



# WORKING PAPERS

48

**Karol Frank**

## **DEVELOPMENT OF SLOVAK FOREIGN TRADE WITH ASIA IN 2000 - 2011**



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*ABSTRAKT*

Slovensko je malá a otvorená ekonomika závislá od zahraničného obchodu. V poslednej dekáde zvýšil dynamický rozvoj ázijských krajín ich význam v medzinárodnom obchode. Štúdia sa zameriava na analýzu a syntézu vývoja zahraničného obchodu s ázijskými krajinami v roku 2000 a 2011 na základe SITC klasifikácie v jednotlivých zoskupeniach ázijských krajín ako aj najdôležitejších obchodných partnerov v týchto zoskupeniach. Detailná analýza obchodovaných komodít poskytuje detailné informácie o štruktúre, objeme, vývoji v čase ako aj technologickej intenzite zahraničného obchodu s ázijskými krajinami.

**KLÚČOVÉ SLOVÁ:** zahraničný obchod, Ázia, tovarová štruktúra, technologicky náročný export a import, obchodná bilancia.

*ABSTRACT*

Slovakia is small and open economy and highly dependent on foreign trade. In the last decade the economic development of Asian countries resulted in increasing importance of these countries in international trade. This study aims to analyse and synthesise the development of these trade relations since 2000 to 2011, based on the data provided by the Eurostat. The analysis will focus on main groups of Asian countries (Commonwealth of Independent States, Northeast Asia, South Asia, Southeast Asia and West Asia) and the most important trading partners in these regions. Furthermore, a detailed analysis of foreign trade based on the SITC classification will provide results on the structure, volume and technology intensity of foreign trade with Asian countries.

**KEYWORDS:** international trade, Asia, commodity structure, technologically intensive exports and imports, trade balance.

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## INTRODUCTION

Slovakia is small and open economy and highly dependent on foreign trade. In the last decade the economic development of Asian countries resulted in increasing importance of these countries in international trade. Therefore it is important to analyse the development of the trade patterns of the Slovak economy with these countries. This study aims to analyse and synthesise the development of these trade relations since 2000 to 2011, based on the data provided by the Eurostat. The analysis will focus on main groups of Asian countries (Commonwealth of Independent States, Northeast Asia, South Asia, Southeast Asia and West Asia) and the most important trading partners in these regions. Furthermore a detailed analysis of foreign trade based on the SITC classification will provide results on the structure, volume and technology intensity of foreign trade with Asian countries.

### 1. INSTITUTIONS FRAMEWORK FOR EXPORT SUPPORT IN SLOVAKIA

The fact, that the Slovak economy is highly dependent on foreign trade resulted in creation of Council for Export and Investment Support by the Slovak government last year. The Council is an advisory, coordinating and initiative body of the Slovak government in the area of international trade cooperation and presentation of the Slovak republic. The main objectives of the Council are following<sup>1</sup>:

- Adoption of statements to measures linked to strategic materials of ministries and other state administration bodies in the field of export, investment, international presentation and other forms of international cooperation.
- Assessment of services provided by the diplomatic missions to business sector abroad and recommendations for improvement of these measures.
- Proposal of priorities for territorial focus of international trade and investment cooperation.
- Adoption of measures for coordinated approach of business sector and academia in order to enforce Slovak economic and trade interests in international relations.
- Assessment and adoption of recommendations for improving the cooperation between state administration and business sector focused on implementation of international trade and economic cooperation and promotion of Slovak republic.

The chairmanship of the Council is shared by the Minister of Foreign Affairs and Minister of Economy of the Slovak republic. Besides the Council the Ministry of Foreign Affairs is responsible for economic diplomacy which is based on the Strategy for Export support for 2013. Moreover a long term Strategy for Export Support 2014 – 2020 is being drafted.

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<sup>1</sup> <[http://www.mzv.sk/sk/zahranicna\\_politika/rada\\_vlady\\_slovenskej\\_republiky\\_na\\_podporu\\_exportu\\_a\\_investicii](http://www.mzv.sk/sk/zahranicna_politika/rada_vlady_slovenskej_republiky_na_podporu_exportu_a_investicii)>.

