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The development of Hungarian Foreign Trade with Asia

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INTRODUCTION*

The liberalisation of the Hungarian economy and trade in the 1990's induced a considerable inflow of foreign direct investment and trade with the Western European countries. As a result, before Hungary joined the European Union (EU), it had already been integrated into the European market through its foreign trade. From 2004 onwards, the EU membership brought a new wave of trade intensification with the other new Central European member countries. A hypothesis of this study is that the international crisis, which has been ongoing since 2008, can be another impetus for an increase of Hungarian foreign trade, but this time to non-European areas, such as Asia.

Hungary is a small and open economy depending on foreign capital and exports. This is well illustrated by the fact that the share of Hungarian exports in the GDP was 80 per cent in 2011.[1] As far as geographical distribution, structure and the size of exporting companies are concerned, Hungarian export is concentrated. The share of the European Union in Hungary's exports (imports) was 76 per cent (70%) in 2012.[2] Like other countries, Hungary was seriously hit by the global economic and financial crisis. Partly as a consequence, the search for other, non-EU markets has been intensified by policymakers and firms alike. Asian countries certainly do not have a big share in Hungarian foreign trade but their role is increasing. The role of the Asian region is still more significant (though decreasing) in Hungarian imports (13,7% in 2012) than in exports (6.4%).[3]

Asia is a big continent and is formed by very heterogeneous countries; therefore, it is worth making country groupings. In the present study we formed five groups of Asian countries: West Asia, Southern Asia, the Commonwealth of Independent States (CIS), Southeast Asia and Northeast Asia.[4] We analysed the period between 2000 and 2012 based on Eurostat data.

The first part of the study gives an overview of the main aims and measures of Hungarian trade policy towards Asia. The second part describes the developments and trends of Hungarian exports and imports concerning the Asian countries. In the third part the product structure of trade is analysed in detail. We analyse the concentration of trade and the similar trends, showing the changing structure of trade in time. We also examine the share of high-tech products in trade with the main important partners of each Asian region. Finally we draw conclusions from the analyses and make some recommendations for policymakers.

1) TRADE POLICY TOWARDS ASIA

Hungary's new foreign economic strategy was approved by the government in the spring of 2012. The so-called 'Eastern Opening' is an integral part of this strategy. Hungarian policymakers created this new foreign economic strategy taking Asia's growing economic role into consideration. The government would like to maintain Hungary's strong and important economic relations with Western industrial countries (*e.g.* EU, USA), while simultaneously diversifying Hungary's foreign economic relations and developing Eastern (or Asian) relations. Rapidly growing Asian countries are considered as ones able to provide several business opportunities for Hungary.

Goals, tools and supporting institutions in Hungary's new foreign economic strategy

The new foreign economic strategy was constructed to underpin the objectives of Hungary's national economic policy in the field of economic growth, employment and external balance. In accordance with the

* The study was made in the framework of the Research Project "Trade with Asia" no. 11220101 financed by the International Visegrad Fund.

[1] Based on Eurostat data. For 2012 the estimated share is 78,7 per cent.

[2] Calculation from Eurostat data.

[3] *Ibid.*

[4] We omitted Turkey and Russia for being transcontinental countries and we considered Georgia and Azerbaijan as Asian countries.

national economic policy, the main aims of the Hungarian foreign economic strategy are the following: (1) doubling Hungary's exports, (2) developing the exports of Hungarian Small and Medium Enterprises (SMEs), (3) doubling inward FDI flows to Hungary, (4) doubling outward FDI flows to neighbouring countries within a decade.[5]

Regarding the plans of export development, the foreign economic strategy puts forward an active state intervention to diversify Hungary's export markets and structure, and also to develop the export capability of domestic small companies. The share of Hungarian SMEs in total exports is only 11 per cent.[6] Approximately 80 per cent of the Hungarian exports are related to foreign companies.[7]

Efforts for diversification can reduce the vulnerabilities stemming from the huge concentration of Hungary's trade relations, at least to some extent. The foreign economic strategy marks out three directions of *geographical diversification* of export: (1) 'Eastern Opening;' (2) becoming suppliers to big European exporters; and (3) economic cooperation in the Carpathian Basin. Concerning our research, the first and second direction should be explained in detail. The Hungarian policymakers would like to have Hungarian companies benefit from the rapid growth of Asian markets directly or indirectly. The foreign economic strategy puts emphasis on developing trade (and technology) relations with China, India, Russia, South Korea, Turkey, ASEAN member states, Arab countries and CIS. Developing indirect exports to Asian (or other emerging) markets means that Hungarian companies should become suppliers of big European (*e.g.* German, Austrian and Scandinavian) exporters with a strong position in emerging markets.

Besides the geographical diversification, some *changes in the export structure* would also be desirable. The New Széchenyi Plan (the general Hungarian economic development programme of the Hungarian government) focuses on the following key sectors, which are simultaneously the main target sectors of state export development: health care/pharmaceutical sector, agriculture/food sector, automotive sector, electronics sector, creative/innovative sector, green sector and services.

The state export promotion programmes mainly concentrate on increasing the international activity of Hungarian SMEs and strengthening their export and supplier capability. The latter is strongly related to the goal of FDI attraction. The Hungarian policymakers would like to develop relations with foreign companies located in Hungary and attract new investors. The government has already started to sign 'strategic cooperation declarations'[8] with 40 transnational companies to reinvest their earnings in Hungary, develop R&D activities, increase their participation in vocational trainings and strengthen supplier relations with Hungarian SMEs. In addition, the efforts to attract new export-oriented FDIs can positively support the goal of export development. (We cannot overlook the fact that the doubling of Hungary's exports can be primarily expected from the activities of foreign companies which account for 80% of total Hungarian exports.)

After presenting the main goals, it is essential to deal with the tools and supporting institutions of Hungarian foreign economic strategy. Out of the different tools and tasks of supporting institutions, those that are related to the export development and the concept of the 'Eastern Opening' will be emphasised. The state export development is targeted to increase Hungarian SMEs' export capability by: (1) Creating a so-called *ex-*

[5] Less optimistic or pessimistic aims reckon with only a 50 per cent increase.

[6] Hungarian (big, medium-sized and small) companies' share in total exports is only 17 per cent.

[7] The top ten exporting companies account for approximately 40 per cent of exports (NGM, 2011).

[8] As mentioned before, the Hungarian economy strongly depends on foreign investors. In the international competition for foreign investments, Hungarian policymakers are looking for transnational allies. With the signing of strategic cooperation declarations, the Hungarian government would like to establish long-term relations with transnational companies of different national origins and with high value-added economic activities. Twenty strategic cooperation declarations (with Stadler Trains, Magyar Suzuki, Coca-Cola, Alcoa-Köfém, Richter Gedeon, Tesco, Daimler, Hankook Tire, GE Hungary, Microsoft, IBM Magyarország, Tata Consultancy Services, Jabil Circuit, Nokia Siemens Network, National Instruments, Audi Hungaria Motor, Continental, Dalkia Energia, Lego and Huawei Technologies) have been signed so far. Predecting the potential results of these declarations is not easy because they are not legally binding.

port academy that will provide trainings in foreign trade for SMEs;[9] (2) creating a programme of *'exports return home'* which will make a survey on SMEs'goods/services with export quality, and provide a network of advisers in foreign trade; (3) creating an *export directory* which will contain the database of Hungarian exporters and available state export incentives;[10] and (4) supporting cooperation among SMEs in the form of *cluster or consortium* etc.[11]

To enhance SMEs'entry into emerging (Asian) markets, the opening of state-owned *trading houses*[12] is also planned. At the beginning of 2013, the state-owned National Trading House cPlc. was established which is going to open trading houses in China, Saudi Arabia, Russia and Kazakhstan this year. Trading houses will help Hungarian SMEs to sell their products abroad. In addition, the policymakers will also take possible cooperation with private trading houses into consideration.[13]

The foreign economic strategy also recommends the development of economic diplomacy, e.g. the network of *attachés for foreign economic relations* and a more aligned cooperation among export financing state banks (EXIM, MEHIB), the Ministry of National Economy and the Hungarian Trade and Investment Agency (HITA).[14] Beside these institutions, we should pay attention to the growing importance of different chambers, committees, business forums in the framework of the 'Eastern Opening'. Within the Hungarian Chamber of Commerce and Industry, new (Chinese, Kazakh and Turkish) departments have been established. Reactivating the work of Joint Economic Committees (intergovernmental organisations) and the growing number of meetings of high-ranking politicians (in Asia or Hungary), as well as business forums underpin Hungary's strong commitment to the 'Eastern Opening.'[15] In the concept of the 'Eastern Opening,' Russia and especially China have an outstanding role, which is verified by the fact that the Hungarian Minister of Economy has been the special commissioner for Hungarian-Chinese and Hungarian-Russian relations since 1 January 2012. China is Hungary's most important Asian trading partner. Hungarian policymakers'efforts to strengthen relations with China are the most obvious in the framework of the 'Eastern Opening'. Invigorating Hungarian-Chinese economic relations traces back to 2003. Since then, there have been several annual meetings of high-ranking politicians either in Hungary or China.[16] These events

[9] In the framework of the export academy, the Hungarian Trade and Investment Agency organises export promotion trainings for Hungarian companies.

[10] The Business Development Directorate of HITA is in charge of continually developing the export directory and building personal relations with Hungarian SMEs in order to facilitate their foreign trade.

[11] At HITA, Hungarian companies can apply for financial support in the following cases: (1) Participation in fairs and exhibitions abroad; (2) business meetings, press conferences abroad; (3) establishing representative offices abroad; and (4) creating marketing strategies. Applications of different clusters of SMEs are also welcomed.

[12] Partly state-owned trading houses will be coordinated by a centre (a small company) fully owned by the Ministry of National Economy and the Hungarian Chamber of Commerce and Industry in Budapest. By creating trading houses, the government would like to help Hungarian companies that lack of capital with its knowledge of foreign trade and foreign markets to enable these companies to enter new emerging markets. In export development, trading houses will function as integrators between Hungarian SMEs and foreign buyers.

[13] In December 2012, Széchenyi Bank opened a trading house in Baku, Azerbaijan. QUAESTOR, a financial consultancy company is planning to establish a trading house in Moscow, Russia.

[14] A better cooperation among these institutions can be expected in the future due to the transmission of the supervision and ownership of HITA and export financing state banks from the Ministry of National Development to the Ministry of National Economy.

[15] Some recent examples:

The 1st Arab–Hungarian Economic Forum was held in Budapest, on November 12-13, 2012. (Participants: Algeria, Bahrain, the United Arab Emirates, Egypt, Iraq, Libanon, Libya, Yemen, Jordan, Qatar, Kuwait, Palestine National Authority, Saudi Arabia, Syria, Sudan and Tunesia.)

ASEAN Awareness Forum (with business-to-business meeting) was held in Budapest, on October 11-12, 2012.

In 2011 and 2012, several Hungarian delegations of high-ranking politicians, policymakers and businessmen visited India, Japan, South Korea, Thailand, Azerbaijan, Georgia, Kazakhstan, Usbekistan, Turkmenistan, Saudi Arabia, Kuwait, Qatar and Vietnam *etc.*

[16] 2003: Hungarian PM, Mr. Péter Medgyessy visited China. (PM visit to China for the first time after 44 years.)
2004: Chinese President, Mr. Hu Jintao visited Hungary. (55th anniversary of diplomatic relations, new Agreement on Economic Cooperation, Hungarian-Chinese Bilingual Elementary School.)
2005: Hungarian PM, Mr. Ferenc Gyurcsány visited China and Hong Kong.

have had an important effect on Chinese-Hungarian trade (Szunomár, 2011).

In 2004, the Hungarian consulate in Shanghai was reopened and in 2010, a new consulate was opened in Chongqing. Some vocational organisations, *e.g.* ChinaCham Hungary (Hungarian-Chinese Economic Chamber), and the Chinese-Hungarian Business Committee have been established recently to intensify bilateral business relations. In addition, Hungary has the opportunity, together with other CEE countries, to develop economic relations with China in a multilateral forum. The first China-CEE Economic and Trade Forum was held in Budapest, in June 2011. After that, the first meeting of the leaders of China and those of the CEE countries was organised in Warsaw, in April 2012. The Secretariat of the China-Central Eastern Europe Cooperation was established within the Ministry of Foreign Affairs of the PRC and the first meeting of national co-ordinators was held in Beijing, in September 2012. The cooperation among China and CEE countries includes trade, investments, infrastructural development and building of technology and industrial parks *etc.*

The Hungarian 'Eastern Opening' policy presented above is concentrating not only on developing trade, but also on attracting FDIs from emerging (Asian) countries. Besides 'old' Asian investor partners (*e.g.* Japan, South Korea), China is considered to be an investor with growing importance for Hungary. The export of Hungarian technologies (*e.g.* agriculture and water management) can also play a significant role in developing economic relations with emerging (Asian) countries.

2006: Chinese Vice Premier, Mr. Zeng Peiyan visited Hungary.
2007: Hungarian PM, Mr. Ferenc Gyurcsány visited China. (Hungarian Season was opened in China.)
2008: Hungarian PM, Mr. Ferenc Gyurcsány visited China. (Olympic Games held in Beijing.)
2009: Chinese Vice President, Mr. Xi Jinping visited Hungary (60th anniversary of diplomatic relations.)
2010: Hungarian PM, Mr. Viktor Orbán visited China.
2011: Chinese PM, Mr. Wen Jiabao visited Hungary (PM visit to Hungary for the first time after 24 years; 12 agreements were signed.)
2012: Chinese Vice Premier, Mr. Li Keqiang visited Hungary. (7 agreements were signed.)

EU trade policy towards Asia

As a member of the EU, Hungary is obliged to enforce the common trade policy in its extra-EU relations. This means Hungary's trade with Asia is primarily regulated and influenced by the common trade policy. This way, Hungary's national playing field can be relatively small. Using national measurements of foreign trade policy related to increasing exports to Asia can be very limited. And the above-mentioned measurements primarily aim at only Hungarian companies' exports (which account for approximately 20% of total exports).

Among the measurements of the common trade policy, Free Trade Agreements (FTAs) should be mentioned here. In the last decade, the EU has become proactive in approaching Asia and adopted strategies for this (Kim, 2011). As a part of these strategies the EU showed a growing interest in concluding FTAs. In Asia, the EU had already signed a free trade agreement with South Korea that entered into force in July 2011. FTA negotiations with Japan will start too. In the ASEAN region, the EU is currently negotiating a free trade agreement with Malaysia and Vietnam. The EU-Singapore FTA negotiations were completed on 16 December 2012. In 2007, the EU started FTA talks with India, but negotiations are progressing slowly. The EU is currently negotiating a deep and comprehensive free trade area as part of the Association Agreements with Georgia and Armenia (European Commission, 2012).

The concept of the 'Eastern Opening' and the concluded EU-Korea FTA will be taken into account in the following analysis of trade between Hungary and Asia.

2) Development of trade with Asia

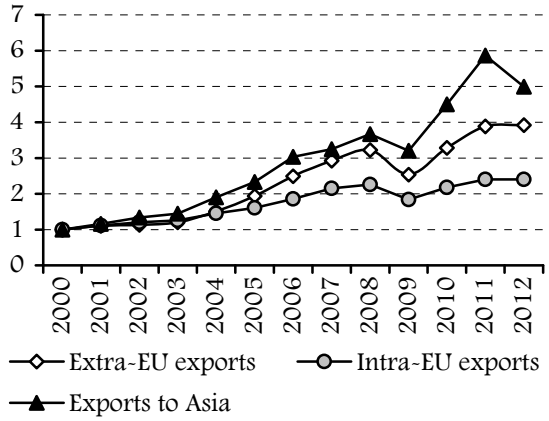
Asian countries are increasingly important trade partners for the European Union. This is well known, and was analysed in several articles, studies (see a detailed analysis for example in Gaulier *et al.*, 2012b). Recently, the economic crisis and the contraction of

the European markets reinforced this phenomenon. The EU is the largest trading partner for China and China has also become a decisive market for Europe. For example, in 2011 European exports increased by 25 per cent to China (Islam, 2012). The European Union is also a very important partner for China itself, the share of EU in China's exports reached a peak with 20.5 per cent in 2008 and decreased a little during the crisis, to 18.7 per cent (Chen, 2012). Simultaneously, other Asian countries intensified their trade with China, so China is becoming the engine of regional economic growth and trade. This can decrease its dependence on Western markets (Gaulier *et al.*, 2012a).

