC groups. In general, Danish exports to CEECs exhibit three regimes: a period of slow growth in the 1990s, followed by rapid growth in the 2000s and a period of stagnation after the recent financial crisis. In the past, manufactured exports to the CEECs have given the largest growth contribution, but in recent years the contributions from agricultural and raw material exports have been equally significant. Specifically, the sudden growth in agriculture exports is noticeable, and it could be due to the CEECs becoming full members of the EU in the mid-2000s.

Danish exports of agricultural goods as a percentage of total Danish goods exports is higher than the corresponding shares of agricultural products in both OECD and CEECs' goods exports. Which indicates the relative specialization of Denmark in agricultural goods.

Danish imports from CEECs are dominated by raw materials followed by manufactures. Agriculture imports show a strong increase toward the mid-2000s, but the increase is not as strong as that of total exports. A breakdown of the trade balance shows that the recent deficits in trade balance are largely attributed to manufactured goods. Despite CEECs comparative advantage in labor intensive goods, Denmark has a trade surplus in agricultural products.

[4] SITC is for Standard International Trade Classification, Revision-3

Figure 1. Trade with CEEC-13 by SITC groups



The decomposition of exports and imports by SITC groups can be combined to form a formal measure of comparative advantage. Following Boeri and Brücker (2000) the revealed comparative advantage (RCA) for SITC group-*i* can be calculated as:

$$RCA_i^{DNK} = \log\left(\frac{x_i^{DNK}}{\sum_i x_i^{DNK}} \Big/ \frac{m_i^{DNK}}{\sum_i m_i^{DNK}}\right) \quad (1)$$

Where x_i^{DNK} and m_i^{DNK} are Danish SITC-*i* exports to and imports from the CEECs. A value greater than zero "reveals" that Denmark has a comparative advantage, a value below zero "reveals" that Denmark has a comparative disadvantage. A value of zero shows neither advantage nor disadvantage. Figure 2 illustrates the stance of Danish comparative advantage in relation to trade with CEEC-13 and with the group of OECD countries, the latter country group is included to facilitate comparisons.

Denmark has a high comparative advantage in agricultural products vis-à-vis both the CEECs and the OECD countries, albeit with a decline versus the OECD countries. The comparative stance in raw material looks stationary, also vis-à-vis the OECD. In manufactured goods, Denmark has a comparative disadvantage in trade with OECD. Vis-à-vis CEECs Denmark has gone from a moderate disadvantage to moderate advantage in manufactures. The breakdown of manufactured goods shows that Denmark has a high but falling comparative advantage in chemicals and pharmaceuticals in relation to CEECs. In the other categories the CEECs now have the comparative advantage although the measure is close to zero for machinery which is a recent phenomenon. In trade with the OECD, Denmark's old disadvantage in chemicals has turned into an advantage and there is a clear comparative advantage in miscellaneous over OECD.

Figure 2. Revealed comparative advantage of Denmark by SITC groups

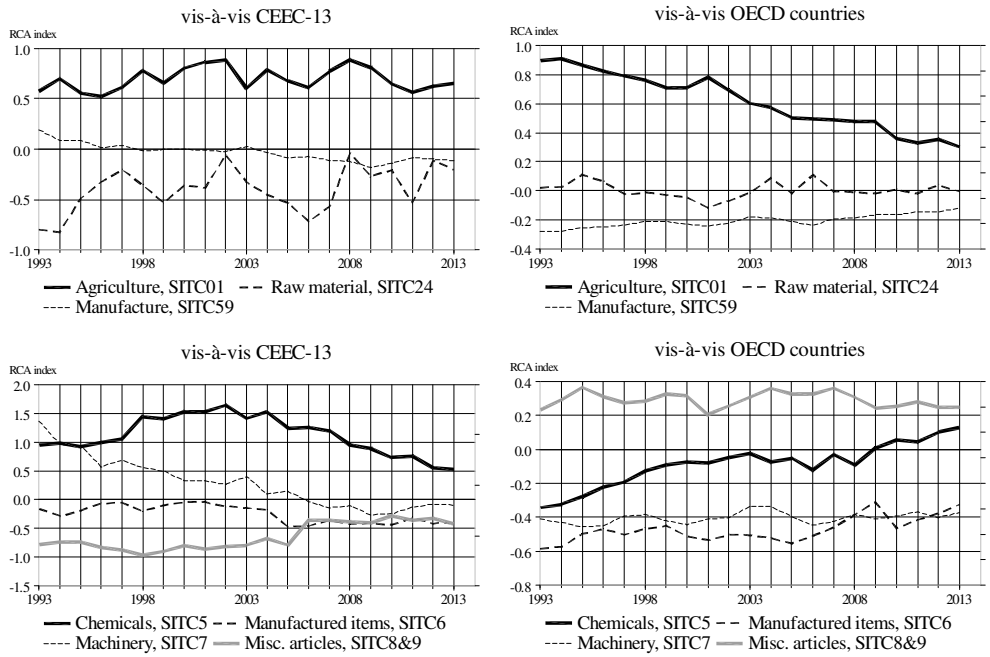


Figure 2 confirms that Denmark has a comparative advantage in agricultural products both in the OECD and CEECs markets. The agricultural industry differs between countries and over products but on average it can be categorized as a low-technological sector. On the other hand, Denmark has a comparative disadvantage in manufactured goods. Manufactured goods are even more diverse and not all of them belong to a high technological sector. A more informative measure of comparative advantage based on technological level is possible if the SITC components are grouped according to technological level, and this is addressed in the following section.

2.3. International Standard Industrial Classification

The OECD uses the International Standard Industrial Classification (ISIC) to group trade into four technological based groups: High-tech, Medium-high-tech, Medium-low-tech and Low-tech (OECD, 2011). This approach can also be employed to the Danish foreign trade. For this purpose OECD's database for International Trade by Commodity Statistics (ITCS) is used. The ITCS data for SITC-rev 3 is converted into ISIC data based on a correspondence table from Eurostat,[5] see appendix II.

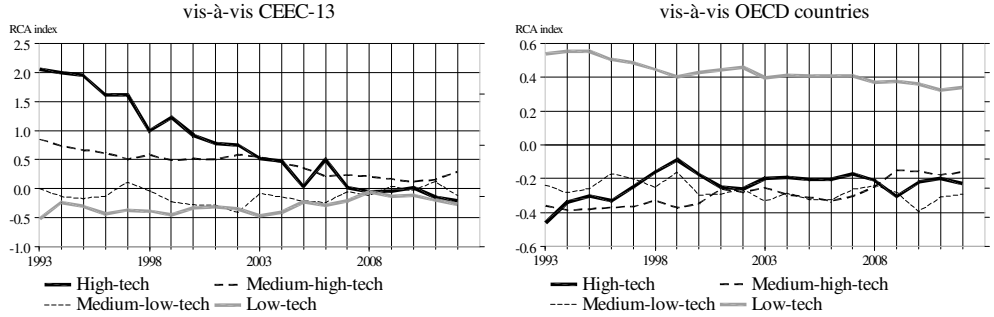
The four tech-based groups constitute about 92% (93%) of total Danish exports (imports) of goods in 1993 and 88% (91%) in 2012. Thus, a distribution of trade on the four groups should give an overall view of total Danish trade in goods as the residual component is small. A good example of residual items is cereals and vegetables, whose share have grown slightly. Exports are largely

[5] http://ec.europa.eu/eurostat/ramon/relations/index.cfm?TargetUrl=LST_LINK&StrNomRelCode=ISIC REV. 3 - SITC REV. 3&StrLanguageCode=EN

dominated by low-tech products (e.g. food and beverages), but the share of low-tech has been declining recently. Medium-high-tech products (e.g. chemicals excluding pharmaceuticals) constitute the second largest component and have been increasing recently. Exports of high-tech products are relatively small. High-tech goods are the most dynamic sector and the limited Danish exports of high-tech goods can affect long term growth. On the other hand, high-tech goods are also the most volatile and lack of dependence in these goods facilitates stability. Imports are dominated by medium-high-tech products followed by low-tech products. Appendix III(a-e) provides a detailed decomposition of trade based on technological level and by partner countries.