The general support of export is being carried out by the EXIMBANKA of Slovakia. The main objective of the institution is to support the maximum volume of export of sophisticated production, especially to the European Union and OECD countries, as well as to developing countries, while ensuring the return on investment through the minimization of risks arising from insurance, credit, guarantee, and finance activities<sup>2</sup>. The financial services (mainly financing and insuring export credits) of the bank are designed for small and medium-sized enterprises as well as for large corporations, and make it easier to enter international markets.

Furthermore the foreign trade is supported by the trade departments at Slovak embassies, SARIO Agency (Slovak Investment and Trade Development Agency), Slovak Guarantee and Development Bank and National Agency for Development of Small and Medium Enterprises. Besides the above mentioned institutions several bilateral business chambers focused on Asian trade are operating in Slovakia. The chambers are providing support for businesses basically in all areas relevant to foreign trade. Namely the Slovak – Chinese Business Chamber SINACO, Slovak-Korean Committee at the Slovak Trade and Industry Chamber, Slovak - Israeli Business Chamber, Slovak – Japanese Business Chamber, Slovak – Vietnamese Business Chamber and others.

## **2. FOREIGN TRADE DEVELOPMENT PATTERNS WITH ASIA (AN AGGREGATED APPROACH)**

The Eurostat Comext database provides a very detailed overview of foreign trade of Slovakia with the Asian countries. Figure 1 shows the development of the Slovak exports to EU 27 countries, Asian countries and the rest of the world. In 2000 the volume of exports to Asia was at EUR 233 million and the end of 2011 reached EUR 2.2 billion. Compared with the export to EU and the rest of the world the foreign trade with Asian countries the volume of export nearly doubled during the last decade. A significant increase of exports to these countries can be seen especially from 2009 to 2011. A more detailed look at the structure and reasons for this development will be analysed later on.

For the purpose of this analysis we have aggregated the Asian countries into following geographical groups:

1. Commonwealth of Independent states: 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.

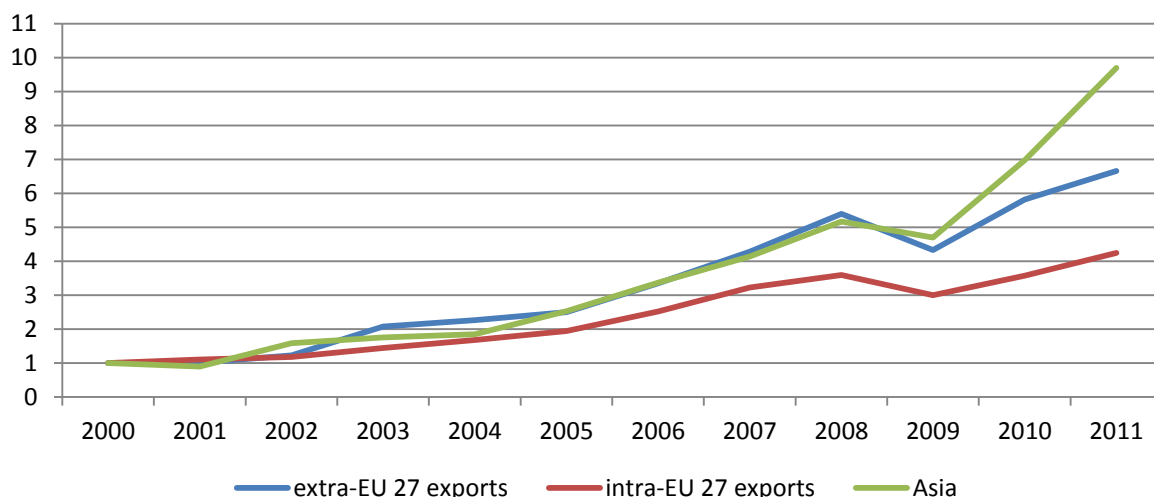
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<sup>2</sup> <[http://www.eximbanka.sk/en/about-us.html?page\\_id=192](http://www.eximbanka.sk/en/about-us.html?page_id=192)>.