There has been very little information so far on trade relations between Asian countries and Central and Eastern European (CEE) countries. Based on Chen (2012), we know that after these countries joined the EU, bilateral trade with China increased. At first Hungary was China's biggest CEE partner, and then it was replaced by Poland. In the past decade the four Visegrad countries were clearly the most important trade partners among the CEE countries for China.

The importance of Asia in Hungarian trade seems to be increasing, even if Hungary's most important partner remains the EU. During the decade after 2000, Hungarian exports towards the EU members increased rapidly. In 2004 the country joined the European Union and this brought a significant increase in trade – mainly with other Central and Eastern European member countries. As we have seen, the share of the EU in Hungarian exports and imports is significant. A considerable increase of export to Asia can also be observed, which is broken in 2009 because of the international crisis (similarly to the loss of dynamism to the EU relation in that year). This trend is more remarkable between 2009–2011 when dynamism overtakes the pace of the intra- and extra-EU export increase. However, in 2012 the export dynamism is broken to all areas but mostly towards Asia. (*Figure 1*)

Figure 1
Increase of Hungarian export to certain regions
(2000=1)



Source: Eurostat

Hungarian exports to Asia increased fivefold during the period, imports from Asia increased only twofold in value (see later).

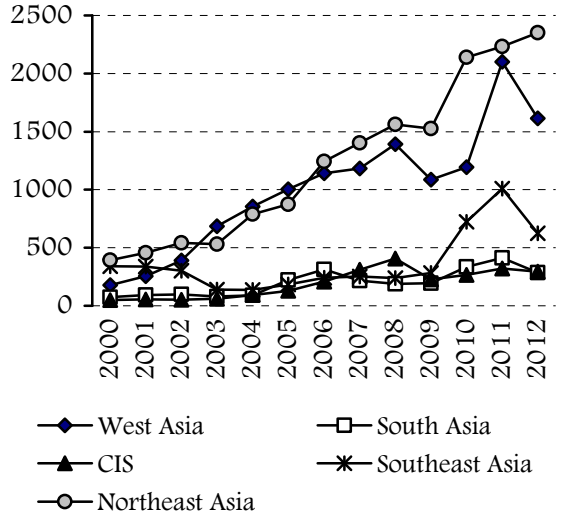
We get a more detailed picture if we observe the export increase to the various Asian regions. The following countries belong to the five groups:

1. *Commonwealth of Independent states* (CIS): Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
2. *West Asia*: Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates, Yemen
3. *South Asia*: Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, Sri Lanka
4. *Southeast Asia*: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar (Burma), Philippines, Singapore, Thailand, Timor-Leste, Viet-Nam
5. *Northeast Asia*: Hong Kong, China, Japan, North Korea, South Korea, Macao, Mongolia, Taiwan

A really remarkable increase of Hungarian *exports* can be seen in *Figure 2*, especially to West and Northeast Asia. In 2011 export to West Asia was eleven times greater and export to Northeast Asia is 5.6 times greater than in 2000, reaching a level of over 2 billion euros. Export increased to other regions too, but to a much smaller extent. An exception is Southeast Asia, as export to this region has increased significantly from 2009 onwards. In 2012 exports

decreased almost to all regions except for Northeast Asia.

Figure 2
Hungarian exports to the Asian regions
(million EUR)

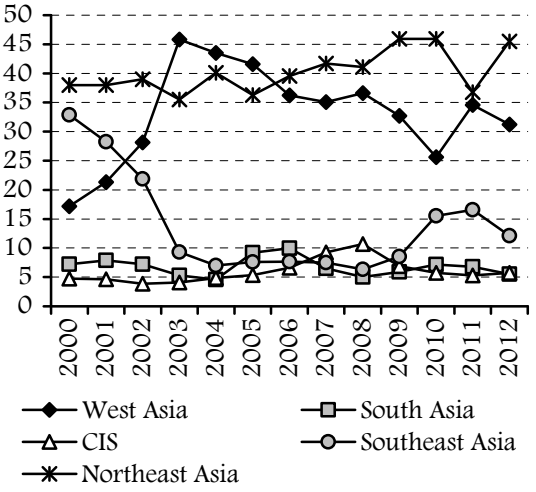


Source: Eurostat

Observing the regional composition of Hungarian export to Asia, *Figure 3* clearly shows – in accordance with the above trends – that it has mainly been directed at two regions during this period: West Asia and Northeast Asia. The share of Northeast Asia was constantly around 40 per cent these years, but the share of West Asia jumped from 17 per cent to 45.8 per cent between 2000 and 2003. Both regions' share decreased in the crisis year of 2010 but later gained momentum. The share of Southeast Asia was rather high in Hungarian export at the beginning of the period (32%), but dropped radically to 9 per cent already in 2003 and remained low afterwards. However, parallel with the rapid growth of exports, the share of this region was increasing constantly in the crisis years (2009–2011) and dropped in 2012. The share of CIS and South Asia remained below 10 per cent during the whole period – with some small fluctuations.

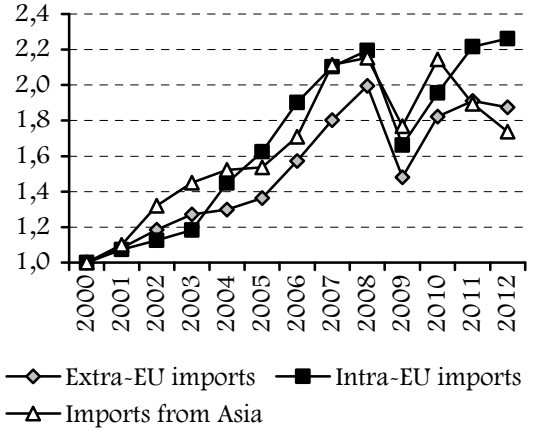
Regarding Hungarian *import* from Asia, until 2004 these increased more dynamically than imports from other regions and since then it has increased in a similar way than imports from the EU. For 2011 and 2012 imports from Asia decreased, meanwhile imports from the EU increased. (*Figure 4*)

Figure 3
Shares of Asian regions in Hungarian exports to Asia



Source: Eurostat

Figure 4
Increase of Hungarian import from certain regions
(2000=1)



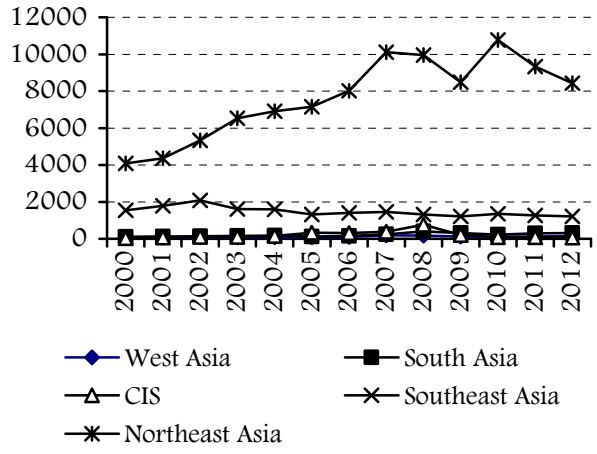
Source: Eurostat

Import increased two to threefold from Northeast Asia until 2010 but in the case of other regions it remained almost constant (*Figure 5*). The value of imports is much higher than that of exports, as it reached more than 10 billion euros in 2010 from Northeast Asia. Imports decreased, however from this region in 2011–2012.

Regarding the regional composition of imports (*Figure 6*), among the five Asian country groups the share of Northeast Asia is outstanding and increasing after 2000. This share grew from 53,6 per cent to 83 per cent until 2012. In the meantime the share of Southeast Asia decreased, from 20-

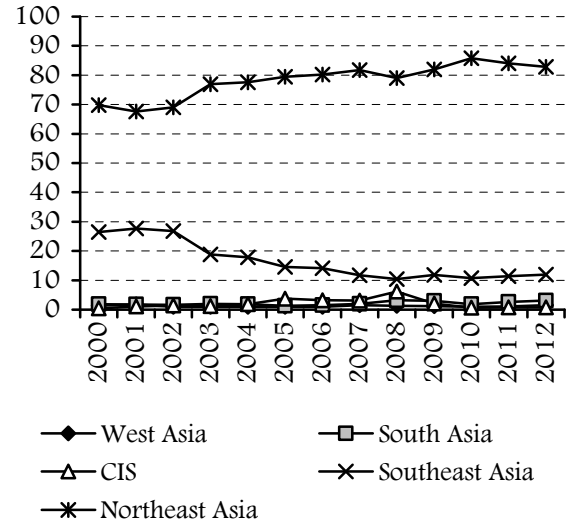
27 per cent to 10 per cent. The significance of other Asian regions has been very small.

Figure 5
Hungarian imports from Asian regions
(million EUR)



Source: Eurostat

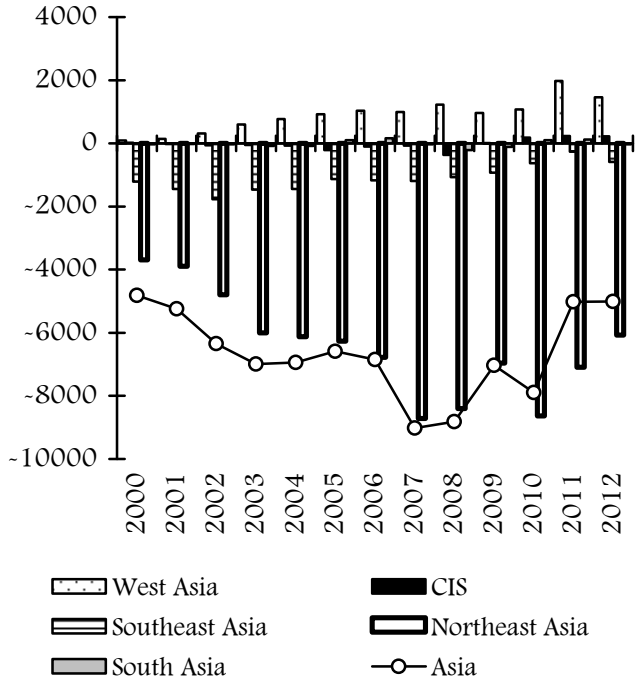
Figure 6
Share of Asian regions in Hungarian imports from Asia



Source: Eurostat

Hungarian trade with Asia shows considerable deficits throughout the period. However, this deficit is caused mainly by the highly uneven trade with Northeast Asia (*Figure 7*). Here approximately 70 per cent of the deficit comes from the trade with China. In the last three years of the period trade deficit with Northeast Asia has been decreasing. Hungary has a trade deficit with Southeast Asia too, but to a much smaller extent and this deficit has decreased since 2009. West Asia is the region where Hungary has had an increasing trade surplus during the period. (This is partly due to the growing surplus with the United Arab Emirates.) Trade is almost even with the CIS countries and South Asia, showing little surplus from time to time.

Figure 7
Foreign trade balance of Hungary with the Asian regions
(million EUR)



Source: Eurostat

The most important regions and countries

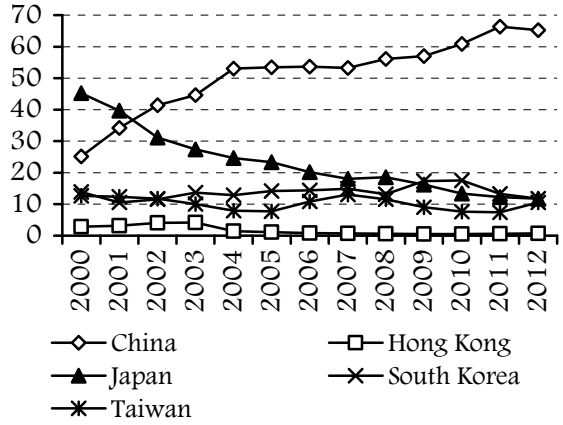
As seen above, the role of Northeast Asia is decisive in the Hungarian-Asian trade. Around 80 per cent of imports come from this region and around 35-40 per cent of Hungarian exports is directed there. By the end of the observed period China has become the most important country of the region by far. However, this has not always been the case, since Japan held the leading position in imports until 2002 and in exports until 2004. The following years the share of Japan declined radically and continuously, until it reached a figure below 20 per cent.

Other countries have played far smaller roles in the bilateral trade. The share of Hong Kong is negligible in Hungarian imports and around 10 per cent of exports is directed to there. The share of South Korea is similar in exports and imports, both

around 10–17 per cent. The share of Taiwan in Hungarian exports decreased significantly between 2000 and 2005 from 20 per cent to 5 per cent.

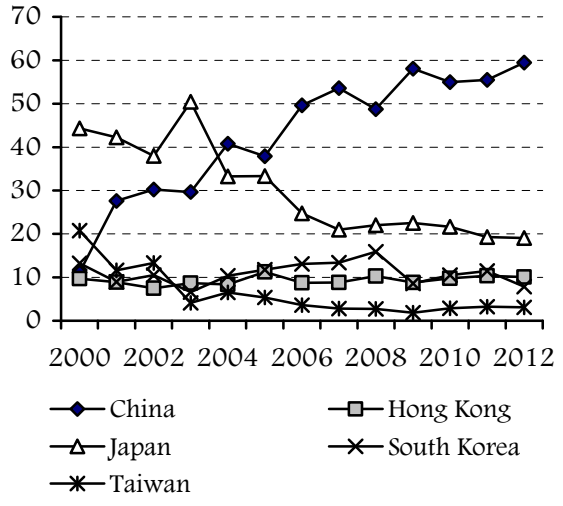
North Korea, Mongolia and Macao also belong to the Northeast Asian group but there is almost no Hungarian trade with them.

Figure 8
The share of the main Northeast Asian countries in Hungarian imports



Source: author's own calculations from Eurostat

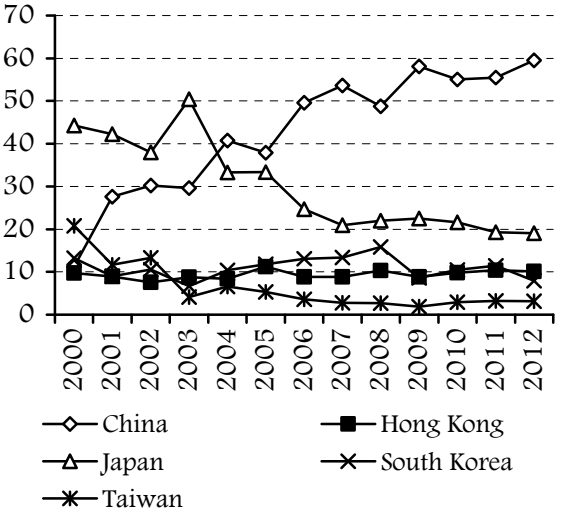
Figure 9
The share of the main Northeast Asian countries in Hungarian exports



Source: author's own calculations from Eurostat

The second most important Asian region for Hungarian exports is West Asia. 34.5 per cent of exports to Asia was directed to the Western region in 2011. (In Hungarian import, however, the share of this region is negligible, around 1%). Let us see to which countries has Hungarian export been directed during the examined period. The main partner is the United Arab Emirates, although with considerable fluctuations, as it can be seen in figure 9. In 2011, 70 per cent of Hungarian exports to West Asia were directed to the UAE. The second most important market in the region for Hungarian products is Israel, representing around 20 per cent of exports to the region (showing quite significant fluctuations too). The third export partner is Saudi Arabia in this region with a smaller share.