According to figure 3 Denmark had a high comparative advantage vis-à-vis the CEECs in high-tech and medium-high-tech goods in the beginning of the 1990s. The intensity of physical and human capital is high in these industries, which should support the Danish comparative advantage vis-à-vis the CEECs. However, in recent periods the Danish comparative advantage in these goods have been reduced significantly and even lost in high-tech goods. In low-tech goods the CEECs still have a minor comparative advantage. In trade with the OECD, Denmark holds a high but slightly declining comparative advantage in low-tech goods and a disadvantage in the remaining groups.

Figure 3. Revealed comparative advantage of Denmark by technology level



2.4. EU trade with CEECs versus trade with Denmark

Geographical proximity is vital for trade between the EU and the CEECs. Three-fourth of EU's trade with CEECs is carried out by EU countries bordering the CEECs: Germany, Australia, Italy, Finland and Greece (Boeri and Brücker, 2000). Germany is Denmark's largest trading partner, and the Danish market share in German imports may be crowded out by the CEECs.

Earlier studies have focused on trade diversion effects of the Eastern enlargement on Southern European countries (Greece, Spain and Portugal) whose factor endowments are more similar to the CEECs, and also the effects on far-away Ireland have been discussed, see for example Gual and Martin (1995) and Brülhart and Kelly (1999). There is a marked difference in factor endowment between Denmark and CEECs, and the possibility of trade diversion cannot be ruled out. It can be shown that the Danish market share is stable in the intra-OECD trade. But when OECD trade with the world constitutes the market, the Danish market share is declining reflecting the

increasing presence of emerging economies in OECD imports, cf. Sisay (2014). Compared to other OECD countries low-tech products (such as agriculture) account for a large share of Danish exports (Andersen, Isaksen and Spange, 2012), and these products are the pillars of CEECs' comparative advantage. Generally the demand for low-tech goods is more sensitive to prices than high-tech goods (Brito, Chami and Souza, 2012).

While trade diversion is possible, the CEECs also create trade for Danish exporters. There is no simple way of quantifying the trade diversion and the trade creation effects. Section two has shown that there has been a significant trade creation. To shed light on trade diversion, figure 4 compares selected OECD countries trade with Denmark and CEEC-13. First, it can be seen that there is little or no change in USA's import from CEECs over the sample covered, which shows the role of geographical proximity. Second, the group of EU countries has seen a steady growth in their imports from the CEECs. In contrast, the EU-countries' import from Denmark have been declining. In particular German imports from Denmark have been falling over the sample period covered, with the exception of raw materials. A similar trend is observed for Sweden, which is the second largest Danish trading partner.

Figure 4. Selected OECD countries' import from CEEC-13 and Denmark

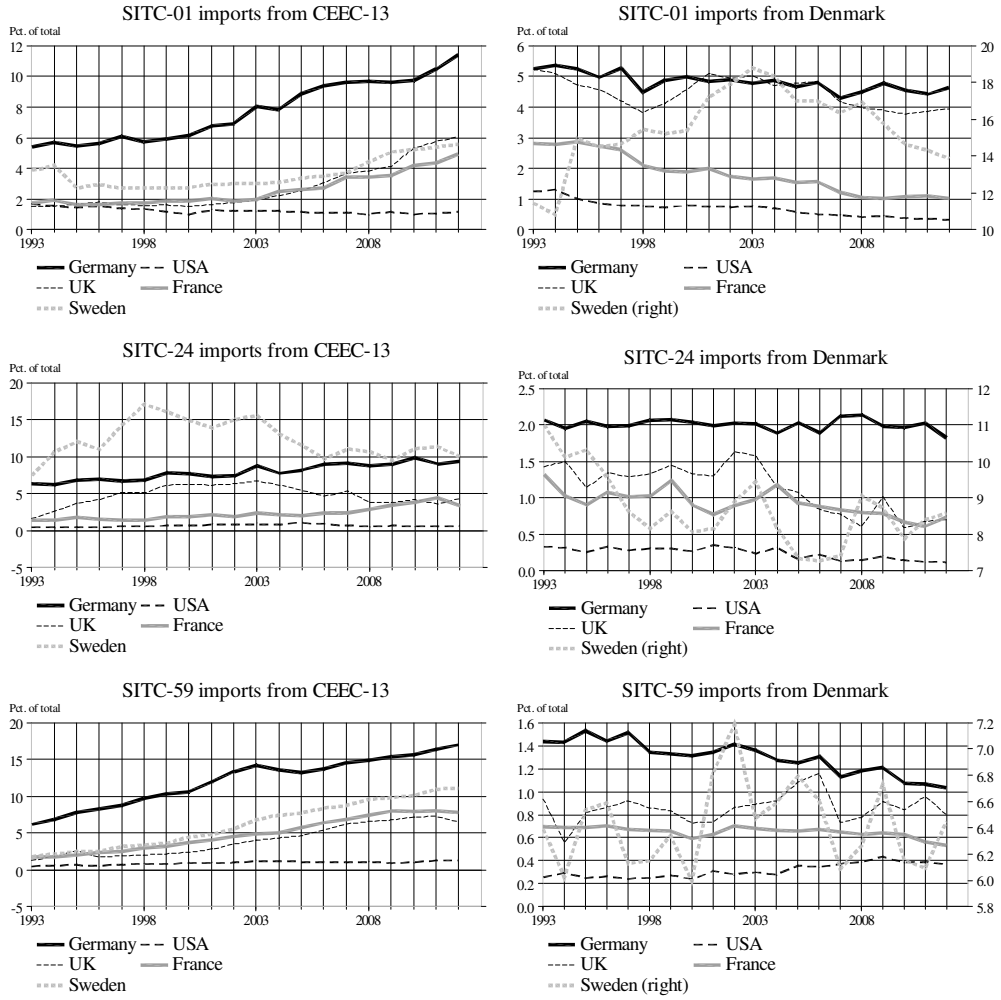


Figure 4 provides useful information on the patterns of trade in selected countries, but it does not establish a relation between the falling Danish exports and rising CEECs exports to the chosen sample countries. It could be the case that Danish trade is reoriented to new destinations such as USA or China, so that a fall in German import from Denmark may not necessarily indicate an unfortunate loss of Danish share in the German market. For example, other EU countries that were expected to lose market share (e.g. Spain) maintained their market share in the German market but lost market shares in distant markets (ECB, 2005).

In summary, the relatively high content of low-tech goods in Danish exports and the comparative advantage of CEECs in these goods could present a challenge for Danish exports to the EU. To address this issue, measures of trade similarity can be used to establish a relationship between EU countries import from CEECs versus import from Denmark. One of the popular measures of trade similarity is the Finger and Kreinin (1979) index,[6] which is also used in the OECD. For example, a similarity index can be calculated between German imports from Denmark and CEECs. These measures were, however, not found to reveal additional information and are not reported in this paper.

3. CEECs impact on market share measure

The export equations in ADAM are modeled by relating market shares in fixed prices to relative prices. Market shares are defined as the ratio between Danish exports and an index that measures the export market, and relative prices are the ratio between Danish export prices and market prices. Traditionally, both export and export market price indices have been constructed from data for 21 OECD countries constituting the major trading partners, cf. Sisay (2013). The description of trade pattern in section 2 revealed that the share of Danish exports to OECD countries has been falling significantly while the corresponding share of exports to BRIICS and CEECs has been increasing. For example, Danish exports to Poland have become much larger than exports to New Zealand and Canada, and it has become important to update the list of countries included in the export market and market price indices.