4. Southeast Asia: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar (Burma), Philippines, Singapore, Thailand, Timor-Leste, Vietnam.
5. Northeast Asia: Hong Kong, China, Japan, North Korea, South Korea, Macao, Mongolia, Taiwan.

Figure 1

**Increase of Slovak export to certain regions (2000 = 1)**

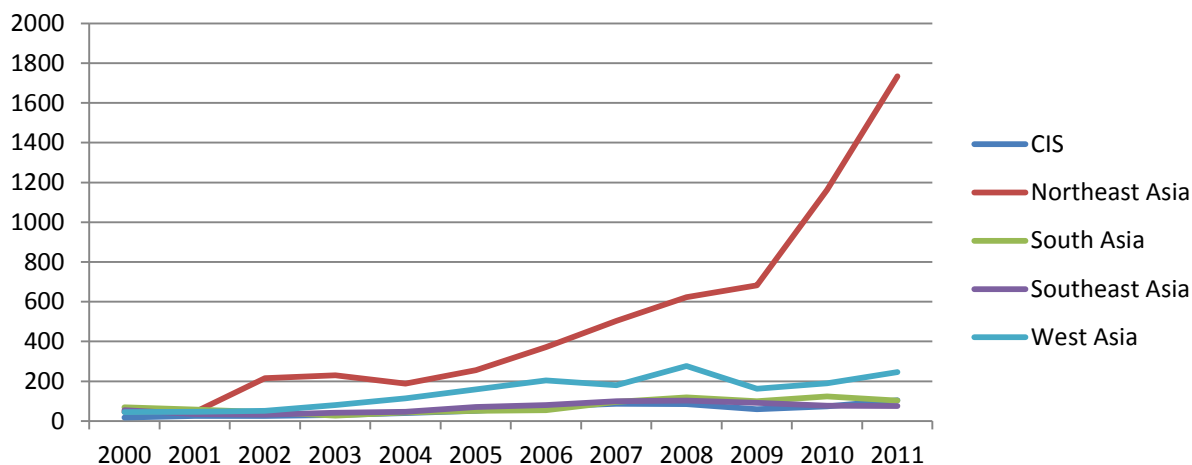


Source: Eurostat, own calculations.

Figure 2 show that the rapid growth of exports in the Asian countries after 2009 was driven mainly by the exports to Northeast Asia, where the export to other Asian regions grew only slightly. The share of Northeast Asian countries represents approximately 80 % of total exports to Asia followed by West Asian countries with approximately 10 %. The share of West Asian countries recorded a significant decline especially after the 2008, whereas the export to Northeast Asian countries started to grow rapidly from 2009.

Figure 2

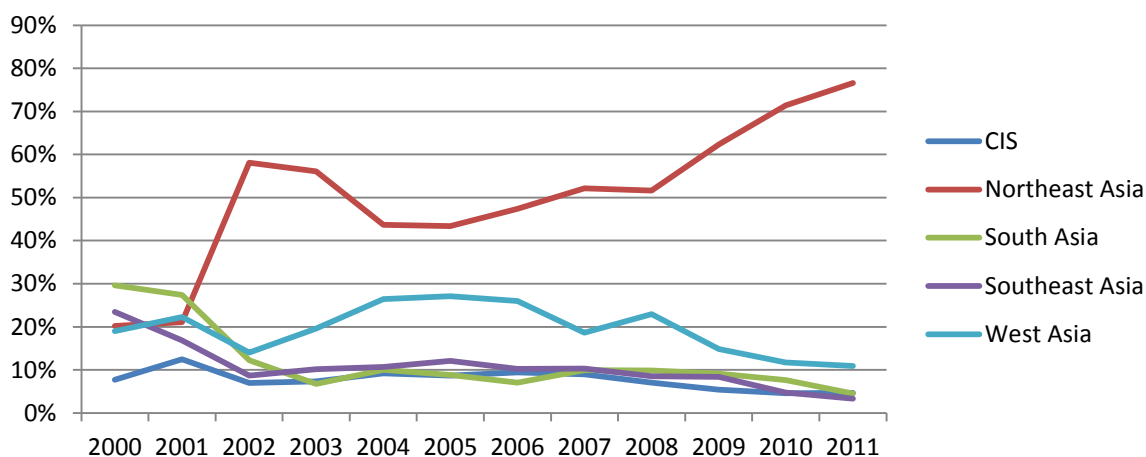
**Slovak exports to the Asian regions, million euros**



Source: Eurostat.