Figure 10
The share of the main West Asian countries in Hungarian export



Source: author's own calculations from Eurostat

Table 1 offers an overview of all the Asian countries that are important for Hungarian export. The share of the main partners is given as a percentage of the total export to that region. Regarding South Asia, India is the dominant market while among the CIS countries Kazakhstan and Uzbekistan are the most important ones. The share of Azerbaijan in Hungarian exports was more significant until 2011 (its share was 24.5% in that year) than the share of Georgia, but in 2012 export to Georgia was slightly higher. This is due to an increased export volume of cereal preparations and medicaments. (It cannot be judged yet whether this was a one-off delivery or a beginning of a trend. As for during the period Azerbaijan was more significant export partner, further on in the analysis we consider Azerbaijan as the third most important country for Hungary in the CIS region.) Singapore is the main market in Southeast Asia, followed from afar by

Table 1a
Main export destinations in each country group (share), 2000

West Asia		South Asia		CIS		Southeast Asia		Northeast Asia	
Israel	34.8	Iran	50.9	Kazakhstan	48.3	Singapore	68.9	Japan	44.3
Saudi Arabia	17.1	India	27.2	Uzbekistan	17.3	Malaysia	15.1	Taiwan	20.8
Kuwait	13.2	Pakistan	11.6	Georgia	10.6	Vietnam	4.4	South Korea	13.2
Syria	10.8	Bangladesh	6.4	Azerbaijan	10.6	Philippines	4.2	China	11.2
Lebanon	10.7	Sri Lanka	3.7	Turkmenistan	6.1	Thailand	4.0	Hong Kong	9.7
United Arab Emirates	6.1	Other	0.1	Armenia	3.8	Indonesia	3.4	Other	0.8
Other	7.3			Other	3.3	Other	0.1		
Total	100		100		100		100		100

Table 1b
Main export destinations in each country group (share), 2012

West Asia		South Asia		CIS		Southeast Asia		Northeast Asia	
United Arab Emirates	57.7	India	78.1	Kazakhstan	42.3	Singapore	50.5	China	59.5
Israel	17.0	Pakistan	10.5	Uzbekistan	17.6	Malaysia	19.7	Japan	19.1
Saudi Arabia	12.6	Iran	6.2	Georgia	13.3	Thailand	15.2	Hong Kong	10.1
Other	12.7	Other	5.2	Azerbaijan	12.9	Viet-Nam	5.6	South Korea	7.9
				Armenia	5.4	Myanmar (Burma)	3.4	Taiwan	3.1
				Other	8.5	Indonesia	3.0	Other	0.3
						Other	3		
Total	100		100		100		100		100

Source: author's own calculations from Eurostat

Table2a
Main import sources in each region, 2000

West Asia		South Asia		CIS		Southeast Asia		Northeast Asia	
Israel	93.9	India	65.9	Kazakhstan	32.3	Singapore	36.0	Japan	45.3
Saudi Arabia	2.6	Pakistan	16.3	Uzbekistan	29.2	Malaysia	21.2	China	25.2
Syria	1.3	Bangladesh	6.7	Tajikistan	25.3	Thailand	17.5	South Korea	13.9
Other	2.2	Iran	6.3	Turkmenistan	8.8	Philippines	13.9	Taiwan	12.6
		Sri Lanka	4.4	Azerbaijan	2.4	Indonesia	9.2	Hong Kong	2.9
		Other	0.4	Other	2.0	Other	2.2	Other	0.1
Total	100		100		100		100		100

Table 2b
Main import sources in each region, 2012

West Asia		South Asia		CIS		Southeast Asia		Northeast Asia	
Israel	79.88	India	93.10	Kazakhstan	94.43	Thailand	27.72	China	65.19
Oman	10.43	Pakistan	3.10	Uzbekistan	2.14	Malaysia	26.26	Japan	11.79
Jordan	4.17	Sri Lanka	2.31	Tajikistan	1.42	Singapore	21.03	South Korea	11.77
United Arab Emirates	2.89	Iran	0.92	Azerbaijan	0.82	Philippines	13.26	Taiwan	10.52
Saudi Arabia	0.95					Indonesia	8.13	Hong Kong	0.73
Other	1.69	Other	0.57	Other	1.18	Viet-Nam	3.56		
						Other	0.04	Other	0.01
Total	100		100		100		100		100,00

Source: author's own calculations from Eurostat

Malaysia and Thailand. In the year 2000 the situation was somewhat different. In South Asia Iran was the main market for Hungarian products, followed by India and Pakistan. In West Asia and Northeast Asia – as seen previously – the country-rank was very different from the situation in 2012.

The geographical structure of Hungarian imports is extremely concentrated; one country dominates in three Asian regions. *Table 2* shows the relevant countries and regions. In the case of South Asia and the CIS region this concentration increased during the examined period. From Southeast Asia import is more evenly distributed and in Northeast Asia too, as we have seen in figure 7.

3) PRODUCT STRUCTURE OF TRADE

The previous parts have provided the reader with a broad view on the volume and increase of trade between Hungary and the Asian regions and on the main partner countries. At this point we shall analyse the product structure of trade. *Figure 11* shows the structure of Hungarian *exports* to the five Asian regions according to the main SITC classification system (of ten product groups). The first thing that catches one's eye is the considerable change during the examined period. In 2000 chemicals and related products occupied a significant share (30-38% to three regions and 5-12% to two regions) in the export to almost all Asian regions, but for 2012 this share increased (to 60%) only towards the CIS countries and shrank to a small share (4-7%) regarding other regions. In the meantime the weight of machinery and transport equipment has become overwhelming, standing at 70-85 per cent, except for the CIS countries where it was 21 per cent in 2012.

The only region where the product pattern did not change much is Southeast Asia. Here, export of machinery and transport equipment has always played the main role. The export of food and live animals decreased significantly to all regions. As written later, this general change in the product structure of exports is largely due to the activity of foreign multinational companies that are present in Hungary.

Regarding the structure of Hungarian *imports* from Asia, we can also observe a radical change from 2000 to 2012 in the case of almost all regions (*Figure 12a* and *12b*). The only exception is Northeast Asia where the import structure did not change throughout the period: machinery and transport equipment represent more than 80 per cent.

In the case of West Asia the import of chemicals and related products increased from 14.6 per cent to 67 per cent during this period. Since 85 per cent of Hungarian import from this region comes from Israel, the above-mentioned tendency is mainly due to the import of medicaments and other chemicals from this country.

Regarding South Asia, the import from this region is also dominated by one country: 92 per cent of Hungarian imports comes from India. Two product groups increased their shares significantly during the period: machinery and transport equipment and chemicals. Both product groups took 40-40 per cent shares in 2012.

A similar geographical concentration can be observed in the import from the CIS area, as in 2012 94 per cent of imports came from Kazakhstan, where mineral fuels and related materials are the main import products.

The share of chemicals and related products has increased in the imports from Southeast Asia too, from 0.6 per cent to 13 per cent. This can be due to the fact that medicinal and pharmaceutical products were the most important import product group from Singapore in 2011–2012.

As we have seen based on a very broad product classification, the product structure of Hungarian-Asian trade changed during the examined decade. It is worth analysing this phenomenon more deeply. We applied the SITC 3 digit level classification system for this (the list of products is in the Annex). We calculated the Finger-Kreinin similarity index[17] for bilateral export and import for the year 2000 and 2012.

$F=\sum \min(X_{it1},X_{it2})*100$, where X_{t1} and X_{t2} are the shares of the commodity i in total exports in year t1 and t2 or in country t1 and t2

[17] Finger – Kreinin 1979.