The challenge is to get the necessary data for emerging markets, especially trade values split into quantity and prices. Figure 5 demonstrates the

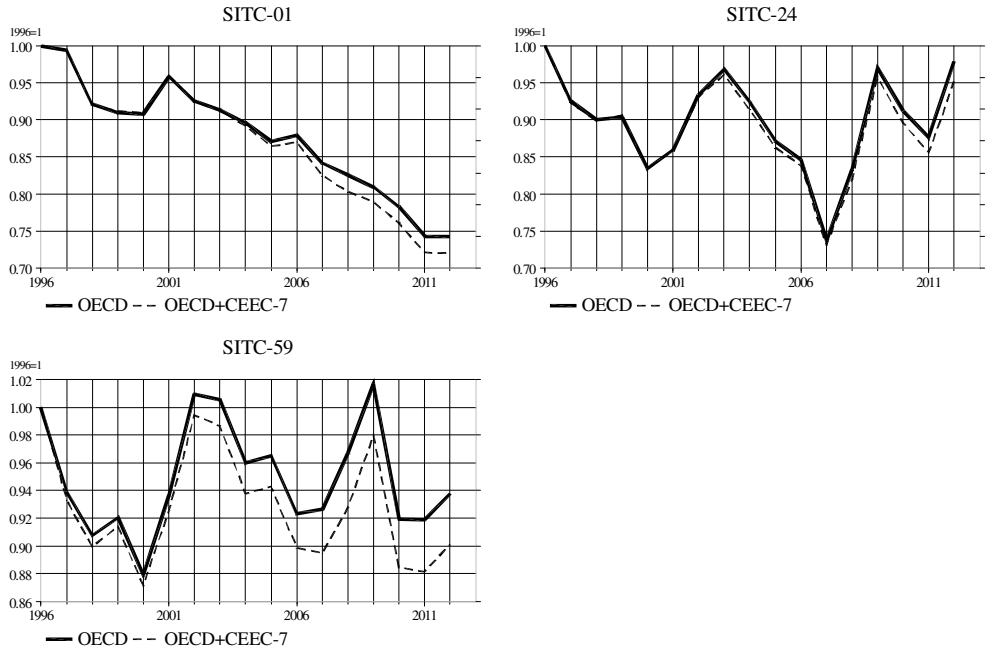
[6]The Finger and Kreinin index of trade similarity for imports of EU countries, say Germany, from Denmark and CEECs can be calculated as follow. Consider n traded goods indexed by *i = 1,…,n.* The FK index *S* of export similarity between German imports from respectively CEECs and Denmark is given as:

$$S = \sum_i \min\left(\left[\frac{M_i^{DNK}}{\sum_i M_i^{DNK}}\right], \left[\frac{M_i^{CEEC}}{\sum_i M_i^{CEEC}}\right]\right)$$

Where M_i^{DNK} is German import from Denmark of commodity *i* and M_i^{CEEC} is German import from CEECs of commodity *i.* The summation is across all relevant categories of imports. By construction S ϵ [0,1], a value of 1 indicates perfect similarity of imports and a value of 0 indicates no similarity of imports.

consequences for market shares of including the CEECs. Due to lack of data, only seven of the CEECs are considered and as the values of trade flows are more reliable than volumes, market share in value is used. It is clear from the figure that the drop in market shares is more pronounced when the CEECs are included in the market. This is because the imports of the CEECs countries have been increasing strongly in recent times even in the wake of the recent financial crisis. The steeper fall in market share can signal an under specialization of Denmark in the new markets. However, market share measures have limitations as indicators of export performance, because the increased outsourcing and internationalization of production have weakened the link between simple market shares and export performance (ECB, 2005).

Figure 5. Market share with and without CEECs



Note:
OECD: Australia, Austria, Belgium- Luxembourg, Canada, Switzerland, Germany, Spain, Finland, France, Great Britain, Greek, Ireland, Iceland, Italy, Japan, Netherland, Norway, New Zealand, Portugal, Sweden and United States.
CEEC-7: CEEC-5, Slovakia and Turkey

4. Gravity equation

Since its introduction by Tinbergen (1962), the gravity equation has been widely used to explain bilateral trade. Its parsimony and empirical robustness have made it one of the most used model in international trade, and its theoretical foundation has been developed, see e.g. Anderson (1979), Bergstrand (1990) and Anderson and van Wincoop (2001).

The gravity equation has been used by several to explain trade between EU countries and CEECs, cf. Boeri and Brücker (2000), Brülhart and Kelly (1999), Kristensen and Jensen (2001) and De Benedictis, De Santis and Vicarelli (2005). More specifically, the model is used to compare the potential trade

volume (predicted bilateral trade based on the gravity equation) with actual trade between the EU and CEECs.

This section follows suit and presents a measure of potential Danish-CEECs trade to be compared to actual trade. GDP and per capita income in the CEECs are still below the EU average, but there has been a considerable catching up bringing income in the CEECs closer to the EU average. The catching up in trade is even stronger, and it will not be long before the Danish-CEECs trade catches up with the Danish-EU trade.

The measure for potential trade between Denmark and CEECs is based on a gravity equation for trade between Denmark and EU15[7]. Parameter estimates based on this equation, i.e. with EU15 as reference group, are used to estimate potential Danish-CEEC trade, which can be compared with actual trade.

The gravity equation for the reference group EU15 is estimated as formulated in Tinbergen (1962). The equation takes the form:

$$\log(E_{ij}) = \alpha + \beta_1 \cdot \log(\mathrm{GDP}_i) + \beta_2 \cdot \log(\mathrm{GDP}_j) + \beta_3 \cdot \log(\mathrm{DIST}_{ij}) + \sum_k \gamma_k \cdot D_k + \epsilon_{ij} \quad (3)$$

Where
- E_{ij} value of exports from *i* to *j*
- GDP_i GDP of country *i*
- GDP_j GDP of country *j*[8] which is here a country group
- $DIST_{ij}$ Distance between country *i* and *j*[9]
- D_k list of control dummies and variables
- ϵ_{ij} error term

GDP is used as a proxy for the size of supply and demand in the home and partner countries, respectively, and the coefficients are expected to have a positive sign. The coefficient for distance is expected to be negative. Various studies include per capita incomes as a measure for factor endowments, but it is not included here, because the coefficient for per capita income depends on the country group chosen. For instance, a positive coefficient is normally expected for the per capita income of exporting and importing country in case of capital-intensive goods, and a negative coefficient is expected for labor-intensive goods, cf. Boeri and Brücker (2000). In preliminary estimations of gravity models for respectively Danish-CEECs trade and Danish-EU15 trade we have found significantly different coefficients for per capita income variables for the same commodity. Consequently, it was decided to drop the per capita income variables.

[7]EU15 countries are Austria, Belgium, Luxembourg, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden and United Kingdom.
[8]Data for partner countries GDP is obtained from the IMF economic outlook.
[9]Distance measures between capital cities are taken from Jon Haveman's website: http://www.macalester.edu/research/economics/PAGE/HAVEMAN/Trade.Resources/Data/Gravity/dist.txt

Control dummies for common border and language and measures for remoteness have been tested, but they did not seem to contribute significantly to the basic equation based on income and distance variables. Besides, the controls have a tendency to inflate the income elasticity estimates and consequently the potential trade estimates. It was, thus, decided to do without them. The gravity equation for Danish-EU15 trade is supposed to produce a trade flow that reflects the trade pattern between the old EU-members, and it is not that surprising if the role of control variables is limited.