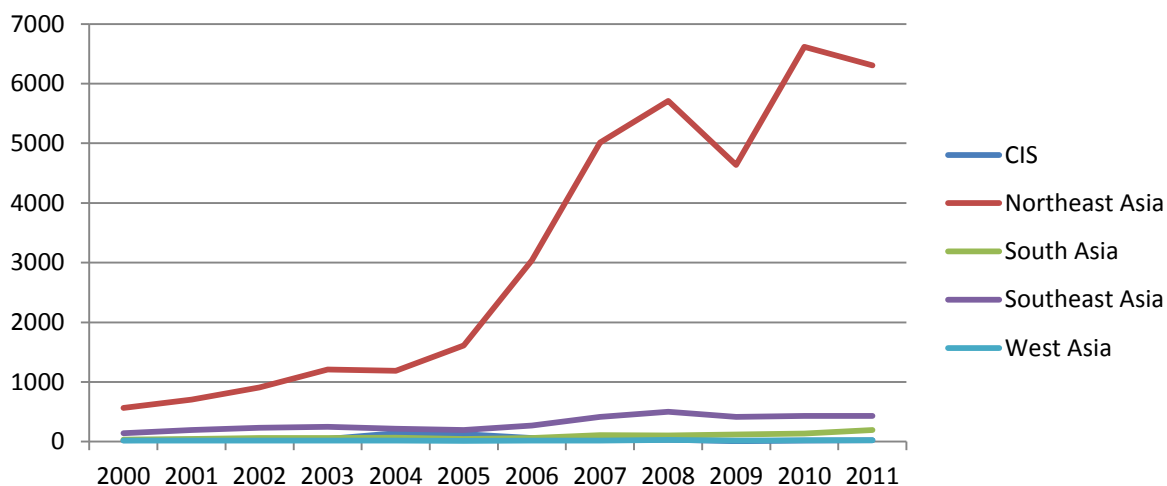
**Figure 3**  
**Shares of Asian regions in Slovak exports to Asia**



Source: Eurostat, own calculations.

The development of imports from the Asian countries shows a little different picture. Since 2000 the volume of imports especially from Northeast Asian countries grew constantly, with small decline in 2008 (effect of the economic and financial crisis). However, already in 2009 the volume of imports started to grow and in 2011 a slight decline has been recorded again. The share of Northeast Asian region grew very dynamically, where the rest of the country groups, especially West Asia went down from approximately 30 % to 10 % in 2011.

**Figure 4**  
**Slovak imports from Asian regions, million euros**

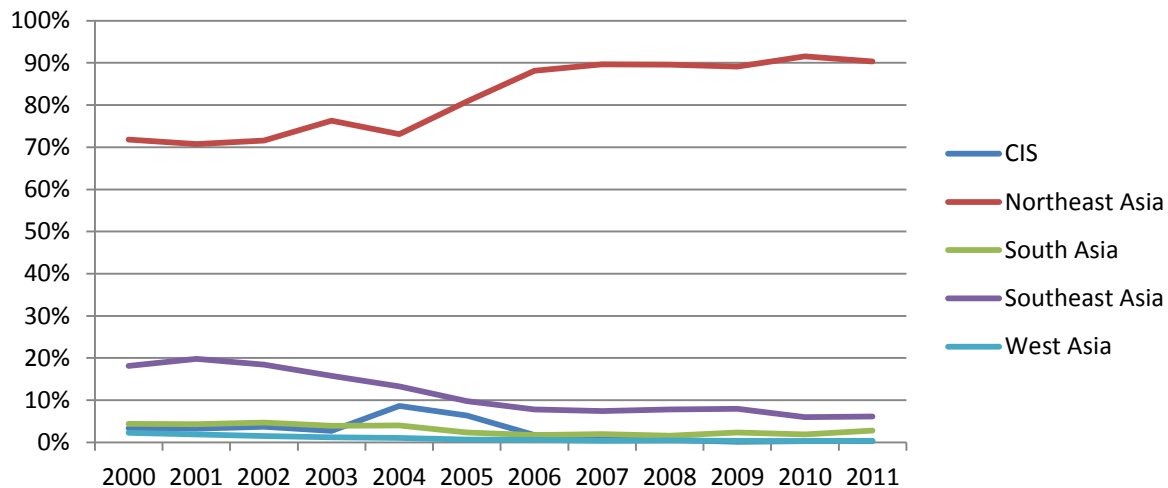


Source: Eurostat.