Figure 11a
Hungarian export to Asian regions in 2000

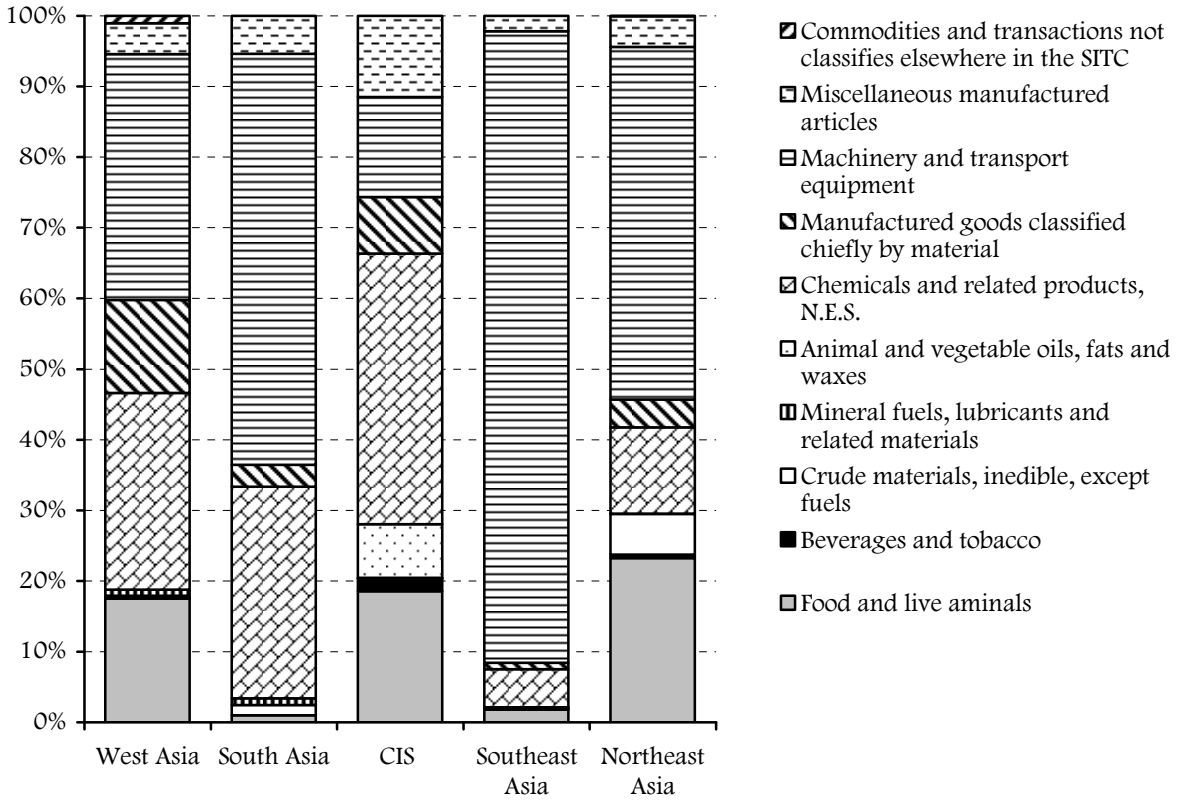


Figure 11b
Hungarian exports to Asian regions in 2012

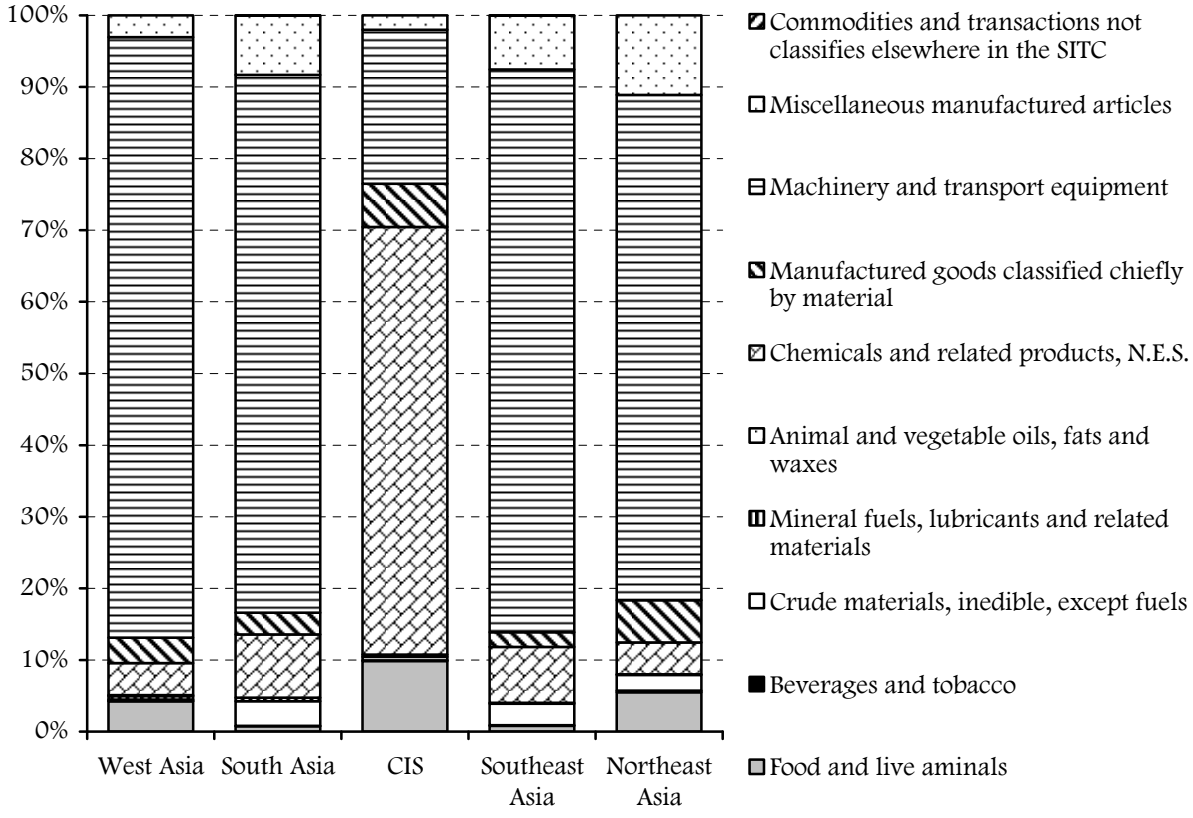


Figure 12a
Hungarian import from Asian regions in 2000

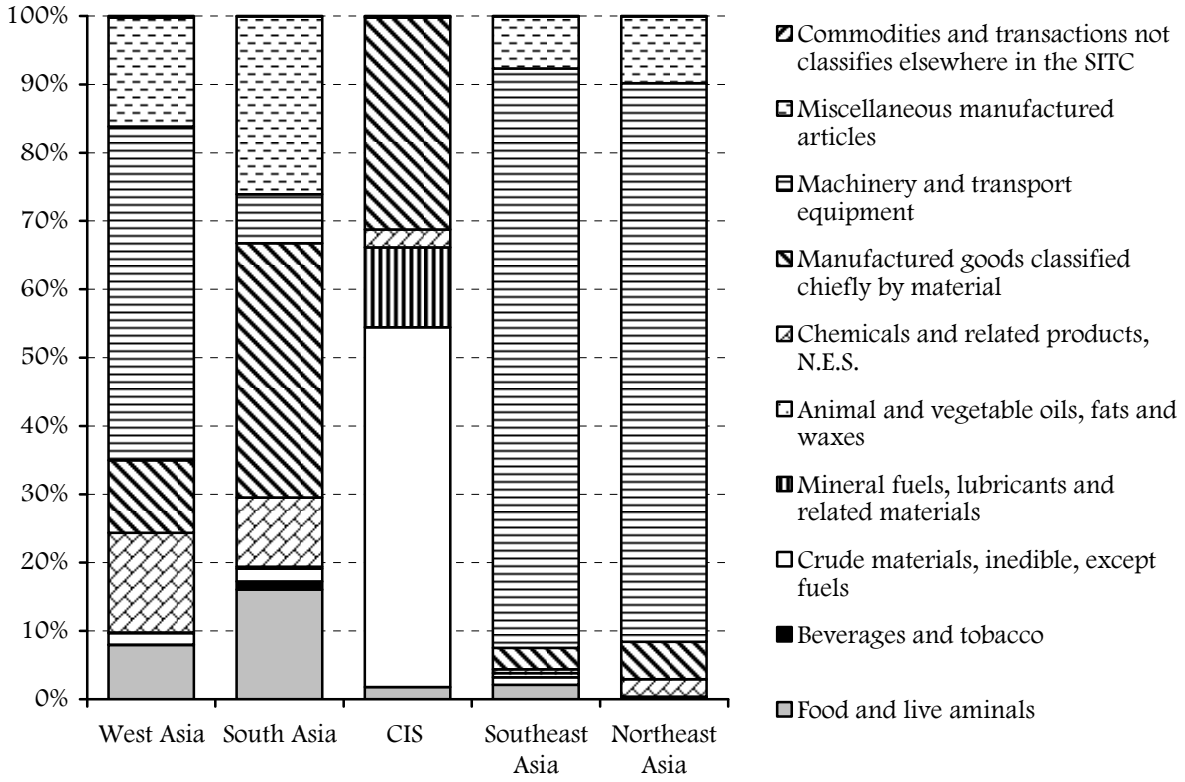
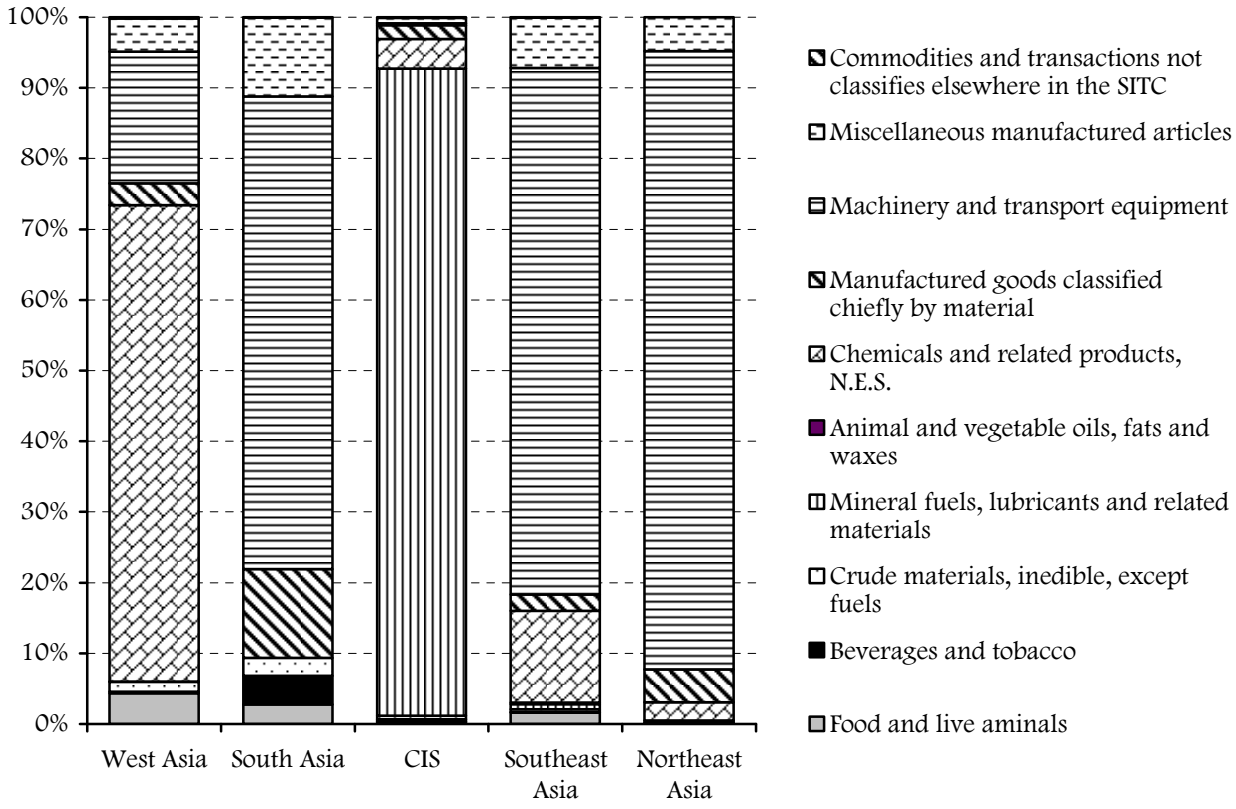


Figure 12b
Hungarian import from Asian regions in 2012



Results are shown in *Table 3*.

Table 3a
Finger similarity indices for Hungarian export and import, 2000–2012

West Asia	United Arab Emirates	Israel	Saudi Arabia	
Export	0.077	0.319	0.144	
Import	0.122	0.300	0.049	
South Asia	India	Iran	Pakistan	
Export	0.275	0.158	0.184	
Import	0.234	0.767	0.470	
CIS	Azerbai-jan	Kazakh-stan	Uzbeki-stan	
Export	0.475	0.411	0.565	
Import	0.002	0.002	0.001	
Southeast Asia	Malaysia	Singapore	Thailand	
Export	0.473	0.201	0.346	
Import	0.374	0.209	0.226	
Northeast Asia	China	Hong Kong	Japan	South Korea
Export	0.218	0.471	0.459	0.201
Import	0.512	0.389	0.589	0.288

Source: author's own calculations

Table 3b
Finger similarity indices for Hungarian export, three periods

West Asia	United Arab Emirates	Israel	Saudi Arabia	
2000–2007	0.110	0.215	0.125	
2007–2011	0.796	0.468	0.789	
2011–2012	0.933	0.774	0.797	
South Asia	India	Iran	Pakistan	
2000–2007	0.305	0.324	0.063	
2007–2011	0.327	0.379	0.632	
2011–2012	0.593	0.350	0.718	
CIS	Azerbaijan	Kazakhstan	Uzbekistan	
2000–2007	0.357	0.369	0.594	
2007–2011	0.597	0.739	0.772	
2011–2012	0.543	0.719	0.822	
Southeast Asia	Malaysia	Singapore	Thailand	
2000–2007	0.568	0.622	0.300	
2007–2011	0.564	0.198	0.125	
2011–2012	0.687	0.691	0.517	
Northeast Asia	China	Hong Kong	Japan	South Korea
2000–2007	0.199	0.362	0.534	0.297
2007–2011	0.658	0.639	0.589	0.736
2011–2012	0.862	0.774	0.822	0.620

Source: author's own calculations from Eurostat

The calculations justify the previous assumptions; the product structure of trade has changed radically for several Asian partners. The Hungarian export structure in 2012 was less than 20 per cent similar to the export structure in 2000 regarding the Arab Emirates, Saudi Arabia, Iran, Pakistan. Similarity in around 20 per cent regarding Singapore, China, South Korea. Similarity is between 20 and 40 per cent regarding the exports to Israel, India, Kazakhstan, Exports remained the most similar (between 40-60%) to Uzbekistan, Kazakhstan, Malaysia, Hong Kong and Japan. The structure remained relatively similar for imports from Iran, Pakistan, China, Japan, less similar in the case of Hong Kong and Malaysia and changed the most from the Arab and CIS countries. In the case of Azerbaijan, the import level was very low in 2012, and consisted mainly of fruit juices, iron and steel (base metal) products, whereas in the year 2000 there were other products imported, mainly cotton. Therefore, the similarity here is close to zero.

It is an interesting question whether these structural changes in Hungarian export mainly took place before the international crisis or during the crisis itself. Therefore in table 3b three sub-periods can be seen. Similarity indices for Hungarian exports are given for each sub-periods. As it is seen in almost all cases main changes happened before the crisis, export structure of 2000 and 2007 are much less similar than export structure of 2007 and 2011. An obvious exception is Singapore where structural changes were radical during the crisis. (Sixty percent of Hungarian export to Singapore consisted from automatic data processing and electric machines in 2007, meanwhile in 2011 telecommunication equipments gave 80 per cent.) Between 2011 and 2012 radical changes did not occur, except for Iran, and India, Azerbaijan, Thailand where the leading export products changed.

Concentration

It can be supposed, based on the broad product groups that Hungarian export is not diversified. The extent of concentration can be seen even better if we analyse the structure based on the mentioned more detailed SITC classification. *Table 4* gives the shares of the most important export product groups regarding the West Asian main partners.

Table 4
Share of the first ten product groups in Hungarian exports to main West Asian partners, 2012

United Arab Emirates		
SITC	Euro	%
764	821 776 161	88.33
714	12 892 915	1.39
778	11 297 944	1.21
772	11 043 269	1.19
752	10 012 234	1.08
761	6 079 831	0.65
771	3 814 431	0.41
641	3 702 972	0.40
24	2 831 106	0.30
742	2 739 547	0.29
Share of first 10	*886 190 410*	*95.26*
Israel		
716	58 718 648	21.59
781	49 964 386	18.37
515	23 224 625	8.54
752	15 714 413	5.78
761	11 651 478	4.28
642	10 585 298	3.89
541	10 373 389	3.81
12	8 370 413	3.08
513	7 820 958	2.88
764	7 146 210	2.63
Share of first 10	*203 569 818*	*74.85*
Saudi Arabia		
764	97 436 247	47.74
751	10 068 296	4.93
772	9 969 281	4.88
98	7 372 726	3.61
24	7 315 555	3.58
752	6 314 538	3.09
714	6 305 941	3.09
893	4 955 929	2.43
743	3 952 793	1.94
625	3 896 132	1.91
Share of first 10	*157 587 438*	*77.22*

Source: author's own calculations from Eurostat.

It can be seen that Hungarian exports to the Arab Emirates consist almost totally of SITC group 764 (telecommunication equipment and parts). This is due to the "Nokia effect," the massive export of the Hungarian Nokia affiliate. This, however, will not continue as the downscaling of Nokia in Hungary was announced in 2012. Nokia transfers its assembly plant to Asia. The export of telecommunication equipment was significant also to Saudi Arabia and to a smaller extent to Israel. Rotating electric plants (SITC 716) and parts and motorcars and other motor vehicles (SITC 781) were the most important export products to Israel.

Table 5
Share of the first ten product groups in Hungarian exports to main South Asian partners, 2012

India		
SITC	Euro	%
764	54 496 709	24.60
752	21 085 325	9.52
541	16 604 604	7.50
874	15 002 617	6.77
778	8 451 707	3.82
515	7 883 160	3.56
759	7 729 262	3.49
772	7 451 018	3.36
282	7 157 445	3.23
784	6 031 450	2.72
Share of first 10	*151 893 297*	*68.57*
Iran		
334	2 465 675	14.37
642	1 550 952	9.04
541	1 334 872	7.78
774	1 111 588	6.48
775	924 597	5.39
893	866 352	5.05
662	722 502	4.21
778	634 951	3.70
742	623 124	3.63
629	561 383	3.27
Share of first 10	*10 795 996*	*62.92*
Pakistan		
764	11 923 774	39.78
714	2 683 833	8.95
642	2 542 788	8.48
784	2 075 839	6.93
752	1 363 815	4.55
872	1 353 445	4.52
269	1 216 655	4.06
575	1 018 605	3.40
541	951 255	3.17
542	803 992	2.68
Share of first 10	25 934 001	86.52

Source: author's own calculations from Eurostat.

Hungarian export to South Asian countries is less concentrated, especially in the

case of Iran (*Table 5*). Towards India and Pakistan the above-mentioned telecommunication equipment and parts product group dominates.

Table 6
Share of first ten product groups in Hungarian exports to main CIS partners, 2012

SITC	Euro	%
Kazakhstan		
542	56 742 535	46.37
764	16 719 519	13.66
56	7 032 836	5.75
642	6 240 253	5.10
541	3 633 705	2.97
743	3 281 523	2.68
591	2 625 243	2.15
791	2 521 290	2.06
751	2 518 931	2.06
679	2 102 252	1.72
Share of first 10	*103 418 087*	*84.52*
Azerbaijan		
542	17 120 194	45.42
764	5 564 418	14.76
781	2 422 718	6.43
56	1 978 716	5.25
744	1 060 625	2.81
751	754 619	2.00
575	685 532	1.82
772	628 054	1.67
541	619 496	1.64
782	421 562	1.12
Share of first 10	*31 255 934*	*82.93*
Uzbekistan		
542	41 969 650	84.52
541	1 385 668	2.79
721	1 173 794	2.36
1	1 082 788	2.18
56	1 005 265	2.02
573	528 594	1.06
784	511 881	1.03
764	424 944	0.86
591	332 213	0.67
531	210 480	0.42
Share of first 10	*48 625 277*	*97.92*

Source: author's own calculations from Eurostat.

Telecommunication equipment and parts are the second most important export group to the CIS countries too (see table 5). Here, however, medicaments (SITC 542) also play a dominant role, due to the Richter Gedeon company (a Hungarian multinational firm).

The main Hungarian export products to Southeast Asia are again the telecommunication equipments and parts (*Table 7*). In the case of Malaysia, automatic data processing machines (SITC 752) represent a high share too.

Table 7
Share of the first ten product groups in Hungarian exports to main Southeast Asian partners, 2012

SITC	Euro	%
Malaysia		
752	54 437 573	44.26
764	19 950 286	16.22
898	7 406 574	6.02
759	4 665 461	3.79
874	4 496 064	3.66
728	4 161 249	3.38
741	3 877 512	3.15
771	3 262 881	2.65
892	2 684 496	2.18
772	2 459 198	2.00
Share of first 10	*107 401 294*	*87.32*
Singapore		
764	168 216 476	53.24
772	29 953 172	9.48
752	26 721 069	8.46
761	12 732 339	4.03
541	11 551 596	3.66
778	10 497 420	3.32
282	7 922 686	2.51
893	6 315 285	2.00
716	5 409 537	1.71
742	4 413 981	1.40
Share of first 10	*283 733 561*	*89.80*
Thailand		
716	26 193 740	27.55
764	17 656 514	18.57
874	10 360 774	10.90
232	7 384 131	7.77
752	3 506 324	3.69
591	3 297 234	3.47
745	2 205 196	2.32
714	1 956 058	2.06
541	1 346 006	1.42
728	1 201 471	1.26
Share of first 10	*75 107 448*	*78.99*

Source: author's own calculations from Eurostat.

Table 8
Share of the first ten product groups in Hungarian exports to main Northeast Asian partners, 2012

SITC	Euro	%
China		
713	536146 353	38.47
874	81484 447	5.85
748	69560 643	4.99
716	59347 728	4.26
764	55733 034	4.00
772	51611 954	3.70
752	50705 172	3.64
791	37321 629	2.68
778	37314 441	2.68
742	33388 930	2.40
Share of first 10	*1012614 331*	*72.66*
Hong Kong		
752	83 638 486	35.28
764	55 216 632	23.29
874	23 708 288	10.00
12	16 550 568	6.98
776	12 109 338	5.11
771	7 048 708	2.97
778	4 598 353	1.94
542	4 151 198	1.75
759	3 998 796	1.69
775	3 371 851	1.42
Share of first 10	*214 392 218*	*90.43*
Japan		
12	74 865 528	16.72
781	70 830 008	15.82
874	67 931 462	15.17
752	36 378 628	8.12
541	22 323 929	4.99
699	16 736 321	3.74
742	14 228 128	3.18
775	13 099 650	2.93
786	9 737 115	2.17
784	9 610 017	2.15
Share of first 10	*335 740 786*	*74.99*
South Korea		
784	28 566 131	15.39
874	17 925 392	9.66
12	13 297 812	7.17
775	9 305 919	5.01
663	8 704 950	4.69
778	7 816 739	4.21
44	7 428 149	4.00
752	6 563 431	3.54
291	6 101 966	3.29
743	5 885 184	3.17
Share of first 10	*111 595 673*	*60.14*

Source: author's own calculations from Eurostat

Regarding Northeast Asia (*Table 8*), apart from the telecommunication equipments, internal combustion piston engines (SITC 713)[18] appear as main export articles to China and are the second most important articles exported to South Korea. However, it should be mentioned that trade statistics of Eurostat and the Korean Statistical Office differ substantially regarding South Korean trade.[19] According to Korean statistics the most important Hungarian export product is corn (maize). This generally goes through Dutch and Swiss traders and does not appear in Hungarian statistics as exported to Korea. Such phenomenon can be relevant for other Asian countries too.