Table 3 presents the results of the estimated relation for the reference group (Denmark-EU15 trade). The estimation sample covers 1980 to 2013. All variables are statistically significant and have the appropriate sign and magnitude.

Table 3. Estimation result based on the reference group: Exports as dependent variable

Variable	Coeff.	Pooled OLS
$\log(E_{ij})$		
$\log(GDP_i)$	β_1	0.792
		[0.061]
$\log(GDP_j)$	β_2	0.462
		[0.020]
$\log(DIST_{ij})$	β_3	-1.042
		[0.051]
Const	α	14.166
		[0.536]

Using the parameter estimates from table 3, a measure of potential trade for Danish exports to CEECs is calculated. Estimates of potential imports from CEECs are calculated by re-estimating equation (3) with imports of *i* from *j* as the dependent variable, the result is shown in appendix IV. Because of the sensitivity of the income elasticity estimates, one should not emphasize on the calculated level of potential trade. Instead, the focus will be on the convergence between the actual and potential trade levels as this convergence is less sensitive to the income elasticities. Figure 6 compares actual and potential trade between Denmark and the CEEC-13, similar figures for German-CEECs trade and Swedish-CEECs trade are also reported for comparison purposes. A measure of potential Danish trade with each of the CEECs is reported in appendix V. The potential trade estimates for Germany and Sweden are calculated following the same principle, i.e. by fitting gravity equations for each country's trade with EU15.

Figure 6 shows that actual Danish imports from CEEC-13 have been closing in on the potential level since the mid-nineties. The convergence in exports to CEEC-13 has been considerably slower for Danish exports. Since the mid-2000s actual and potential exports have been growing pari passu and the actual exports to CEEC-13 are presently around 50 percent of the potential value. There is no indication that the trade between Denmark and the CEECs has surpassed the potential level, with the exception of imports from smaller CEEC nations, see appendix. On the other hand, German-CEECs trade is above potential levels. Swedish-CEECs trade is at potential levels for imports and about 20 percent below potential levels for exports, which is larger than the

estimates for Denmark. As in the case of Denmark, both German and Swedish exports to CEECs have not been growing for most of the second half of the sample. It shows that the slowdown in export growth is not unique to Denmark.

Figure 6. Ratio of actual over potential value of exports and imports: SITC-09

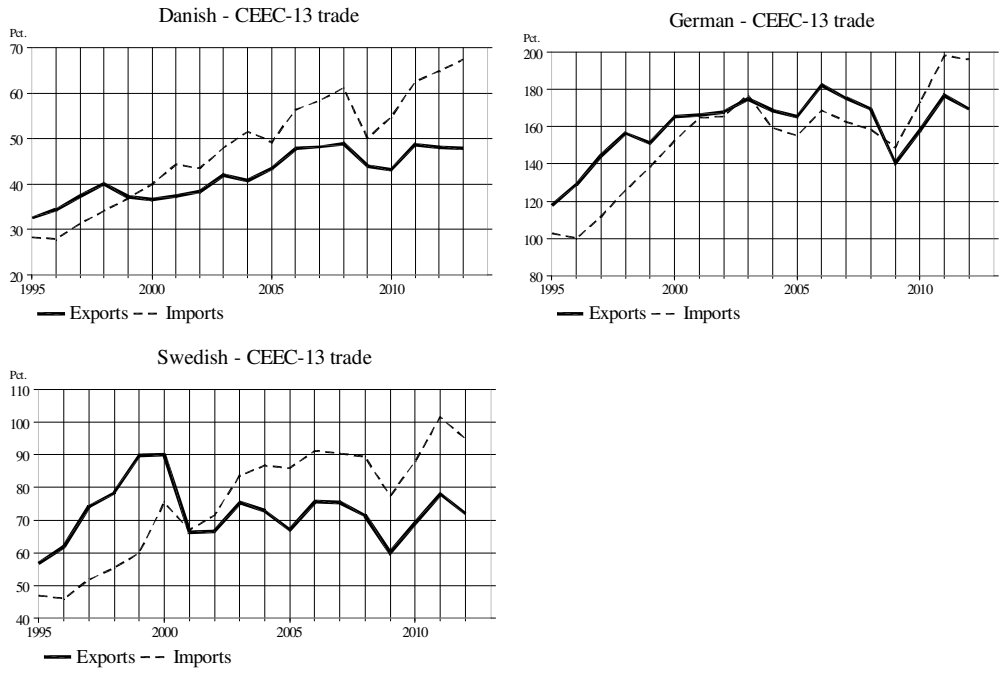
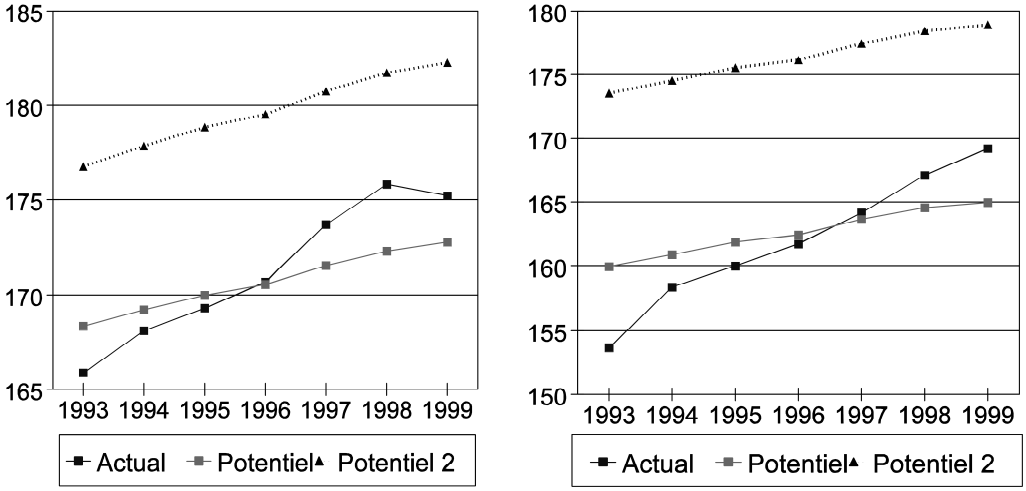


Figure 7. Actual and potential value of Danish-CEEC-13 trade, Danish exports (left) and Danish imports (right) in log: SITC-09



Source: Kristensen and Jensen (2001).
Note: the series 'potentiel' is the fitted value from a gravity equation for Danish-CEEC-13 trade, and the series 'potentiel2' is based on a gravity equation for Danish-EU15 trade, which is the one that should be used for comparison with figure 6.

Figure 7 reprints the potential trade estimates from Kristensen and Jensen (2001). The figure reports absolute level of trade in log-scale, hence one should not make a direct comparison with figure 6. Nevertheless, it can be seen that the estimated gap between the potential trade (potentiel2) and the actual trade is smaller in Kristensen and Jensen (2001). There is no indication that the

actual trade between Denmark and CEECs is at a level between Denmark and EU15.

5. Summary and conclusion

The paper has presented the trade impacts of the Eastern enlargement in the case of Denmark. There is an increasing reorientation of Danish trade, especially imports, towards the CEECs accompanied by a decline in trade with industrialized nations. Among the CEECs, Danish trade with Poland and Czech-republic is very significant accounting for approximately 50% of total Danish trade with CEECs. Danish trade balance vis-à-vis the world is characterized by surplus. However, the trade with CEECs is dominated by annual deficits, especially after the financial crisis. The deficit indicates that the CEECs have been able to strengthen their export and marketing policies leading to a growing CEECs export to Denmark without a similar tendency for Danish exports to CEECs.