Similar trend can be observed in volume and share of import in respective country groups. Since 2000, the share of Northeast Asia went up from 70 % to 90 % and declined from 20 % to 8 % in Southeast Asia. The volume of Northeast Asia grew from EUR 563 million to EUR 6.3 billion in 2011, which represent an 1118 % increase during the decade. In the

rest of the country groups the volume of imports increased especially from South Asia by 568 %, Southeast Asia by 301.5 % and West Asia by 136,9 %. The share of imports from CIS went down by 12 percentage points.

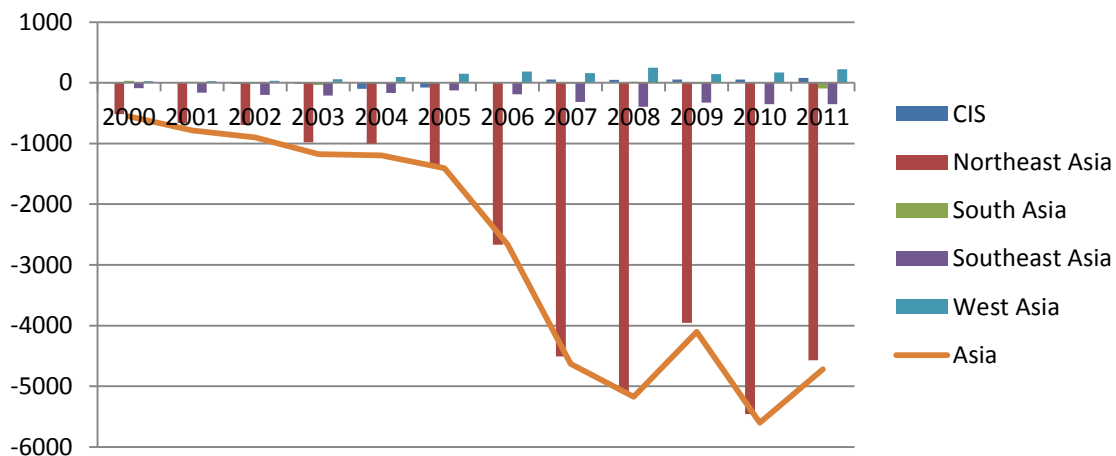
**Figure 5**  
**Share of Asian regions in Slovak imports**



Source: Eurostat, own calculations.

The development is increasingly negative in the last decade. The main foreign trade deficit can be observed especially with Northeast Asian countries followed by Southeast Asian countries. The foreign trade deficit with Asian countries increased from EUR 552 million in 2000 to EUR 4.7 billion in 2011. At the end of 2011 the highest foreign trade deficit with Northeast Asia reached EUR 4.5 billion followed by Southeast Asia with EUR 353 million. A positive trade balance of EUR 222 million has been recorded with West Asian countries followed by CIS with EUR 81 million in 2011.