Exports to Japan are more diversified, containing meat products, measuring instruments, data processing machines. This is the only country to which the most important Hungarian export product is meat (not manufactured product). Peculiarities of the Japanese market are described in *Box 1.*

In order to measure the degree of concentration of the Hungarian exports we calculated the Herfindahl-Hirschman index:[20]

$HHI = [\Sigma_i s_i^2]^{1/2}$, where si is the share of the product group in total exports. If the index is 1, it means full concentration.

Table 9 shows the value of HHI indices for the beginning and for the end of the period. The calculations are based on the SITC 3-digit level classification. Regarding exports it can be seen that for 2011-12 the index is extremely high in the case of the Arab Emirates, Singapore and Uzbekistan. Concentration is relatively low (compared to other relations) in the exports to Japan, South Korea, Iran and Israel. It can also be seen that the pattern of concentration has changed through time. The change is the most spectacular in the exports to the Arab Emirates where there is a drastic increase of concentration (Nokia effect). In other cases

[18] The biggest engine factory of the world (Audi Hungaria) is located in Győr, Hungary. Among exporting companies, Audi Hungaria accounts for the highest share not only in the Hungarian total of exports, but also in the Hungarian exports to China.

[19] There are discrepancies among national statistics and Eurostat in the case of other Asian countries too.

[20] See, for example, Hirschman, Albert O. (1945): National Power and the Structure of Foreign Trade. Berkeley (appendix). http://www.google.hu/books?id=BezqxPq50dwC&printsec=frontcover&hl=hu#v=onepage&q&f=false

Box 1

Japanese market – features, trends and Hungarian experiences

Personal relations are essential in a successful business and it is true for Japanese relations too. The example of a Hungary-based consultancy company confirms this statement. Sűdy & Co. Ltd* specialises in business creation and support primarily between Hungary and Japan. It was established by Zoltán Sűdy, a former Hungarian Ambassador to Japan. Sűdy & Co. helps its customers analyse and enter the new market and find local suppliers and partners to establish a local presence. Below we summarise their experiences concerning the Japanese market.

As our calculations from Eurostat data showed, the share of Japan in Hungary's total trade has been decreasing for a decade. Between 2000 and 2008, Hungary's *imports* from Japan almost stagnated in absolute value and later decreased during the global crisis. Hungary's imports are strongly related to the Japanese manufacturing subsidiaries located in Hungary, which have been seriously affected by the global crisis. In the electronics industry, several Japanese companies (*e.g.* Sunarrow, TDK, Sony and Sanshin) recently closed their subsidiaries in Hungary. Suzuki car factory's annual production has decreased from a 300,000 peak in 2006 to 170-180,000 units for today. The global crisis, the strong yen and possibly the use of alternative sources of supplies (planting Japanese production units to China) have caused a negative tendency in Hungary's imports from Japan.

Hungarian *exports* have been growing during this period but have been lagging behind imports. In recent years, (frozen) meat (pork) has been the top Hungarian export product to Japan, where pork meat is very popular. For example, the company Pick has achieved a successful presence on the Japanese market. In the pharmaceutical industry, Richter Gedeon has a stake in the Hungarian exports to Japan. Pharmaceutical and medical materials are the fifth most important product exported to Japan. In terms of export structure, Hungary has a relatively diverse trade with Japan, which is based on decades-old personal relations with certain firms. Hungary's EU accession (in 2004) probably helped Hungarian products penetrate the Japanese market, although this had not been a rapid process.

Regarding the food industry, honey, goose and duck liver specialities have good chances on the Japanese market and Hungarian producers can gain some share in the Japanese food market by emphasising their non-GMO products and presenting themselves as alternatives to other (e.g. Chinese) suppliers. Apart from these, goose feathers, pharmaceutical materials and softwares are traditionally the most favoured Hungarian products in Japan. But Japanese consumers are open to new, high quality products.

The main *problems, barriers* Hungarian companies meet on the Japanese market are the following:

* Several non-tariff barriers, e.g. food safety regulations.
* Competition in industrial products.
* The final price can be too high (4-5 times higher than the production cost) because of transport costs and a multilevel distribution system (trade houses).
* Hungarian firms do not want or cannot meet Japanese packaging requirements.
* The Japanese market is very big and closed, it is difficult to map the possibilities, and making a market research is almost impossible for a foreigner because of the lack of information.
* Export can be facilitated by the creation of one's own subsidiary but establishing a firm in Japan is very expensive.

It is often easier to become successful on the Japanese market, if the Japanese partner initiates the market entry of Hungarian products. There are examples of some Japanese stores searching directly for suppliers, excluding trading houses.

According to the opinion of Sűdy & Co., Hungarian policymakers can also help Hungarian companies enter the Japanese market by putting more emphasis on Hungarian-Japanese relations in the 'Eastern Opening' strategy to restore Hungary's image in Japan, which has faded recently.

the concentration either increased although to a smaller extent, or it decreased (Iran and South Korea).

mies highly dependent on exports (like Hungary) are vulnerable to external shocks. As studies (UNDP, 2011, Samen, 2010)

Table 9
Herfinfahl-Hirschman indices for Hungarian export and import

West Asia	United Arab Emirates		Israel		Saudi Arabia			
	Export	Import	Export	Import	Export	Import		
2000	0.270	0.309	0.275	0.230	0.410	0.746		
2011	0.928	0.347	0.358	0.330	0.570	0.530		
2012	0.883	0.387	0.314	0.368	0.490	0.246		
South Asia	India		Iran		Pakistan			
	Export	Import	Export	Import	Export	Import		
2000	0.301	0.219	0.656	0.723	0.377	0.346		
2011	0.575	0.300	0.212	0.913	0.548	0.349		
2012	0.299	0.321	0.231	0.842	0.433	0.375		
CIS	Azerbaijan		Kazakhstan		Uzbekistan			
	Export	Import	Export	Import	Export	Import		
2000	0.501	0.878	0.283	0.550	0.568	0.937		
2011	0.499	0.713	0.464	0.953	0.722	0.906		
2012	0.483	0.586	0.484	0.967	0.810	0.732		
Southeast Asia	Malaysia		Singapore		Thailand			
	Export	Import	Export	Import	Export	Import		
2000	0.452	0.411	0.787	0.615	0.307	0.355		
2011	0.484	0.460	0.812	0.679	0.653	0.400		
2012	0.483	0.561	0.553	0.602	0.365	0.406		
Northeast Asia	China		Hong Kong		Japan		South Korea	
	Export	Import	Export	Import	Export	Import	Export	Import
2000	0.257	0.293	0.380	0.373	0.259	0.297	0.686	0.507
2011	0.407	0.560	0.473	0.327	0.282	0.337	0.316	0.503
2012	0.404	0.505	0.445	0.320	0.302	0.258	0.237	0.508

Source: author's own calculations based on SITC 3-digit level classification

Import is highly concentrated from the CIS countries (cotton, natural gas), Iran (fruit and nuts) and Singapore (medicinal products), and rather concentrated from China, South Korea, Malaysia and Saudi Arabia. Regarding West and South Asian and CIS countries, medicine chemical, cotton, textile products and natural gas dominate in Hungarian import; in Southeast and Northeast Asia it is telecommunication equipments and other high-tech parts and components which are dominant.

As we have seen, concentration is high in Hungarian trade with Asia. Diversification of exports would be better, because econo-

show, the size of this impact depends on the degree of the country's export concentration. Higher degrees of export concentration are correlated with greater volatility in export earnings.

Technology-intensity

The degree of economic and technological development of a country can be reflected in its production and export structure. The share of high-technology products in the export can be an important sign of development in several cases. However, in the case of

developing countries, economic trade literature questions real technological development behind the export of high-tech products (Mani, 2000; Srholec, 2005). It is argued that there is no real innovative activity, technological achievements behind this export, but this is due to the fragmentation of the production, the effect of global production networks (vertical specialisation) established by multinational companies. One product is produced in several countries; therefore, there is an important quantity of trade in its intermediate products and parts.

Fragmentation of production has increased to a considerable extent in the last decade, especially in the electronic, clothing and automotive industry (Lall *et al.*, 2004; Kimura *et al.*, 2005; Srholec, 2006; Vogiatzoglou, 2012; Túry, 2013). What is more, international trade in global production networks has risen much faster then "normal" trade. Asian developing countries especially participate in this process with China at the front. The intensity of production fragmentation depends on certain factors like technically separable stages, factor intensity, the technological complexity of production and the weight of the product (transportable to large distances). These factors especially facilitate the production segmentation in electronics (Lall *et al.*, 2004).

Participation in these global production networks means producing the labour intensive phases of high-tech intensive production (Srholec, 2005). As a consequence of the increased fragmentation of production the assembly of an electronic product or a part can be similarly intensive in cheap labour as the assembly of any other machine. Therefore, countries where R&D intensity is low can also manifest high shares of high-tech exports. This is true for several Asian countries except for some high-income countries like Japan, Singapore, Taiwan, South Korea and certain Chinese regions (Srholec, 2005). The increasing role of China in the global network of information, communication and technology industry is proven by Amighimi (2005). In order to assemble them, the electronic parts of products are imported, which is manifested in a high share of high-tech import in these countries. Cross-border movement of parts and products within the same production network increases the trade of these developing (Asian) countries, "artificially" generating international trade with each crossing (Athukorala, *et al.*, 2006; Mani, 2000).

As a consequence, the competitiveness of countries can be overestimated based on gross export data and on indices (such as revealed comparative advantage) calculated from gross exports. This is especially true for open countries that rely heavily on imported intermediates. Based on world input-output table data, Timmer et al (2012) show that the use of imported intermediate inputs and the inclusion in global value chains has increased radically between 1995 and 2008 in the case of the Visegrad countries.

Table 10
Trade of high-technology products between Hungary and Asian partners
(million EUR)

	United Arab Emirates		Israel	
	2011	2012	2011	2012
Htimport	0.80	1.84	22.49	25.18
Htexport	1,335.83	853.22	76.27	38.84
	Saudi Arabia		India	
Htimport	1.14	0.58	9.35	27.82
Htexport	105.20	111.38	230.06	98.91
	Iran		Pakistan	
Htimport	0.10	0.03	0.30	1.27
Htexport	2.73	3.36	18.39	16.14
	Azerbaijan		Kazakhstan	
Htimport	0.03	0.01	0.01	0.68
Htexport	47.32	8.13	57.12	29.33
	Uzbekistan		Malaysia	
Htimport	0.00	0.00	156.97	227.84
Htexport	5.32	4.55	98.45	45.89
	Singapore		Thailand	
Htimport	284.69	206.43	92.46	81.17
Htexport	515.00	188.01	103.27	33.88
	China		Hong Kong	
Htimport	3,447.39	2,832.29	18.86	19.33
Htexport	179.95	188.91	112.42	102.13
	Japan		South Korea	
Htimport	439.15	250.50	606.09	243.26
Htexport	84.75	93.84	66.76	27.85

Source: author's own calculations based on Eurostat data. Hungarian import from the given country and Hungarian export to the country.

Based on the analysis of the product structure, we can assume that there is a

considerable share of high-tech products in the Hungarian trade with Asia. *Table 10* shows the value of trade in high-tech products in 2011–2012 with the main trade partners being in Asia. The list of high-technology products is given by the Eurostat[21] based on their OECD definition (see the list in the Annex).

It can be seen that high-tech trade in general is very uneven, and the balance is extremely positive for Hungary in the case of the Arab countries, India and the CIS countries, also positive in the case of Israel and Hong Kong, but very negative in the case of China, Japan and South Korea. High-tech export to Singapore and Thailand exceeded high-tech import in 2011 but this was reversed in 2012. In general Hungarian high-tech export decreased in 2012 to almost all main Asian partners and in several cases this decrease was radical.

We also calculated the share of high-technology products in the Hungarian trade with the main Asian partners. *Table 11* shows the relevant shares in Hungarian exports and imports in the case of each country. We can see that Hungarian exports are much more

Table 11
Share of high-technology products in Hungarian exports to and imports from the main Asian partner countries

West Asia	United Arab Emirates		Israel		Saudi Arabia			
	Import	Export	Import	Export	Import	Export	Import	Export
2000	1.9	5.0	40.7	2.6	0.1	0.9		
2007	8.5	82.8	21.3	29.7	34.4	69.0		
2009	15.4	84.5	20.3	36.4	50.4	47.9		
2011	26.4	95.0	21.6	23.1	61.0	61.4		
2012	41.1	91.6	20.3	14.1	39.1	54.6		
South Asia	India		Iran		Pakistan			
2000	3.1	16.7	5.5	8.8	0.0	6.8		
2007	18.7	19.6	1.8	4.2	0.3	87.1		
2009	23.7	39.8	0.9	5.0	2.9	30.0		
2011	3.5	65.6	3.8	15.4	2.6	62.0		
2012	9.5	44.5	0.9	19.1	39.1	53.9		
CIS	Azerbaijan		Kazakhstan		Uzbekistan			
2000	0.0	13.5	0.0	10.5	0.0	12.3		
2007	0.0	36.6	0.0	47.9	0.0	26.4		
2009	76.5	56.8	0.0	16.5	0.8	6.5		
2011	43.2	60.0	0.0	39.4	0.0	14.8		
2012	1.6	21.3	1.0	23.5	0.0	8.8		
Southeast Asia	Malaysia		Singapore		Thailand			
2000	57.3	21.8	69.6	4.6	27.2	20.6		
2007	50.5	30.7	36.8	11.4	32.0	6.9		
2009	72.3	46.9	50.7	35.7	27.6	50.7		
2011	64.0	58.3	82.7	85.0	30.9	72.1		
2012	71.6	37.3	81.0	59.7	24.0	35.6		
Northeast Asia	China		Hong Kong		Japan		South Korea	
2000	43.6	16.2	51.0	15.8	33.9	14.5	27.7	5.0
2007	56.4	25.6	42.0	27.6	35.9	20.4	47.3	15.2
2009	60.0	17.9	39.6	37.3	46.5	25.3	52.1	20.8
2011	55.7	14.5	31.7	48.6	38.3	19.7	48.8	26.1
2012	51.6	13.5	31.6	43.0	25.2	20.9	24.5	15.0

Source: author's own calculations from Eurostat.

[21] http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf.

high-tech intensive than imports in the case of the South Asia and CIS countries and are just the opposite way in the case of Northeast Asia: here Hungarian imports are more high-tech intensive than exports (exception is Hong Kong in 2011–2012). Situation is similar with Southeast Asia (except for Thailand to where Hungarian exports are more high-tech intensive than imports). High-tech intensity of trade is similar in both ways with West Asia (except for the Arab Emirates where export is almost only high-tech mobile phones). Parallel to the decrease in volume, also the shares of high-tech products decreased in Hungarian exports in 2012.

Table 12 shows the leading high-tech export product groups. Regarding West Asia, exports to the United Arab Emirates and to Saudi Arabia reflect the already mentioned massive export of the Nokia affiliate from Hungary, increasing the high-tech share from a very low to a high level between 2000 and 2011. In the case of South Asia the situation is similar in the export to India and Pakistan where electronics cause a significant high-tech share because of "telephone sets including those for cellular networks." Exports to Iran are much less high-tech intensive, and scientific instruments give 48 per cent of the high-tech exports (see table 12), mainly orthopaedic appliances and electrodiagnostic apparatus for medical, surgical, dental or veterinary purposes.