A breakdown of trade by SITC shows that Danish exports/imports to/from the CEECs used to be dominated by manufactured goods. However, in recent years, Danish exports of agricultures and raw materials have been equally important, which seems to contradict the common conjecture that the incumbent EU members export capital-intensive goods and import labor-intensive goods. A measure of revealed comparative advantage also indicates that Denmark has a high comparative advantage in agricultural products in relation to trade with CEECs, whereas the Danish comparative advantage in manufactures has been recently reversed to a disadvantage. The CEECs general advantage in manufactures may not be surprising considering the many multinational corporations that are producing in the CEECs because of the low costs. A decomposition of manufactured products shows that Denmark does retain a high comparative advantage in chemicals and pharmaceuticals vis-à-vis the CEECs.

A breakdown of trade by technological level using the ISIC nomenclature supports the conclusion from the trade breakdown by SITC. Denmark has a comparative advantage in medium-high-tech products (e.g. chemicals) but its advantage in high-tech products is declining vis-à-vis the CEECs. Moreover, the CEECs have had a high comparative advantage in low-tech products, but in recent years Denmark has been gaining advantage in low-tech products. High-tech products are related to the most dynamic industries and the lack of specialization in high-tech might have negative consequence for future market shares. However, there is also a benefit from depending on medium-tech products, whose demand is less volatile.

Denmark's largest trading partner Germany has also experienced a significant increase in imports from CEEC and in the same period, the Danish share in German imports has been falling. In general, the Danish market share in the imports of OECD countries including the CEECs has a more negative trend than the Danish market share in the imports of OECD countries alone. This may indicate that Danish trade has been hit by a negative diversion effect of the EU enlargement, but it is not a clear-cut conclusion. A more affirming

conclusion seems to come from the gravity analysis, which indicates that actual trade between Denmark and CEECs is below potential levels especially when it comes to Danish exports to CEECs. The gap between actual and potential exports to CEECs is approximately 50 percent and not decreasing, while CEECs' exports to Denmark are converging to the potential level rapidly.

This relatively weak position of Danish exports vis-à-vis the CEECs demonstrates the under-specialization of Denmark in the CEECs market. The limited market penetration in the rapidly growing CEECs may present a problem in the future.

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Appendix

Appendix I-a: Danish SITC-09 exports to CEECs, percent of total

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Poland	1,27	1,47	1,36	1,63	1,76	1,93	1,71	1,61	1,61	1,58	1,55	1,59	2,15	2,15	2,47	2,67	2,75	2,66	2,78	2,62	2,67
Hungary	0,23	0,28	0,24	0,22	0,23	0,30	0,27	0,27	0,35	0,41	0,43	0,51	0,55	0,54	0,56	0,62	0,56	0,55	0,52	0,54	0,55
Czech R.	0,30	0,36	0,40	0,39	0,34	0,39	0,36	0,37	0,40	0,42	0,46	0,48	0,73	0,95	1,01	0,83	0,87	0,90	0,94	0,97	0,88
Estonia	0,09	0,10	0,12	0,18	0,20	0,23	0,19	0,24	0,25	0,26	0,25	0,23	0,25	0,33	0,34	0,32	0,29	0,23	0,23	0,26	0,24
Slovenia	0,08	0,08	0,09	0,08	0,10	0,11	0,11	0,10	0,09	0,09	0,10	0,11	0,10	0,12	0,10	0,11	0,11	0,09	0,08	0,08	0,08
Bulgaria	0,08	0,07	0,09	0,06	0,07	0,10	0,08	0,09	0,11	0,12	0,12	0,12	0,13	0,12	0,14	0,17	0,24	0,11	0,09	0,10	0,10
Latvia	0,07	0,10	0,12	0,17	0,19	0,26	0,22	0,21	0,25	0,25	0,23	0,24	0,33	0,32	0,40	0,32	0,23	0,24	0,26	0,30	0,29
Lithuania	0,08	0,16	0,25	0,30	0,46	0,49	0,47	0,39	0,44	0,46	0,43	0,37	0,35	0,54	0,61	0,51	0,36	0,34	0,47	0,44	0,46
Slovakia	0,07	0,09	0,09	0,10	0,09	0,12	0,10	0,11	0,12	0,12	0,16	0,16	0,16	0,20	0,23	0,31	0,30	0,29	0,32	0,29	0,25
Romania	0,08	0,08	0,11	0,10	0,09	0,12	0,11	0,09	0,10	0,13	0,16	0,15	0,18	0,23	0,30	0,33	0,38	0,32	0,35	0,45	0,42
Malta	0,12	0,13	0,05	0,06	0,09	0,04	0,05	0,05	0,05	0,05	0,04	0,05	0,04	0,05	0,08	0,17	0,13	0,05	0,05	0,04	0,07
Cyprus	0,10	0,08	0,06	0,07	0,09	0,18	0,14	0,12	0,08	0,07	0,10	0,07	0,06	0,18	0,10	0,09	0,09	0,08	0,13	0,10	0,07
Turkey	0,36	0,22	0,35	0,32	0,35	0,40	0,38	0,36	0,31	0,43	0,46	0,42	0,45	0,42	0,57	0,71	0,56	0,67	0,62	0,65	0,75
CEEC5	1,97	2,30	2,20	2,51	2,64	2,96	2,64	2,59	2,69	2,76	2,79	2,92	3,78	4,08	4,49	4,53	4,58	4,43	4,56	4,48	4,43
CEEC10	2,35	2,80	2,85	3,24	3,53	4,05	3,62	3,48	3,72	3,84	3,89	3,95	4,92	5,49	6,18	6,17	6,10	5,73	6,05	6,06	5,95
CEEC13	2,93	3,22	3,31	3,69	4,06	4,68	4,19	4,01	4,16	4,38	4,50	4,49	5,48	6,14	6,92	7,14	6,87	6,53	6,85	6,85	6,84