**Figure 6**  
**Foreign trade balance of Slovakia with the Asian regions, million euros**

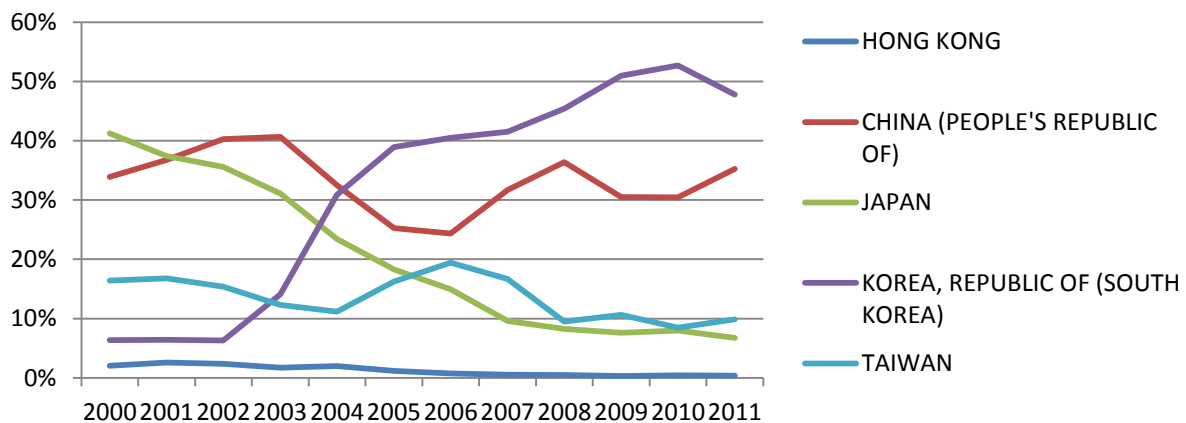


Source: Eurostat, own calculations.

The decomposition of the Northeast Asian country group on individual countries displayed in figure 7 shows the share of individual countries on Slovak imports. From 2000 to 2011 there has been a substantial increase of imports from South Korea, while the shares of the other countries remained relatively stable or have declined. Especially the imports from Japan recorded a significant decline from approximately 41% to negligible 6.7 % on share in total imports. The rapid increase of import from South Korea is caused by the investments of the KIA/Hyundai and other South Korean automotive enterprises in Slovakia.

Figure 7

**Share of the main Northeast Asian countries in Slovak imports**

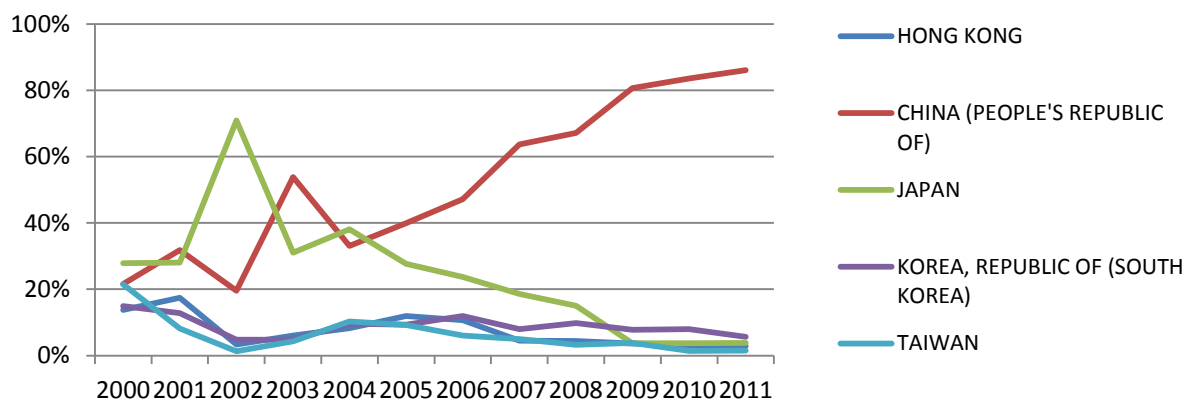


Source: Eurostat, own calculations.

The development of exports to Northeast Asian countries displayed in figure 8, shows the importance of China as the most dominant export market for Slovak exports. The share of China has been constantly growing since 2000, while the export to other Northeast Asian countries recorded a gradual decline. Similarly as in the case of imports, the most significant decline in export share has been recorded with Japan. The share of the other countries is below 10 % and gradually declining.