Towards the CIS countries Hungarian high-tech exports exist to Azerbaijan and to Kazakhstan where telephone sets are also

Table 12a
Share of high-technology product groups in Hungarian high-tech export to main partners in West Asia, South Asia and CIS, 2012

	United Arab Emirates		Israel		Saudi Arabia	
	m. EUR	%	m. EUR	%	m. EUR	%
Aerospace	12.89	1.51	6.87	17.69	6.31	5.66
Computers, office machines	7.30	0.86	11.53	29.69	2.74	2.46
Electronics, telecommunications	828.74	97.13	8.60	22.15	98.60	88.53
Pharmacy	0.57	0.07	9.12	23.49	1.72	1.54
Scientific instruments	2.39	0.28	0.70	1.80	1.69	1.52
Electrical machinery	1.22	0.14	1.20	3.09	0.14	0.13
Chemistry	0.14	0.02	0.79	2.03	0.24	0.22
Non-electrical machinery	0.01	0.00	0.03	0.09	0.01	0.01
Arms and ammunition	0	0.00	0	0.00	0	0.00
High-tech	853,22	100,00	38,84	100,00	111,38	100,00
	India		Iran		Pakistan	
	m. EUR	%	m. EUR	%	m. EUR	%
Aerospace	2.28	2.31	0.00	0.00	2.68	16.63
Computers, office machines	5.02	5.07	0.01	0.24	0.52	3.25
Electronics, telecommunications	58.39	59.04	0.16	4.79	12.10	74.97
Pharmacy	10.60	10.72	0.38	11.26	0.40	2.45
Scientific instruments	13.47	13.61	1.62	48.22	0.30	1.85
Electrical machinery	4.01	4.06	0.59	17.62	0.01	0.03
Chemistry	0.71	0.72	0.59	17.49	0.13	0.82
Non-electrical machinery	4.43	4.48	0.01	0.38	0.00	0.00
Arms and ammunition	0.00	0.00	0.00	0.00	0.00	0.00
High-tech	98.91	100.00	3.36	100.00	16.14	100.00
	Azerbaijan		Kazakhstan		Uzbekistan	
	m. EUR	%	m. EUR	%	m. EUR	%
Aerospace	0.00	0.00	1.36	4.64	0.00	0.00
Computers, office machines	0.15	1.91	0.27	0.93	0.06	1.43
Electronics, telecommunications	6.09	74.92	17.81	60.72	0.49	10.75
Pharmacy	1.41	17.35	6.02	20.54	3.43	75.37
Scientific instruments	0.21	2.63	0.87	2.97	0.02	0.53
Electrical machinery	0.03	0.32	0.34	1.15	0.00	0.01
Chemistry	0.25	3.02	2.76	9.42	0.54	11.91
Non-electrical machinery	0.00	0.00	0.00	0.02	0.00	0.00
Arms and ammunition	0.00	0.00	0.00	0.00	0.00	0.00
High-tech	8.13	100.00	29.33	100.00	4.55	100.00

dominant. Additionally, in 2011 there was a unique delivery of aeroplanes to Azerbaijan but in 2012 there was no such item. Towards the Southeast Asian partners the share of high-tech exports is high, almost entirely due to telephone sets.

The share of high-tech products in the Hungarian exports is the lowest to the Northeast Asian region. Export to Hong Kong shows the highest share in the region, above 40 per cent (due to telephone sets) and exports to China, Japan and South Korea have around 20 per cent or less share in high-tech products. In the Hungarian export to China scientific instruments are significant high-tech products; in electronics not only telephones but also their parts and printed circuits are important. This is most probably because of the assembly activity in China. Similarly, cellular phones and parts also important high-tech export products to Hong Kong. Towards Japan and South Korea the share of high-tech exports is much lower and in the case of Japan not that concentrated than in other cases (see table 12).

High-technology import of Hungary is rather high in value from China, Japan and South Korea and also from Malaysia and Singapore. Import from these countries is high-technology intensive – as data of table 10 show.

As it is seen from table 13 this high value and high technology intensity of import is (in 80-94%) due to the electronics and telecommunications products. From China and Hong Kong cellular phone sets and their parts are the most important import products within electronics. This is due to the activity of multinational companies in the global production networks. These electronic multinational affiliates are present in Hungary and China too.

Telecommunication equipments dominate in the import from Southeast Asia too. Singapore differs from this general pattern, because pharmaceutical products (heparin and salts) lead as high-tech products.

Table 12b
Share of high-technology product groups in Hungarian high-tech export to main partners in Southeast Asia and Northeast Asia, 2012

	Malaysia		Singapore		Thailand			
	m. EUR	%	m. EUR	%	m. EUR	%		
Aerospace	0.70	1.53	0.79	0.42	1.96	5.77		
Computers, office machines	11.29	24.61	0.93	0.50	0.10	0.31		
Electronics, telecommunications	28.88	62.92	170.58	90.73	16.65	49.15		
Pharmacy	0.36	0.79	11.52	6.13	0.60	1.78		
Scientific instruments	4.24	9.25	3.00	1.60	10.33	30.48		
Electrical machinery	0.11	0.23	0.80	0.43	0.11	0.34		
Chemistry	0.16	0.35	0.34	0.18	3.30	9.74		
Non-electrical machinery	0.00	0.00	0.05	0.03	0.89	2.62		
Arms and ammunition	0.00	0.00	0.00	0.00	0.00	0.00		
High-tech	45.89	100.00	188.01	100.00	33.88	100.00		
	China		Hong Kong		Japan		South Korea	
	m. EUR	%	m. EUR	%	m. EUR	%	m. EUR	%
Aerospace	1.62	0.86	0.33	0.32	2.47	2.63	0.42	1.51
Computers, office machines	17.02	9.01	5.54	5.42	8.75	9.33	1.93	6.93
Electronics, telecommunications	77.85	41.21	69.46	68.02	13.34	14.22	9.50	34.10
Pharmacy	2.76	1.46	0.15	0.15	21.97	23.41	1.51	5.42
Scientific instruments	70.53	37.34	23.47	22.98	45.27	48.24	11.97	42.97
Electrical machinery	4.70	2.49	3.75	3.68	0.33	0.36	1.15	4.13
Chemistry	2.08	1.10	0.00	0.00	1.59	1.69	0.26	0.92
Non-electrical machinery	13.60	7.20	0.02	0.01	0.36	0.38	1.13	4.04
Arms and ammunition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High-tech	188.90	100.00	102.13	100.00	93.84	100.00	27.85	100.00

Source: author's own calculations from Eurostat.

Import of high-tech products practically does not exist from the CIS countries. There are some high-tech imports from India and Israel; mainly in electronics, pharmacy and chemistry. (From India there was also some import of gas turbine parts for turbo jets in 2012 and from Pakistan this item is the only high-tech import for Hungary).

Table 13a
Share of high-technology product groups in Hungarian high-tech import from main partners in West Asia, South Asia and CIS,2012

	United Arab Emirates		Israel		Saudi Arabia	
	m. EUR	%	m. EUR	%	m. EUR	%
Aerospace	1.50	81.49	0.13	0.53	0.00	0.61
Computers, office machine	0.06	3.02	0.45	1.79	0.16	27.71
Electronics, telecommunications	0.21	11.28	5.96	23.66	0.34	59.95
Pharmacy	0.00	0.00	6.32	25.11	0.00	0.00
Scientific instruments	0.08	4.17	0.62	2.45	0.07	11.33
Electrical machinery	0.00	0.04	0.28	1.12	0.00	0.40
Chemistry	0.00	0.00	11.40	45.26	0.00	0.00
Non-electrical machinery	0.00	0.00	0.00	0.01	0.00	0.00
Arms and ammunition	0.00	0.00	0.02	0.07	0.00	0.00
High-tech	1.84	100.00	25.18	100.00	0.58	100.00
	India		Iran		Pakistan	
	m. EUR	%	m. EUR	%	m. EUR	%
Aerospace	3.07	11.04	0.00	0.00	1.26	99.71
Computers, office machine	0.09	0.31	0.00	0.41	0.00	0.24
Electronics, telecommunications	7.23	25.97	0.02	65.40	0.00	0.01
Pharmacy	16.57	59.55	0.00	0.00	0.00	0.00
Scientific instruments	0.35	1.25	0.01	34.18	0.00	0.02
Electrical machinery	0.09	0.33	0.00	0.00	0.00	0.02
Chemistry	0.43	1.54	0.00	0.00	0.00	0.00
Non-electrical machinery	0.00	0.00	0.00	0.00	0.00	0.00
Arms and ammunition	0.00	0.01	0.00	0.00	0.00	0.00
High-tech	27.82	100.00	0.03	100.00	1.27	100.00
	Azerbaijan		Kazakhstan		Uzbekistan	
	m.EUR	%	m.EUR	%	m.EUR	%
Aerospace	0.00	0.00	0.00	0.00	0.00	0.00
Computers, office machine	0.00	0.00	0.03	3.73	0.00	0.00
Electronics, telecommunications	0.00	9.43	0.02	3.32	0.00	0.00
Pharmacy	0.00	9.43	0.63	92.63	0.00	0.00
Scientific instruments	0.01	81.14	0.00	0.32	0.00	0.00
Electrical machinery	0.00	0.00	0.00	0.00	0.00	0.00
Chemistry	0.00	0.00	0.00	0.00	0.00	0.00
Non-electrical machinery	0.00	0.00	0.00	0.00	0.00	0.00
Arms and ammunition	0.00	0.00	0.00	0.00	0.00	0.00
High-tech	0.01	100.00	0.68	100.00	0.00	0.00

Source: author's own calculations from Eurostat.

Table 13b
Share of high-technology product groups in Hungarian high-tech import from main partners in Southeast Asia and Northeast Asia, 2012

	Malaysia		Singapore		Thailand			
	m. EUR	%	m. EUR	%	m. EUR	%		
Aerospace	0.00	0.00	0.01	0.00	0.00	0.00		
Computers, office machine	18.99	8.33	7.38	3.58	1.39	1.72		
Electronics, telecommunications	206.80	90.77	46.01	22.29	79.14	97.62		
Pharmacy	0.08	0.04	147.87	71.63	0.02	0.03		
Scientific instruments	0.97	0.43	4.82	2.33	0.06	0.08		
Electrical machinery	0.54	0.24	0.15	0.07	0.21	0.26		
Chemistry	0.45	0.20	0.00	0.00	0.00	0.00		
Non-electrical machinery	0.00	0.00	0.19	0.09	0.24	0.30		
Arms and ammunition	0.00	0.00	0.00	0.00	0.00	0.00		
High-tech	227,84	100,00	206,43	100,00	81,07	100,00		
	China		Hong Kong		Japan		South Korea	
	m. EUR	%	m. EUR	%	m. EUR	%	m. EUR	%
Aerospace	22.05	0.78	0.21	1.09	9.49	3.79	0.27	0,11
Computers, office machine	315.20	11.13	1.00	5.15	2.71	1.08	5.13	2,11
Electronics, telecommunications	2414.92	85.26	16.58	85.79	201.92	80.61	213.69	87,84
Pharmacy	7.80	0.28	0.00	0.01	5.13	2.05	0.05	0,02
Scientific instruments	16.85	0.59	0.86	4.46	10.42	4.16	13.06	5,37
Electrical machinery	51.02	1.80	0.58	3.02	12.65	5.05	8.45	3,47
Chemistry	2.39	0.08	0.08	0.44	2.26	0.90	0.74	0,31
Non-electrical machinery	2.02	0.07	0.00	0.00	5.91	2.36	1.86	0,77
Arms and ammunition	0.05	0.00	0.01	0.05	0.01	0.00	0.00	0,00
High-tech	2832.29	100.00	19.33	100.00	250.50	100.00	243.26	100,00

Source: author's own calculations from Eurostat.

The above-described pattern of high-technology trade between Hungary and Asian countries reinforces the previous theories and assumptions on the decisive role of global production networks. The trade of electronic products, mainly mobile phones and parts – the production of which is extremely segmented – plays a dominant role in the trade with most countries. One exception is the case of CIS countries where delivery of other high-tech products (pharmacy, scientific instruments) is also significant from Hungary. The integration of Hungary (and other Visegrad countries) into the global value chains and the drastic changes in production structure since the late-1990's were generally proven by others (Antalóczy, 2012; Rahman-Zhao, 2013; Timmer *et al.*, 2012). Based on a more disaggregated product classification, our study shows that this vertical integration determines the trade between Hungary and Asia too.

4) Actors of trade: companies

There is an existing body of literature concerning the experiences and features of European companies trading with Asian countries, mainly China. These partly focus on one European country, like features of Italian, Danish or Swiss firms present in China (summarised in Horváthné, 2012) partly analyse several countries together (Gaulier, 2012b).

Barba Navaretti *et al.* (2013) use a dataset of 15,000 manufacturing companies from seven EU member states (including Hungary) and try to find the answer to the question whether firms exporting to China and India are different from other exporters.

They found that there were differences: the companies operating in China and India were on average significantly bigger, more innovative and productive than other exporters.

As it can be seen from the trade data, foreign multinational companies have an essential role in the Hungarian-Asian trade. There are, however, other players: domestic, Hungarian large companies (multinationals) and small or medium-sized Hungarian firms. The way and the degree to which they participate in this trade is different.

Regarding the large multinational affiliates, they included Hungary and the Asian countries in their global production network and their intrafirm trade and special trade policy are decisive.

The case of Nokia is a good example. Nokia established its greenfield factory in Komárom in 1999 with the profile of making cellular phones; in 2004 a new investment doubled its capacity. Several Arab and Asian countries were supplied from here until recently (Szigetvári, 2007). This appears in the trade statistics, as we have seen it. 97 per cent of the revenues of the Hungarian Nokia plant stemmed from export sales. In 2012 Nokia downgraded its affiliates in Europe and Mexico. In Hungary, the Komárom plant cut 2,300 out of 4,400 jobs. The work of assembling phones was switched to Nokia's plants in South Korea and in Beijing. The remaining European workers focus on receiving phones from Asia and customising phone software according to language requirements or to the specifications of individual mobile networks.[22] Therefore, in 2012 the huge export of cellular phones from Hungary already decreased

The second type of firms exporting from Hungary consists of the large domestic companies that have capital strength and a long tradition in their field. One important example is Richter Gedeon that is one of the biggest Central European pharmaceutical companies, is registered on the stock exchange (at 2.3 bn euro value in 2012). It has the largest R&D centre in the region. The firm has a strong presence in the CIS markets not only with exports but also with its own affiliates that export medicine to other Asian countries. The products of the company have been distributed in China since 1998 and there they established a joint venture first in 2010 and then in 2013. The Chinese partner is Rxmidas Pharmaceuticals Company. This joint company has seven regional offices and around 200 employees.[23]

Table 14
Types of firms trading with Asia

	Foreign multinationals	Hungarian large firms (multinationals)	Hungarian SMEs
Entering on Asian market	Easy	Relatively easy, based on former contacts	Difficult
Motives	Assembly, intrafirm trade	Gaining new markets	Gaining new markets
Volume of trade	Large	Large, medium	Small
Effect of the crisis	Changing locations	Not significant, depends on product characteristics	Can be strong, negative

There are several Hungarian small and medium-sized companies who ventured entering the Asian markets. China is perhaps the most important market in this respect. Experiences show that they turned to some organisation (state agency, private trade or counsellor agency) for help. In many cases they established their own affiliate or a joint venture in the Asian market. Entering these markets proved to be a long, difficult process, which requires adequate resources. Chinese experiences proved that negotiation methods, bureaucratic procedures and forms of communication are different from and more complicated than those considered usual in Europe (Horváthné, 2012). Personal contacts and a good knowledge of the language (or a reliable interpreter) are important. In general those firms can be successful that are competitive on other foreign markets too, have a well-prepared and organised management and have their own proper resources.