Source: Statistics Denmark, StatBank

Appendix I-b: Danish SITC-09 imports from CEECs, percent of total

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Poland	1,51	1,70	1,61	1,57	1,70	1,70	1,79	1,83	2,07	1,92	1,80	1,91	2,05	2,39	2,53	2,82	2,66	3,07	3,26	3,29	3,43
Hungary	0,14	0,14	0,14	0,16	0,19	0,24	0,24	0,26	0,31	0,33	0,52	0,63	0,54	0,49	0,79	0,75	0,66	0,71	0,71	0,78	0,78
Czech R.	0,22	0,29	0,28	0,30	0,31	0,35	0,37	0,35	0,41	0,42	0,46	0,53	0,75	0,90	0,96	0,96	1,04	1,13	1,15	1,22	1,32
Estonia	0,10	0,11	0,16	0,19	0,20	0,26	0,29	0,36	0,40	0,37	0,33	0,31	0,32	0,37	0,36	0,36	0,35	0,35	0,41	0,39	0,42
Slovenia	0,09	0,09	0,10	0,10	0,12	0,16	0,18	0,18	0,19	0,19	0,22	0,24	0,25	0,28	0,29	0,25	0,23	0,24	0,27	0,28	0,25
Bulgaria	0,05	0,06	0,05	0,04	0,05	0,06	0,07	0,06	0,07	0,05	0,05	0,05	0,06	0,05	0,03	0,04	0,04	0,08	0,12	0,11	0,12
Latvia	0,28	0,13	0,13	0,19	0,22	0,25	0,32	0,33	0,42	0,37	0,41	0,33	0,37	0,38	0,34	0,45	0,45	0,45	0,59	0,62	0,67
Lithuania	0,15	0,21	0,22	0,26	0,28	0,35	0,45	0,50	0,52	0,53	0,54	0,50	0,47	0,46	0,50	0,75	0,65	0,69	0,62	0,64	0,59
Slovakia	0,04	0,06	0,07	0,08	0,05	0,05	0,08	0,11	0,16	0,16	0,20	0,24	0,26	0,35	0,50	0,60	0,52	0,41	0,46	0,41	0,43
Romania	0,03	0,03	0,03	0,04	0,04	0,05	0,04	0,07	0,08	0,06	0,06	0,06	0,07	0,08	0,06	0,09	0,12	0,16	0,19	0,23	0,25
Malta	0,01	0,01	0,01	0,00	0,01	0,01	0,02	0,00	0,01	0,00	0,01	0,01	0,01	0,01	0,01	0,02	0,03	0,01	0,02	0,08	0,06
Cyprus	0,01	0,01	0,01	0,01	0,01	0,01	0,02	0,01	0,01	0,01	0,01	0,01	0,02	0,02	0,02	0,03	0,02	0,03	0,04	0,03	0,03
Turkey	0,23	0,30	0,30	0,33	0,39	0,45	0,49	0,50	0,61	0,77	0,79	0,85	1,00	0,97	1,03	0,96	0,90	0,91	0,96	1,02	0,96
CEEC5	2,05	2,34	2,28	2,32	2,51	2,72	2,86	2,97	3,38	3,24	3,34	3,62	3,90	4,43	4,92	5,14	4,94	5,50	5,81	5,97	6,21
CEEC10	2,59	2,82	2,79	2,93	3,16	3,47	3,83	4,04	4,64	4,41	4,59	4,81	5,12	5,76	6,35	7,08	6,72	7,28	7,80	7,98	8,27
CEEC13	2,83	3,13	3,10	3,27	3,57	3,93	4,36	4,55	5,26	5,20	5,40	5,69	6,15	6,76	7,41	8,08	7,67	8,23	8,81	9,12	9,32

Source: Statistics Denmark, StatBank

Appendix I-c: Danish trade balance vis-à-vis CEECs, SITC-09, million kroner

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Poland	313	337	7	1064	1107	1377	778	366	-417	-99	360	-278	2076	-50	393	356	2343	416	428	-952	-1719
Hungary	319	507	378	293	256	269	250	244	461	634	-7	-178	447	567	-1065	-462	-2	-233	-448	-736	-779
Czech Rep.	371	397	492	473	270	278	195	330	268	319	413	151	488	783	583	-342	-141	-316	-110	-391	-1598
Estonia	31	39	-25	69	105	-15	-196	-248	-345	-233	-81	-178	-121	-9	19	-133	-73	-393	-730	-443	-788
Slovenia	29	5	12	-10	-11	-125	-151	-234	-335	-315	-449	-529	-599	-811	-950	-749	-466	-624	-927	-1016	-903
Bulgaria	114	72	140	71	83	188	94	165	275	352	392	413	417	415	653	761	1071	258	-40	13	-24
Latvia	-377	-1	23	42	-10	129	-187	-301	-463	-254	-549	-232	98	-95	449	-620	-788	-818	-1495	-1434	-1880
Lithuania	-92	-20	187	287	773	626	323	-125	91	82	-61	-335	-262	687	784	-1102	-1034	-1368	-322	-619	-268
Slovakia	116	128	102	113	173	251	121	91	-72	-90	-39	-271	-370	-669	-1370	-1521	-766	-318	-444	-370	-721
Romania	160	164	267	238	183	278	274	142	150	398	586	535	619	909	1400	1534	1449	1077	1232	1638	1370
Malta	295	358	125	170	293	141	132	181	198	219	197	238	198	236	387	919	536	223	232	-174	95
Cyprus	259	210	169	201	310	594	483	511	340	271	497	324	242	919	466	425	341	330	610	472	259
Turkey	493	-60	319	164	46	7	-145	-274	-869	-1012	-984	-1701	-2171	-2641	-2329	-1045	-1115	-562	-1148	-1416	-456
CEEC5	1063	1283	863	1889	1728	1783	875	458	-368	306	237	-1013	2291	480	-1020	-1330	1662	-1150	-1786	-3538	-5788
CEEC10	983	1626	1582	2640	2930	3256	1501	430	-387	794	567	-903	2792	1726	896	-2279	1593	-2319	-2855	-4309	-7311
CEEC13	2030	2135	2194	3174	3578	3998	1972	848	-718	272	277	-2042	1061	240	-580	-1979	1355	-2328	-3160	-5427	-7412

Source: Statistics Denmark, StatBank

Appendix II: Technological based classification of ISIC components

Group[#]	ISIC revision-3*
High-technology industries	
Aircraft and spacecraft	353
Pharmaceuticals	2423
Office, accounting and computing machinery	30
Radio, TV and communications equipment	32
Medical, precision and optical instruments	33
Medium-high-technology industries	
Electrical machinery and apparatus, n.e.c.	31
Motor vehicles, trailers and semi-trailers	34
Chemicals excluding pharmaceuticals	24 excl. 2423
Railroad equipment and transport equipment, n.e.c.	352 + 359
Machinery and equipment, n.e.c.	29
Medium-low-technology industries	
Building and repairing of ships and boats	351
Rubber and plastics products	25
Coke, refined petroleum products and nuclear fuel	23
Other non-metallic mineral products	26
Basic metals and fabricated metal products	27-28
Low-technology industries	
Manufacturing, n.e.c.; Recycling	36-37
Wood, pulp, paper, paper products, printing	20-22
Food products, beverages and tobacco	15-16
Textiles, textile products, leather and footwear	17-19
Total manufacturing	15-37

*For ISIC rev-3 to SITC rev-3 correspondence table see: http://ec.europa.eu/eurostat/ramon/relations/index.cfm?TargetUrl=LST_LINK&StrNomRelCode=ISIC REV. 3 - SITC REV. 3&StrLanguageCode=EN

[#]Classification is based on data for 12 OECD countries: United States, Canada, Japan, Denmark, Finland, France, Germany, Ireland, Italy, Spain, Sweden, United Kingdom.

Appendix III-a: Danish exports and imports by technology level, percent of total goods

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Exports																						
High-tech	14,3	14,0	13,8	13,7	15,3	15,5	16,2	17,4	18,6	20,1	20,6	20,5	22,0	20,6	20,7	21,4	20,1	18,0	16,3	18,4	16,4	15,8	16,4
Medium-high-tech	24,1	23,3	24,0	23,8	23,3	24,5	24,5	24,3	25,0	24,9	24,2	25,8	25,6	26,6	26,1	25,7	25,6	27,9	28,9	27,9	28,6	28,5	29,3
Medium-low-tech	13,5	13,2	13,7	13,6	13,5	13,8	12,9	12,6	12,4	12,2	11,3	10,9	10,5	10,4	10,9	11,1	11,8	13,4	14,5	12,8	12,0	13,6	11,6
Low-tech	39,3	40,6	40,3	40,9	39,7	38,6	37,6	37,3	36,4	35,3	33,1	33,4	32,3	32,6	31,7	30,4	30,2	30,2	29,3	30,7	31,2	30,0	30,1
The rest*	8,8	9,0	8,2	8,1	8,1	7,7	8,7	8,4	7,6	7,6	10,8	9,3	9,7	9,9	10,5	11,4	12,3	10,5	11,1	10,2	11,8	12,2	12,5
	Imports																						
High-tech	16,1	17,1	16,3	17,0	17,4	17,3	18,8	18,5	18,4	20,0	20,3	21,3	24,0	20,7	21,3	23,2	21,0	17,2	15,5	18,3	18,0	17,1	17,9
Medium-high-tech	29,5	28,4	29,4	28,9	29,5	30,6	30,7	30,5	30,9	30,9	29,6	29,5	29,6	29,4	29,7	30,1	31,2	32,8	32,0	28,7	28,5	29,4	29,3
Medium-low-tech	18,7	18,1	17,5	17,4	17,5	17,8	15,3	15,5	15,9	14,1	16,5	15,3	14,0	15,8	16,4	15,6	16,7	18,7	20,2	18,7	17,7	17,3	16,1
Low-tech	27,2	27,8	28,5	29,4	28,2	27,1	27,5	27,8	28,2	28,8	26,8	27,1	26,0	27,3	25,9	25,3	25,4	25,8	25,5	27,3	28,4	28,2	28,1
The rest*	8,4	8,6	8,3	7,3	7,4	7,2	7,6	7,7	6,6	6,1	6,8	6,8	6,5	6,8	6,7	5,8	5,6	5,6	6,7	7,0	7,4	7,9	8,6

Source: OECD ITCS-database, conversion to ISIC made by the author
*Goods not classified elsewhere.