Figure 8

**Share of the main Northeast Asian countries in Slovak exports**

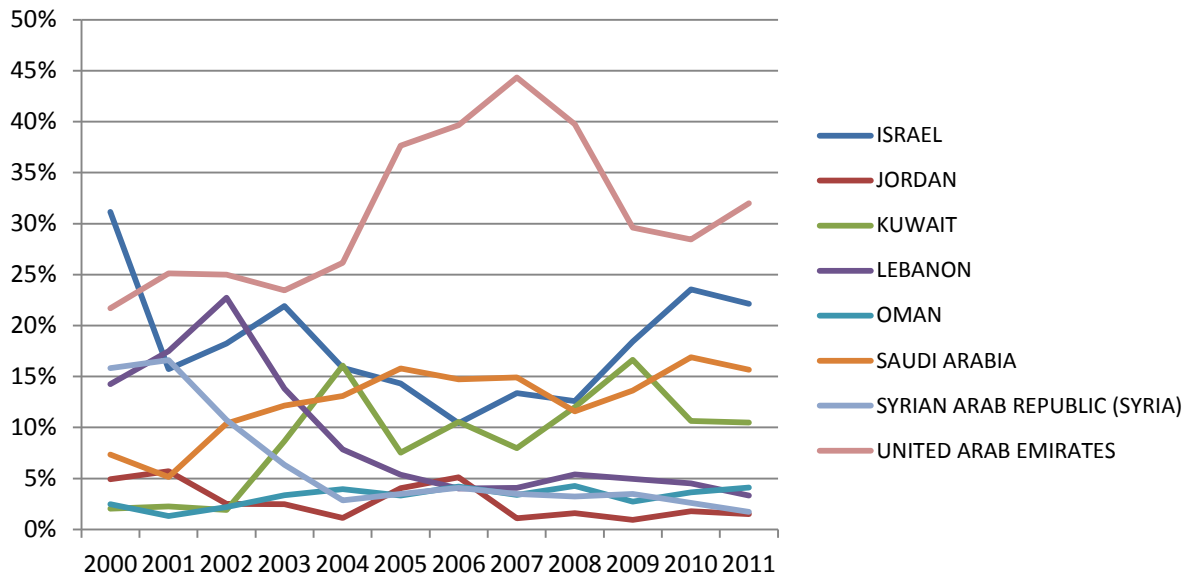


Source: Eurostat, own calculations.

The West Asian countries represent the second largest country group in terms of international trade with Slovakia. Although, the share of export to West Asia has been declining since 2000, the share of export represented 10.9 % in 2011. Figure 9 shows the development of export to individual West Asian countries in the last decade.

Figure 9

**The share of the main West Asian countries in Slovak export**



Source: Eurostat, own calculations.

Table 1 shows the shares of individual countries with the main export groups in 2011. A more detailed look at the data shows that during the last decade the share of export to individual countries in the respective regions changed. The share of countries in the CIS group remained relatively stable with Kazakhstan being the largest export country with 50.9 % share on total exports, followed by Azerbaijan with 23.7 % and Uzbekistan with 9.7 % in 2011. A different development can be observed in the North Asian country group. In 2000 the share of exports to Japan reached 28.9 %, China 21.6 %, Taiwan 21.55 %, South Korea 14.9 % and Hong Kong 13.8%. However, during the last decade the share of China grew to 86. % followed by South Korea with 5.7 %, Japan with .8 % and Hong Kong with 2.9 % share on total exports. In the South Asian region the dominant role of India has been somewhat mitigated by the increase of exports to Pakistan, Afghanistan and Bangladesh, with subsequent decrease of exports to India and Iran. In the Southeast Asian region the export to Indonesia went down significantly from 45.4 % share in 2000 to 13.5 % in 2011.

**Table 1**  
**Main export destinations in each country group, 2011**

CIS		Northeast Asia		South Asia		Southeast Asia		West Asia	
Kazakhstan	50,9 %	China	86,0 %	India	67,3 %	Singapore	22,2 %	United Arab Emirates	32,0 %
Azerbaijan	23,7 %	South Korea	5,7 %	Pakistan	12,2 %	Thailand	21,9 %	Israel	22,1 %
Uzbekistan	9,7 %	Japan	3,8 %	Iran	10,8 %	Malaysia	20,1 %	Saudi Arabia	15,7 %
Georgia	6,1 %	Hong Kong	2,9 %	Afghanistan	6,7 %	Indonesia	13,5 %	Kuwait	10,5 %
Armenia	4,8 %	Other	1,6 %	Bangladesh	1,9 %	Vietnam	13,2 %	Oman	4,1 %
Other	4,8 %			Other	1,2 %	Philippines	6,8 %	Qatar	4,1 %
						Other	2,3 %	Lebanon	3,3 %
								Iraq	2,7 %
								Other	5,5 %
Total	100 %	Total	100 %	Total	100 %	Total	100 %	Total	100 %

Source: Eurostat, own calculations.