[22] http://gigaom.com/2012/02/08/nokia-factories-shift-to-asia-did-it-have-any-choice/

[23] www.richter.hu

Box 2

Case study – A small goose feather processing company with family traditions*

History and profile

The company was established in 1989 and has been operating as a limited company since 1997. The traditional skill started with the grandfather who was a dealer between 1920 and 1965. Her wife, who was also the establisher of the present company, has been working in the poultry trade from 1940 until 1983. In the year 1978 she decided to give over her skill and experience to his son, the present leader and owner, who continuously enlarges and develops the venture. Presently they have l8 employees.

The company produces filling material for the garment industry, both raw and washed, processes goose and duck feathers, both handpicked and industrial. The production is based on their wide-range indirect connections to poultry-farmers. The machinery is able to handle and process the incoming raw feathers separately, by farms and thus can avoid the worsening of quality, in contrast to the unifying technology of the big collectors. It is possible to intervene in the sorting process, whenever it is necessary. That is why the processing capacity is limited to between 1,200-1,500 kilograms per day.

Experiences on the Asian market

The firm has been exporting to South Korea since 2010 and it also delivers to Taiwan. Its Asian export has increased to a small extent since then. It was partly the company, partly Asian importer firms that initiated business contacts. The firm was active in searching for partners, asking help from ITD and the Hungarian Embassy in South Korea. Apart from that they participate in the Frankfurt Heimtex International Fair where there are possibilities to build new contacts.

The firm has good experiences on the Asian market; Korean partners are flexible and pay duely. Future prospects seem to be promising; there is an increasing interest for these Hungarian products, as there is a shortage on the world market of feathers. It also helped that customs duties decreased as a consequence of the Free Trade Agreement of the EU, which Korea has been enforcing since July 2011.

Effect of the crisis

The international financial and economic crisis since 2008 had negative effects on the company; it caused certain market losses and financial problems.

The firm was established with own resources, no state or EU financing was used. In 2006 – experiencing a boom of demand – the firm undertook a major modernisation with the help of a bank loan. Production tripled, but the crisis came and in 2008 the bank withdrew its financial support. The company still does not get investment loans since then, so they cannot expand production further despite the growing demand and orders. The firm has good contacts, good customers in Asia, the necessary technological and professional facilities are given but liquidity problems hinder them in expanding four or fivefold.

* This case study is based on personal questions to the managing director and homepage information of the company.

The characteristics of the product can be very important. There are successful innovative companies in the high-tech segment, like precision, medical instruments (Mediso[24]) or membranes for water treatment (Zenon[25]). Often there are initiatives from the Asian countries coming to Hungary and looking for providers. A major cheese-exporting firm was established and expanded by an Arabic businessman to export cheese and milk products to the Arab countries.[26] The firm was not hurt by the crisis

[24] Mediso Medical Imaging Systems with headquarters in Budapest is a dynamic supplier of imaging devices (for CT, MRI, *etc.*) to the medical research institutions and hospitals of the world. The company was founded in 1990 by experts of Gamma Művek, the largest research and manufacturing company of the region which has engaged in nuclear equipment manufacturing since 1960. The business strength of Mediso is based on its R&D activity and continuous development of new products. More than 50 per cent of Mediso employees are engaged in R&D. The firm received the Hungarian Innovation Award twice and in 2012 also the New Product Innovation Award of Frost&Sullivan. The Mediso-affiliated German and Polish subsidiaries and the worldwide distributor network ensures export to 81 countries, among them to almost all Asian ones.

[25] Zenon Environmental Inc. established a research laboratory in Tatabánya in 2001 and built a membrane factory of 500 workers in Oroszlány between 2002–2006. GE Water and Process Technologies acquired the company in 2006.

[26] Caravanes Co. Ltd. was founded by the Libanese Dr. Riad Naboulsi in 1989. The company has grown to become one of the largest cheese exporters in Hungary. Kőröstej Co. Ltd., the Holdings production

but successfully increased its sales even after 2009.

As the first result of the Arab-Hungarian Economic Forum established in the framework of the 'Eastern Opening', we should mention the agreement between Szentkirályi Ásványvíz, a Hungarian mineral water factory and a Saudi company. Szentkirályi Ásványvíz will supply five star hotels, flight catering companies, and supermarkets in Saudi Arabia. The products of the Hungarian firm are also available in other Arab countries (*e.g.* Bahrain, the United Arab Emirates, Kuwait) now.

Financing requirements of the operations on the Asian markets are rather high. This is the field where the recent international economic crisis had negative effects even on those SMEs that have successfully found their market niches (*Box 2*).

There are consulting companies helping Hungarian firms on Asian markets, like Tradeland Ltd, Sűdy and co., Asiaport, *etc.* Tradeland has even had its own trading house in China since 2009.

5) CONCLUSIONS, RECOMMENDATIONS

Asia represents a relatively small part in Hungarian imports and an even smaller share in exports. Exports to Asia, however, increased more dynamically than exports to other regions during the years since 2000. Hungarian exports are directed mainly to West and Northeast Asia and the majority of imports come from Northeast Asia, mainly from China. Hungarian trade with Asia shows a considerable deficit because of the high value of imports from China.

Our study proved that the product structure of trade changed significantly during the examined period. This was illustrated by the similarity indices calculated for the main Asian partners. Machinery and transport equipment gained a considerable share in trade. Generally we can say that trade is also concentrated to certain product groups, as it was shown by the first ten product groups and by the calculation of concentration indices. High concentration can increase vulnerability and volatility of export incomes. There are certain differences among the five Asian regions, and CIS countries differ the most from the general pattern. In several cases the share of high-tech products is very large, being mostly mobile phones and parts, but also automotive products, medicaments.

All the previously mentioned structural characteristics prove the high role of multinational companies in trade. In general, the fragmentation of production increased in the world during the past decade and this is manifested in the Hungarian trade with Asia too.

As we can see, our previous hypothesis that the present international crisis can give an impetus to trade increase with Asia, proved to be true to a certain extent for a while: export increase until 2011 was more dynamic towards these countries than towards other regions. However, as for Hungarian trade with Asia is largely controlled by multinational companies and their production in the global production chains, the location decisions of these firms can also have the opposite effect. Relocating plants from Hungary, for example, can decrease the Hungarian export capacity significantly and can change the structure of foreign trade too. This seemed to happen in 2012.

Apart from the dominating multinational companies there are large and smaller Hungarian companies that are present on Asian markets. These can have different motives and experiences and were generally hit harder by the international crisis.

The 'Eastern Opening' strategy of the Hungarian government aims at helping precisely these firms. The global economic crisis gave an impetus to policymakers to help Hungarian companies develop business relations with their Asian counterparts. The implementation of the strategy is still at an early stage. As a part of the 'Eastern Opening,' Hungarian policymakers would like to develop Hungarian SMEs' export capability and diversify their exports in terms of desti-

unit, was acquired by the Caravanes Group in 1992 and later in 2000, the Kőröstetétlen plant was also purchased. Primary export destinations are Middle Eastern Arabic countries. In 2006 the Holding procured the reputed Hajdúböszörmény Cheese Plant.
Export markets of Caravanes have expanded steadily and in 2009 the construction of a new plant has become necessary to meet growing demand. In 2010, the Group acquired the Dráva Milk Factory.

nations, and also facilitate SMEs' market entry into Asia. Indirect exports are also supported. Hungarian SMEs are promoted to become suppliers of transnational corporations exporting to Asia.

We can say that the different measures of Hungarian policymakers are necessary but not sufficient. On the one hand, they are very useful for establishing business relations, but on the other hand, they must be supplemented with deep market analyses (potential Hungarian exporters and Asian business opportunities). It also would be more favourable if the 'Eastern Opening' were more geographically focused. In this case, policy efforts could be concentrated on markets with high prospects accordingly. Small and medium-sized firms have serious financial difficulties – as our case study also showed. Therefore, the financial needs of SMEs should be taken into account and helped by policymakers and financial institutions.

Probably a significant impact of the 'Eastern Opening' strategy cannot be expected in terms of Hungary's total Asian exports, but the campaign itself can have a certain effect and it is important that Hungarian policymakers make efforts to help Hungarian companies in such a difficult economic situation. As mentioned, Hungary is integrated in the global value chains of multinational companies. The better utilization of this situation could also be helped. Apart from the well targeted short-term efforts, financial resources should be given to SMEs for investment in technology improvement and to the education system to develop proper skills of workforce. These (together with a favourable business environment) can affect the location choices of multinational firms.

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ANNEX

List of SITC 3 digit level product categories

001	Live animals other than animals of division 03
011	Meat of bovine animals, fresh, chilled or frozen
012	Other meat and edible meat offal, fresh, chilled or frozen (except meat and meat offal unfit or unsuitable for human consumption)
016	Meat and edible meat offal, salted, in brine, dried or smoked; edible flours and meals of meat or meat offal
017	Meat and edible meat offal, prepared or preserved, n.e.s.
022	Milk and cream and milk products other than butter or cheese
023	Butter and other fats and oils derived from milk
024	Cheese and curd
025	Eggs, birds', and egg yolks, fresh, dried or otherwise preserved, sweetened or not; egg albumin
034	Fish, fresh (live or dead), chilled or frozen
035	Fish, dried, salted or in brine; smoked fish (whether or not cooked before or during the smoking process); flours, meals and pellets of fish, fit for human consumption
036	Crustaceans, molluscs and aquatic invertebrates, whether in shell or not, fresh (live or dead), chilled, frozen, dried, salted or in brine; crustaceans, in shell, cooked by steaming or boiling in water, whether or not chilled, frozen, dried, salted or in brine; flours, meals and pellets of crustaceans or of aquatic invertebrates, fit for human consumption
037	Fish, crustaceans, molluscs and other aquatic invertebrates, prepared or preserved, n.e.s.
041	Wheat (including spelt) and meslin, unmilled
042	Rice
043	Barley, unmilled
044	Maize (not including sweet corn), unmilled
045	Cereals, unmilled (other than wheat, rice, barley and maize)
046	Meal and flour of wheat and flour of meslin
047	Other cereal meals and flours
048	Cereal preparations and preparations of flour or starch of fruits or vegetables
054	Vegetables, fresh, chilled, frozen or simply preserved (including dried leguminous vegetables); roots, tubers and other edible vegetable products, n.e.s., fresh or dried
056	Vegetables, roots and tubers, prepared or preserved, n.e.s.
057	Fruit and nuts (not including oil nuts), fresh or dried
058	Fruit, preserved, and fruit preparations (excluding fruit juices)
059	Fruit juices (including grape must) and vegetable juices, unfermented and not containing added spirit, whether or not containing added sugar or other sweetening matter
061	Sugars, molasses and honey
062	Sugar confectionery
071	Coffee and coffee substitutes
072	Cocoa
073	Chocolate and other food preparations containing cocoa, n.e.s.
074	Tea and matã‰

075	Spices
081	Feeding stuff for animals (not including unmilled cereals)
091	Margarine and shortening
098	Edible products and preparations, n.e.s.
111	Non-alcoholic beverages, n.e.s.
112	Alcoholic beverages
121	Tobacco, unmanufactured; tobacco refuse
122	Tobacco, manufactured (whether or not containing tobacco substitutes)
211	Hides and skins (except furskins), raw
212	Furskins, raw (including heads, tails, paws and other pieces or cuttings, suitable for furriers' use), other than hides and skins of group 211
222	Oil-seeds and oleaginous fruits of a kind used for the extraction of "soft" fixed vegetable oils (excluding flours and meals)
223	Oil-seeds and oleaginous fruits, whole or broken, of a kind used for the extraction of other fixed vegetable oils (including flours and meals of oil-seeds or oleaginous fruit, n.e.s.)
231	Natural rubber, balata, gutta-percha, guayule, chicle and similar natural gums, in primary forms (including latex) or in plates, sheets or strip
232	Synthetic rubber; reclaimed rubber; waste, parings and scrap of unhardened rubber
244	Cork, natural, raw and waste (including natural cork in blocks or sheets)
245	Fuel wood (excluding wood waste) and wood charcoal
246	Wood in chips or particles and wood waste
247	Wood in the rough, whether or not stripped of bark or sapwood, or roughly squared
248	Wood, simply worked, and railway sleepers of wood
251	Pulp and waste paper
261	Silk
263	Cotton
264	Jute and other textile bast fibres, n.e.s., raw or processed but not spun; tow and waste of these fibres (including yarn waste and garnetted stock)
265	Vegetable textile fibres (other than cotton and jute), raw or processed but not spun; waste of these fibres
266	Synthetic fibres suitable for spinning
267	Other man-made fibres suitable for spinning; waste of man-made fibres
268	Wool and other animal hair (including wool tops)
269	Worn clothing and other worn textile articles; rags
272	Fertilizers, crude, other than those of division 56
273	Stone, sand and gravel
274	Sulphur and unroasted iron pyrites
277	Natural abrasives, n.e.s. (including industrial diamonds)
278	Other crude minerals
281	Iron ore and concentrates
282	Ferrous waste and scrap; remelting scrap ingots of iron or steel
285	Aluminium ores and concentrates (including alumina)
287	Ores and concentrates of base metals, n.e.s.
288	Non-ferrous base metal waste and scrap, n.e.s.
289	Ores and concentrates of precious metals; waste, scrap and sweepings of precious metals (other than of gold)
291	Crude animal materials, n.e.s.

292	Crude vegetable materials, n.e.s.
321	Coal, whether or not pulverized, but not agglomerated
322	Briquettes, lignite and peat
325	Coke and semi-coke (including char) of coal, of lignite or of peat, whether or not agglomerated; retort carbon
333	Petroleum oils and oils obtained from bituminous minerals, crude
334	Petroleum oils and oils obtained from bituminous minerals (other than crude); preparations, n.e.s., containing by weight 70% or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations; waste oils
335	Residual petroleum products, n.e.s., and related materials
342	Liquefied propane and butane
343	Natural gas, whether or not liquefied
344	Petroleum gases and other gaseous hydrocarbons, n.e.s.
411	Animal oils and fats
421	Fixed vegetable fats and oils, "soft", crude, refined or fractionated
422	Fixed vegetable fats and oils, crude, refined or fractionated, other than "soft"
431	Animal or vegetable fats and oils, processed; waxes; inedible mixtures or preparations of animal or vegetable fats or oils, n.e.s.
511	Hydrocarbons, n.e.s., and their halogenated, sulphonated, nitrated or nitrosated derivatives
512	Alcohols, phenols, phenol-alcohols, and their halogenated, sulphonated, nitrated or nitrosated derivatives
513	Carboxylic acids and their anhydrides, halides, peroxides and peroxyacids; their halogenated, sulphonated, nitrated or nitrosated derivatives
514	Nitrogen-function compounds
515	Organo-inorganic compounds, heterocyclic compounds, nucleic acids and their salts, and sulphonamides
516	Other organic chemicals
522	Inorganic chemical elements, oxides and halogen salts
523	Salts and peroxysalts, of inorganic acids and metals
524	Other inorganic chemicals; organic and inorganic compounds of precious metals
525	Radioactive and associated materials
531	Synthetic organic colouring matter and colour lakes, and preparations based thereon
532	Dyeing and tanning extracts, and synthetic tanning materials
533	Pigments, paints, varnishes and related materials
541	Medicinal and pharmaceutical products, other than medicaments of group 542
542	Medicaments (including veterinary medicaments)
551	Essential oils, perfume and flavour materials
553	Perfumery, cosmetic or toilet preparations (excluding soaps)
554	Soap, cleansing and polishing preparations
562	Fertilizers (other than those of group 272)
571	Polymers of ethylene, in primary forms
572	Polymers of styrene, in primary forms
573	Polymers of vinyl chloride or of other halogenated olefins, in primary forms
574	Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyd resins, polyallyl esters and other polyesters, in primary forms
575	Other plastics, in primary forms
579	Waste, parings and scrap, of plastics