Appendix III-b: Danish High-tech exports and imports by partner groups, in percent

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Exports																						
OECD	72,8	73,1	72,6	67,7	68,2	68,4	69,0	67,9	69,2	80,0	71,3	69,3	70,9	68,0	68,3	64,8	65,9	63,3	62,0	60,0	73,5	73,0	70,5
BRIICS	1,2	1,8	1,6	1,9	2,1	1,9	2,0	2,2	2,3	2,0	3,0	2,8	1,9	2,5	2,7	2,5	3,5	3,5	4,4	4,6	6,5	7,6	7,7
CEEC-13	1,7	1,4	1,9	2,9	2,7	2,8	2,9	3,2	3,2	3,8	2,8	2,9	3,0	3,0	3,0	5,4	5,0	4,7	4,7	4,3	4,9	4,8	4,8
ROW	24,2	23,7	23,9	27,5	27,0	27,0	26,2	26,8	25,3	14,2	22,9	25,0	24,3	26,4	26,0	27,4	25,7	28,6	28,8	31,1	15,1	14,6	17,0
	Imports																						
OECD	91,2	90,5	88,5	88,5	88,2	88,6	88,3	87,9	88,5	91,5	90,4	89,9	90,3	85,6	81,6	73,8	78,8	81,9	82,5	83,9	81,0	80,9	80,8
BRIICS	1,0	1,0	1,3	1,8	2,2	2,1	2,0	2,0	1,9	2,0	2,5	2,4	2,7	3,8	4,6	5,0	5,8	5,3	5,2	5,8	8,4	7,6	7,6
CEEC-13	0,2	0,2	0,2	0,2	0,3	0,3	0,4	0,5	1,0	1,0	1,3	1,6	1,5	2,1	2,5	6,6	3,6	5,8	6,5	5,8	6,2	7,1	7,7
ROW	7,6	8,3	9,9	9,5	9,4	9,0	9,3	9,6	8,6	5,4	5,8	6,0	5,5	8,5	11,4	14,6	11,8	7,0	5,9	4,4	4,5	4,4	3,9

Source: OECD ITCS-database, conversion to ISIC made by the author

Appendix III-c: Danish Medium-high-tech exports and imports by partner groups, in percent

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Exports																						
OECD	75,7	75,2	73,6	73,4	72,4	70,4	70,9	70,8	72,1	75,6	75,2	76,0	74,0	74,2	73,5	73,7	74,0	71,4	71,5	72,1	71,1	71,0	69,1
BRIICS	1,9	1,6	2,4	3,5	4,2	6,0	4,9	4,9	3,8	3,2	3,8	4,2	4,6	5,1	5,9	5,9	5,8	7,2	7,1	7,3	8,4	8,4	8,7
CEEC-13	2,2	3,0	3,0	4,1	3,8	4,1	4,9	5,1	6,0	5,2	4,8	4,9	5,4	5,8	5,6	6,3	6,9	7,8	7,8	6,9	7,1	7,9	8,4
ROW	20,2	20,1	21,0	19,1	19,6	19,5	19,4	19,2	18,1	16,0	16,1	14,9	16,0	14,9	15,0	14,1	13,3	13,6	13,6	13,8	13,4	12,7	13,8
	Imports																						
OECD	90,5	90,8	90,2	88,6	87,9	88,0	87,8	87,3	87,7	92,2	91,2	90,6	90,9	89,5	87,8	86,6	86,5	85,8	84,8	83,4	80,8	80,9	80,8
BRIICS	0,4	0,5	0,6	1,0	1,0	1,2	1,0	1,2	1,3	1,4	1,8	1,7	1,9	2,5	3,1	3,3	3,5	3,9	4,5	5,7	6,5	6,5	6,9
CEEC-13	0,6	0,8	0,9	1,2	1,4	1,5	1,8	2,1	2,3	2,4	2,7	3,2	3,1	3,5	4,3	5,1	5,6	6,3	7,0	7,3	8,9	9,0	8,8
ROW	8,5	8,0	8,3	9,2	9,7	9,3	9,4	9,4	8,8	4,0	4,4	4,5	4,2	4,4	4,9	5,0	4,4	3,9	3,7	3,6	3,8	3,6	3,4

Source: OECD ITCS-database, conversion to ISIC made by the author

Appendix III-d: Danish Medium-low-tech exports and imports by partner groups, in percent

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Exports																						
OECD	80,7	80,3	77,1	83,4	79,4	79,9	79,7	80,7	78,0	82,1	84,7	84,7	81,9	81,6	83,3	80,4	79,2	80,1	76,3	73,5	74,6	70,7	77,5
BRIICS	0,3	0,3	1,1	0,7	0,7	1,3	1,8	1,4	1,2	1,0	1,7	1,3	1,3	1,8	1,9	3,3	1,8	2,7	3,4	3,3	3,7	4,1	3,4
CEEC-13	0,8	5,8	2,4	3,1	3,1	3,2	3,9	4,8	5,7	4,6	4,1	4,2	4,8	6,1	5,8	5,9	6,7	8,7	9,0	9,0	8,6	9,7	9,9
ROW	18,1	13,6	19,4	12,9	16,8	15,6	14,6	13,1	15,1	12,2	9,6	9,9	12,1	10,4	9,0	10,4	12,2	8,5	11,3	14,2	13,1	15,5	9,1
	Imports																						
OECD	87,7	86,3	89,6	84,4	84,8	86,1	85,4	86,3	84,3	86,9	82,1	84,6	85,6	77,7	74,6	78,9	79,2	77,9	71,6	68,2	72,6	74,4	74,0
BRIICS	0,6	1,0	1,5	1,8	2,1	1,8	2,1	2,3	2,4	4,0	4,4	4,8	3,6	5,8	6,4	7,7	8,2	9,7	10,1	8,6	10,4	10,2	9,9
CEEC-13	1,5	1,2	1,5	2,0	2,6	2,8	3,2	3,0	3,9	4,6	4,2	5,0	6,3	5,2	6,1	7,1	7,5	8,0	9,0	7,7	8,4	9,3	11,2
ROW	10,2	11,5	7,4	11,8	10,5	9,4	9,4	8,4	9,5	4,5	9,4	5,6	4,5	11,3	12,9	6,3	5,1	4,4	9,3	15,5	8,6	6,1	4,9

Source: OECD ITCS-database, conversion to ISIC made by the author

Appendix III-e: Danish Low-tech exports and imports by partner groups, in percent

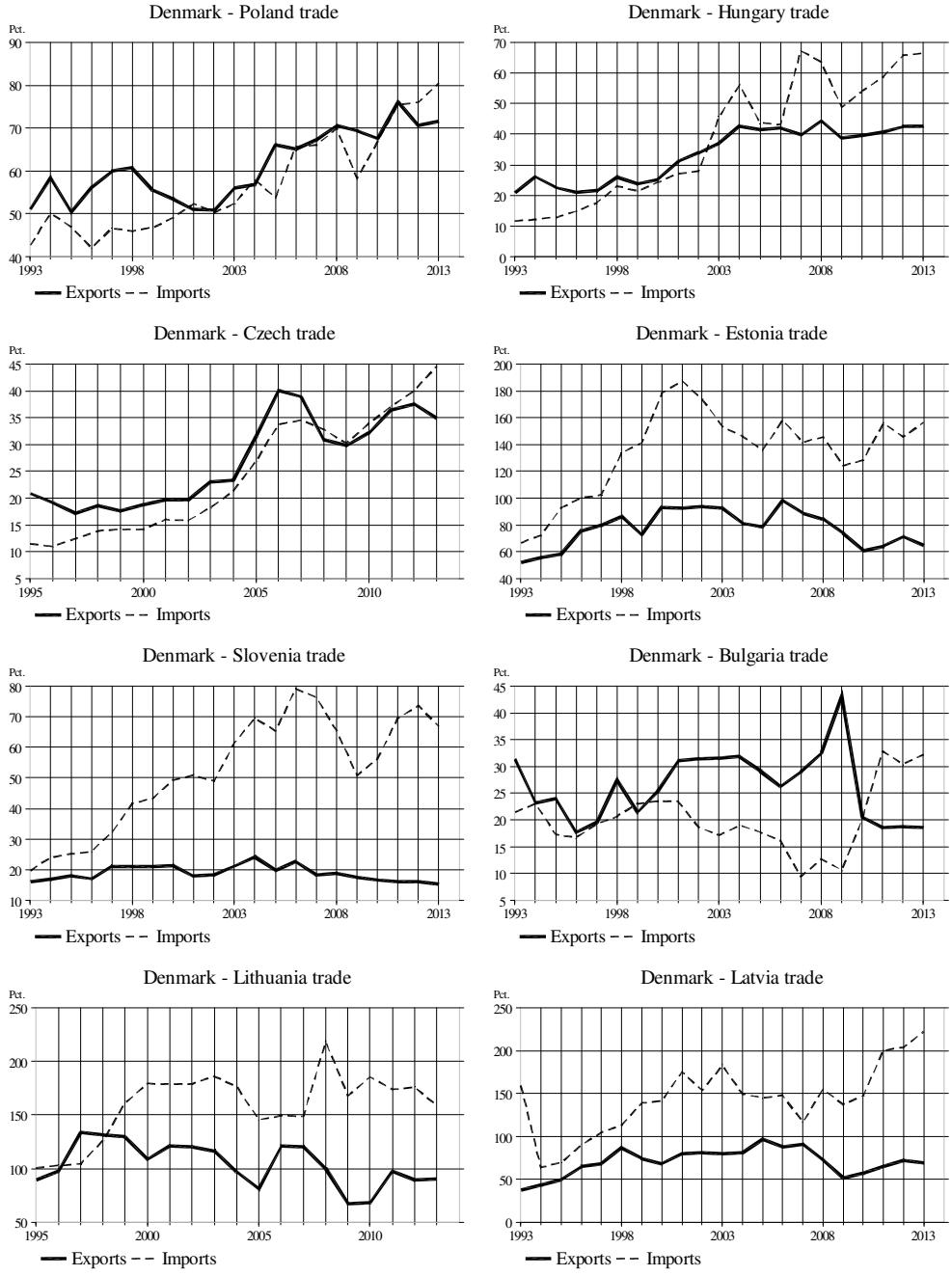
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Exports																						
OECD	87,3	86,8	86,9	85,0	83,2	82,7	81,8	80,0	79,4	84,5	82,3	82,7	82,3	82,7	82,3	81,5	80,7	78,9	77,9	78,5	80,9	80,0	79,7
BRIICS	0,2	0,2	0,5	1,2	2,0	2,7	3,3	4,4	3,3	1,8	2,2	2,5	2,4	2,3	2,3	2,7	3,7	3,9	4,0	3,7	4,1	4,5	4,9
CEEC-13	1,0	1,5	1,6	2,3	3,0	3,0	3,1	3,6	4,3	4,1	4,2	4,2	4,3	4,0	3,8	4,6	5,2	5,9	6,6	6,0	5,8	5,9	5,5
ROW	11,6	11,5	11,0	11,4	11,9	11,6	11,8	11,9	13,1	9,6	11,3	10,6	11,0	11,1	11,5	11,2	10,4	11,3	11,5	11,7	9,2	9,6	10,0
	Imports																						
OECD	72,6	70,8	70,5	70,6	70,5	72,7	72,2	71,0	70,6	72,3	69,6	68,8	69,5	68,8	67,4	65,8	65,0	64,3	63,6	62,1	59,9	60,5	60,7
BRIICS	6,1	7,2	8,3	8,8	8,7	8,1	8,1	9,2	9,1	8,8	10,2	9,8	9,6	10,5	11,3	13,8	13,9	14,6	15,2	15,9	17,3	16,5	16,6
CEEC-13	2,5	3,0	3,7	4,4	5,1	5,4	5,6	6,1	6,8	7,4	8,1	8,9	8,9	9,0	9,5	9,5	10,1	10,2	9,9	10,0	10,0	10,5	10,8
ROW	18,7	19,0	17,5	16,1	15,7	13,8	14,0	13,7	13,5	11,5	12,0	12,5	11,9	11,7	11,7	10,9	11,0	10,9	11,4	12,0	12,7	12,5	11,9

Source: OECD ITCS-database, conversion to ISIC made by the author

Appendix IV. Estimation result for the reference group: Imports as dependent variable

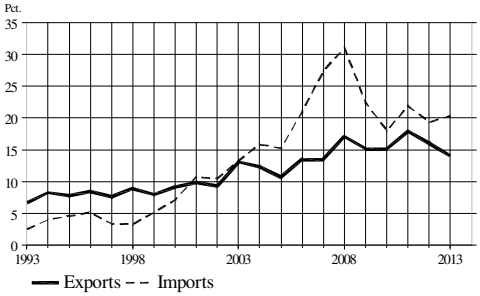
Variable	Coeff.	Pooled OLS
$\log(M_{ij})$		
$\log(GDP_i)$	β_1	0.619
		[0.058]
$\log(GDP_j)$	β_2	0.471
		[0.091]
$\log(DIST_{ij})$	β_3	-1.561
		[0.047]
Const	α	18.745

Appendix V. The ratio of actual over projected value of Danish-CEECs trade: SITC-09

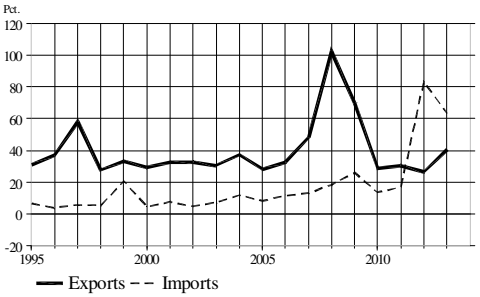


Denmark - Romania trade

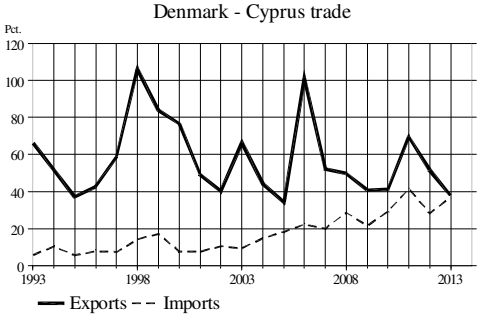
Denmark - Slovakia trade



Denmark - Malta trade



Denmark - Cyprus trade



Denmark - Turkey trade