581	Tubes, pipes and hoses, and fittings therefor, of plastics
582	Plates, sheets, film, foil and strip, of plastics
583	Monofilament of which any cross-sectional dimension exceeds 1 mm, rods, sticks and profile shapes, whether or not surface-worked but not otherwise worked, of plastics
591	Insecticides, rodenticides, fungicides, herbicides, anti-sprouting products and plant-growth regulators, disinfectants and similar products, put up in forms or packings for retail sale or as preparations or articles (e.g., sulphur-treated bands, wicks and candles, and fly-papers)
592	Starches, inulin and wheat gluten; albuminoidal substances; glues
593	Explosives and pyrotechnic products
597	Prepared additives for mineral oils and the like; prepared liquids for hydraulic transmission; anti-freezing preparations and prepared de-icing fluids; lubricating preparations
598	Miscellaneous chemical products, n.e.s.
599	Residual products of the chemical or allied industries, n.e.s.; municipal waste; sewage sludge; other wastes
611	Leather
612	Manufactures of leather or of composition leather, n.e.s.; saddlery and harness
613	Furskins, tanned or dressed (including heads, tails, paws and other pieces or cuttings), unassembled, or assembled (without the addition of other materials), other than those of heading 848.31
621	Materials of rubber (e.g., pastes, plates, sheets, rods, thread, tubes, of rubber)
625	Rubber tyres, interchangeable tyre treads, tyre flaps and inner tubes for wheels of all kinds
629	Articles of rubber, n.e.s.
633	Cork manufactures
634	Veneers, plywood, particle board, and other wood, worked, n.e.s.
635	Wood manufactures, n.e.s.
641	Paper and paperboard
642	Paper and paperboard, cut to size or shape, and articles of paper or paperboard
651	Textile yarn
652	Cotton fabrics, woven (not including narrow or special fabrics)
653	Fabrics, woven, of man-made textile materials (not including narrow or special fabrics)
654	Other textile fabrics, woven
655	Knitted or crocheted fabrics (including tubular knit fabrics, n.e.s., pile fabrics and openwork fabrics), n.e.s.
656	Tulles, lace, embroidery, ribbons, trimmings and other smallwares
657	Special yarns, special textile fabrics and related products
658	Made-up articles, wholly or chiefly of textile materials, n.e.s.
659	Floor coverings, etc.
661	Lime, cement, and fabricated construction materials (except glass and clay materials)
662	Clay construction materials and refractory construction materials
663	Mineral manufactures, n.e.s.
664	Glass
665	Glassware
666	Pottery
667	Pearls and precious or semiprecious stones, unworked or worked
671	Pig-iron, spiegeleisen, sponge iron, iron or steel granules and powders and ferro-alloys
672	Ingots and other primary forms, of iron or steel; semi-finished products of iron or steel
673	Flat-rolled products of iron or non-alloy steel, not clad, plated or coated

674	Flat-rolled products of iron or non-alloy steel, clad, plated or coated
675	Flat-rolled products of alloy steel
676	Iron and steel bars, rods, angles, shapes and sections (including sheet piling)
677	Rails or railway track construction material, of iron or steel
678	Wire of iron or steel
679	Tubes, pipes and hollow profiles, and tube or pipe fittings, of iron or steel
681	Silver, platinum and other metals of the platinum group
682	Copper
683	Nickel
684	Aluminium
685	Lead
686	Zinc
687	Tin
689	Miscellaneous non-ferrous base metals employed in metallurgy, and cermets
691	Structures and parts of structures, n.e.s., of iron, steel or aluminium
692	Metal containers for storage or transport
693	Wire products (excluding insulated electrical wiring) and fencing grills
694	Nails, screws, nuts, bolts, rivets and the like, of iron, steel, copper or aluminium
695	Tools for use in the hand or in machines
696	Cutlery
697	Household equipment of base metal, n.e.s.
699	Manufactures of base metal, n.e.s.
711	Steam or other vapour-generating boilers, superheated water boilers, and auxiliary plant for use therewith; parts thereof
712	Steam turbines and other vapour turbines and parts thereof, n.e.s.
713	Internal combustion piston engines and parts thereof, n.e.s.
714	Engines and motors, non-electric (other than those of groups 712, 713 and 718); parts, n.e.s., of these engines and motors
716	Rotating electric plant and parts thereof, n.e.s.
718	Power-generating machinery and parts thereof, n.e.s.
721	Agricultural machinery (excluding tractors) and parts thereof
722	Tractors (other than those of headings 744.14 and 744.15)
723	Civil engineering and contractors' plant and equipment; parts thereof
724	Textile and leather machinery and parts thereof, n.e.s.
725	Paper mill and pulp mill machinery, paper-cutting machines and other machinery for the manufacture of paper articles; parts thereof
726	Printing and bookbinding machinery and parts thereof
727	Food-processing machines (excluding domestic); parts thereof
728	Other machinery and equipment specialized for particular industries; parts thereof, n.e.s.
731	Machine tools working by removing metal or other material
733	Machine tools for working metal, sintered metal carbides or cermets, without removing material
735	Parts, n.e.s., and accessories suitable for use solely or principally with the machines falling within groups 731 and 733 (including work or tool holders, self-opening die-heads, dividing heads and other special attachments for machine tools); tool holders for any type of tool for working in the hand
737	Metalworking machinery (other than machine tools) and parts thereof, n.e.s.
741	Heating and cooling equipment and parts thereof, n.e.s.

742	Pumps for liquids, whether or not fitted with a measuring device; liquid elevators; parts for such pumps and liquid elevators
743	Pumps (other than pumps for liquids), air or other gas compressors and fans; ventilating or recycling hoods incorporating a fan, whether or not fitted with filters; centrifuges; filtering or purifying apparatus; parts thereof
744	Mechanical handling equipment and parts thereof, n.e.s.
745	Non-electrical machinery, tools and mechanical apparatus and parts thereof, n.e.s.
746	Ball- or roller bearings
747	Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, including pressure-reducing valves and thermostatically controlled valves
748	Transmission shafts (including camshafts and crankshafts) and cranks; bearing housings and plain shaft bearings; gears and gearing; ball or roller screws; gearboxes and other speed changers (including torque converters); flywheels and pulleys (including pulley blocks); clutches and shaft couplings (including universal joints); articulated link chain; parts thereof
749	Non-electric parts and accessories of machinery, n.e.s.
751	Office machines
752	Automatic data-processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, n.e.s.
759	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with machines falling withing groups 751 and 752
761	Monitors and projectors, not incorporating television reception apparatus; reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus
762	Reception apparatus for radio-broadcasting, whether or not combined, in the same housing, with sound recording or reproducing apparatus or a clock
763	Sound recording or reproducing apparatus; video recording or reproducing apparatus; whether or not incorporating a video tuner
764	Telecommunications equipment, n.e.s., and parts, n.e.s., and accessories of apparatus falling within division 76
771	Electric power machinery (other than rotating electric plant of group 716) and parts thereof
772	Electrical apparatus for switching or protecting electrical circuits or for making connections to or in electrical circuits (e.g., switches, relays, fuses, lightning arresters, voltage limiters, surge suppressors, plugs and sockets, lamp-holders and junction boxes); electrical resistors (including rheostats and potentiometers), other than heating resistors; printed circuits; boards, panels (including numerical control panels), consoles, desks, cabinets and other bases, equipped with two or more apparatus for switching, protecting or for making connections to or in electrical circuits, for electric control or the distribution of electricity (excluding swithching apparatus of subgroup 764.1)
773	Equipment for distributing electricity, n.e.s.
774	Electrodiagnostic apparatus for medical, surgical, dental or veterinary purposes, and radiological apparatus
775	Household-type electrical and non-electrical equipment, n.e.s.
776	Thermionic, cold cathode or photo-cathode valves and tubes (e.g., vacuum or vapour or gas-filled valves and tubes, mercury arc rectifying valves and tubes, cathode-ray tubes, television camera tubes); diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices; light-emitting diodes; mounted piezoelectric crystals; electronic integrated circuits and microassembles; parts thereof
778	Electrical machinery and apparatus, n.e.s.
781	Motor cars and other motor vehicles principally designed for the transport of persons (other than motor vehicles for the transport of ten or more persons, including the driver), including station-wagons and racing cars
782	Motor vehicles for the transport of goods and special-purpose motor vehicles
783	Road motor vehicles, n.e.s.
784	Parts and accessories of the motor vehicles of groups 722, 781, 782 and 783
785	Motor cycles (including mopeds) and cycles, motorized and non-motirized; invalid carriages

786	Trailers and semi-trailers; other vehicles, not mechanically-propelled; specially designed and equipped transport containers
791	Railway vehicles (including hovertrains) and associated equipment
792	Aircraft and associated equipment; spacecraft (including satellites) and spacecraft launch vehicles; parts thereof
793	Ships, boats (including hovercraft) and floating structures
811	Prefabricated buildings
812	Sanitary, plumbing and heating fixtures and fittings, n.e.s.
813	Lighting fixtures and fittings, n.e.s.
821	Furniture and parts thereof; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings
831	Trunks, suitcases, vanity cases, executive cases, briefcases, school satches, spectacle cases, binocular cases, camera cases, musical instrument cases, gun cases, holsters and similar containers; travelling bags, insulated food or beverages bags, toilet bags, rucksacks, handbags, shopping bags, wallets, purses, map cases, cigarette cases, tobacco pouches, tool bags, sports bags, bottle cases, jewellery boxes, powder boxes, cutlery cases and similar containers, of leather or of composition leather, of sheeting of plastics, of textile materials, of vulcanized fibre or of paperboard, or wholly or mainly covered with such materials or with paper; travel sets for personal toilet, sewing or shoe or clothes cleaning
841	Men's or boys' coats, capes, jackets, suits, blazers, trousers, shorts, shirts, underwear, nightwear and similar articles of textile fabrics, not knitted or crocheted (other than those of subgroup 845.2)
842	Women's or girls' coats, capes, jackets, suits, trousers, shorts, shirts, dresses and skirts, underwear, nightwear and similar articles of textile fabrics, not knitted or crocheted (other than those of subgroup 845.2)
843	Men's or boys' coats, capes, jackets, suits, blazers, trousers, shorts, shirts, underwear, nightwear and similar articles of textile fabrics, knitted or crocheted (other than those of subgroup 845.2)
844	Women's or girls' coats, capes, jackets, suits, trousers, shorts, shirts, dresses and skirts, underwear, nightwear and similar articles of textile fabrics, knitted or crocheted (other than those of subgroup 845.2)
845	Articles of apparel, of textile fabrics, whether or not knitted or crocheted, n.e.s.
846	Clothing accessories, of textile fabrics, whether or not knitted or crocheted (other than those for babies)
848	Articles of apparel and clothing accessories of other than textile fabrics; headgear of all materials
851	Footwear
871	Optical instruments and apparatus, n.e.s.
872	Instruments and appliances, n.e.s., for medical, surgical, dental or veterinary purposes
873	Meters and counters, n.e.s.
874	Measuring, checking, analysing and controlling instruments and apparatus, n.e.s.
881	Photographic apparatus and equipment, n.e.s.
882	Photographic and cinematographic supplies
883	Cinematographic film, exposed and developed, whether or not incorporating soundtrack or consisting only of soundtrack
884	Optical goods, n.e.s.
885	Watches and clocks
891	Arms and ammunition
892	Printed matter
893	Articles, n.e.s., of plastics
894	Baby carriages, toys, games and sporting goods
895	Office and stationery supplies, n.e.s.
896	Works of art, collectors' pieces and antiques
897	Jewellery, goldsmiths' and silversmiths' wares, and other articles of precious or semiprecious materials, n.e.s.

898	Musical instruments and parts and accessories thereof; records, tapes and other sound or similar recordings (excluding goods of groups 763 and 883)
899	Miscellaneous manufactured articles, n.e.s.
931	Special transactions and commodities not classified according to kind
961	Coin (other than gold coin), not being legal tender
971	Gold, non-monetary (excluding gold ores and concentrates)
972	Gold, monetary and gold coin and current coin
999	Confidential trade

High-technology products list – SITC Revision 4

Group	Code	Title1
Aerospace	(714-714.89-714.99)+	Aeroplane motors, excluding 714.89 and 714.99
	792.1+	Helicopters
	792.2+792.3+792.4+	Aeroplanes and other aircraft, mechanically-propelled (other than helicopters)
	792.5+	Spacecraft (including satellites) and spacecraft launch vehicles
	792.91+	Propellers and rotors and parts thereof
	792.93+	Undercarriages and parts thereof
	874.11	Direction finding compasses; other navigational instruments and appliances
Computers-office machines	751.94+	Multifunction office machines, capable of connecting to a computer or a network
	751.95+	Other office machines, capable of connecting to computer or a network
	752+	Computers
	759.97	Parts and accessories of group 752
Electronics-telecommunications	763.31+	Sound recording or reproducing apparatus operated by coins, bank cards, etc
	763.8+	Video apparatus
	(764-764.93-764.99)+	Telecommunications equipment, excluding 764.93 and 764.99
	772.2+	Printed circuits
	772.61+	Electrical boards and consoles < 1000V
	773.18+ 776.25+ 776.27+	Optical fibre cables Microwave tubes Other valves and tubes
	776.3+	Semiconductor devices
	776.4+	Electronic integrated circuits
	776.8+	Piezoelectric crystals
	898.44+	Optical media
	898.46	Semiconductor media
Pharmacy	541.3+	Antibiotics
	541.5+	Hormones and their derivatives
	541.6+	Glycosides, glands, antisera, vaccines
	542.1+	Medicaments containing antibiotics or derivatives thereof
	542.2	Medicaments containing hormones or other products of subgroup 541.5
Scientific instruments	774+	Electrodiagnostic apparatus for medicine or surgery and radiological apparatus
	871+	Optical instruments and apparatus
	872.11+	Dental drill engines
	(874-874.11-874.2)+ 881.11+ 881.21+	Measuring instruments and apparatus, excluding 874.11, 874.2 Photographic cameras Cinematographic cameras
	884.11+	Contact lenses
	884.19+	Optical fibres other than those of heading 773.1
	(899.6-899.65-899.69)	Orthopaedic appliances, excluding 899.65, 899.69
Electrical machinery	(778.6-778.61-778.66-778.69)+	Electrical capacitors, fixed, variable or adjustable, excluding 778.61, 778.66, 778.69
	778.7+	Electrical machines, having individual functions
	778.84	Electric sound or visual signalling apparatus
Chemistry	522.22+	Selenium, tellurium, phosphorus, arsenic and boron
	522.23+	Silicon
	522.29+	Calcium, strontium and barium
	522.69+ 525+	Other inorganic bases Radioactive materials
	531+	Synthetic organic colouring matter and colour lakes

Group	Code	Title1
	574.33+	Polyethylene terephthalate
	591	Insecticides, disinfectants
Non-electrical machinery	714.89+	Other gas turbines
	714.99+	Part of gas turbines
	718.7+	Nuclear reactors and parts thereof, fuel elements, etc
	728.47+	Machinery and apparatus for isotopic separation
	731.1+	Machine-tools working by laser or other light or photon beam, etc
	731.31+	Horizontal lathes, numerically controlled
	731.35+	Other lathes, numerically controlled
	731.42+	Other drilling machines, numerically controlled
	731.44+	Other boring-milling machines, numerically controlled
	731.51+	Milling machines, knee-type, numerically controlled
	731.53+	Other milling machines, numerically controlled
	731.61+	Flat-surface grinding machines, numerically controlled
	731.63+	Other grinding machines, numerically controlled
	731.65+	Sharpening machines, numerically controlled
	733.12+	Bending, folding, straightening or flattening machines, numerically controlled
	733.14+	Shearing machines, numerically controlled
	733.16+	Punching machines, numerically controlled
	735.9+	Parts and accessories of 731 and 733
	737.33+	Machines and apparatus for resistance welding of metal, fully or partly automatic
	737.35	Machines and apparatus for arc welding of metal, fully or partly automatic
Armament	891	Arms and ammunition

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