The share of exports to Thailand grew from 7.2 % to 21.9 %, to Malaysia from 7.6 % to 20.1 % and the trade with Vietnam, which was negligible in 2000, reached 13.2 % share on total export to this region in 2011. In the West Asian countries the share of United Arab Emirates went up from 21.7 % to 32 %, Saudi Arabia from 7.3 % to 15.7 % and Kuwait by 10.5 %. Since 2000 the share of Israel on total exports decreased by 9 % in 2011. Moreover, at the end of 2011 new countries have emerged as important export partners (Oman, Qatar, and Iraq).

**Table 2**  
**Main export destinations in each country group, 2000**

CIS		Northeast Asia		South Asia		Southeast Asia		West Asia	
Kazakhstan	54,4 %	Japan	27,9 %	India	82,7 %	Indonesia	45,4 %	Israel	31,2 %
Uzbekistan	29,5 %	China	21,6 %	Iran	12,4 %	Singapore	24,6 %	United Arab Emirates	21,7 %
Turkmenistan	6,6 %	Taiwan	21,5 %	Pakistan	1,3 %	Malaysia	7,6 %	Syria	15,8 %
Armenia	3,0 %	South Korea	14,9 %	Sri Lanka	1,7 %	Thailand	7,2 %	Lebanon	14,3 %
Georgia	2,6 %	Hong Kong	13,8 %			Myanmar	7,1 %	Saudi Arabia	7,3 %
						Philippines	6,3 %	Jordan	4,9 %
Other	3,9 %	Other	0,2 %	Other	1,9 %	Other	1,8 %	Other	4,8 %
Total	100 %	Total	100 %	Total	100 %	Total	100 %	Total	100 %

Source: Eurostat, own calculations.

In 2011, the share of imports from CIS is dominated by Kazakhstan with 89.8 % share followed by Georgia with 9.48 %. The highest share in imports from Northeast Asia has been recorded with South Korea (47.8 %), China (35.3 %), Taiwan (9.9 %) and Japan (6.7 %). The highest share in imports from South Asia has been recorded with India (52.7 %), Bangladesh (22.37 %), Pakistan (12.3 %) and Sri Lanka (11.1 %). The imports from Southeast Asia are the highest from Vietnam (35.6 %), Thailand (26.5 %), Malaysia (19.7 %), Indonesia (11.7 %) and Singapore (3.2 %). In the West Asian region, Israel is the leading country with 88.9 % share in total imports followed by Jordan (5.6 %), Saudi Arabia (1.84 %) and United Arab Emirates (1.36 %).

**Table 3**  
**Main import countries in each region, 2011**

CIS		Northeast Asia		South Asia		Southeast Asia		West Asia	
Kazakhstan	89,8 %	South Korea	47,7 %	India	52,7 %	Vietnam	35,6 %	Israel	88,9 %
Georgia	9,4 %	China	35,2 %	Bangladesh	22,3 %	Thailand	26,5 %	Jordan	5,5 %
Other	0,6 %	Taiwan	9,8 %	Pakistan	12,3 %	Malaysia	19,7 %	Saudi Arabia	1,8 %
		Japan	6,7 %	Sri Lanka	11,1 %	Indonesia	11,7 %	United Arab Emirates	1,3 %
		Other	0,3 %	Other	1,4 %	Singapore	3,1 %	Other	2,2 %
						Other	3,2 %		
Total	100 %	Total	100 %	Total	100 %	Total	100 %	Total	100 %

Source: Eurostat, own calculations.

Compared with 2000, the share of imports of individual countries changed basically in all country groups except for West Asia, where Israel maintained its strong position. In the rest of the countries the import shares changed significantly during the last decade (table 3 and table 4).

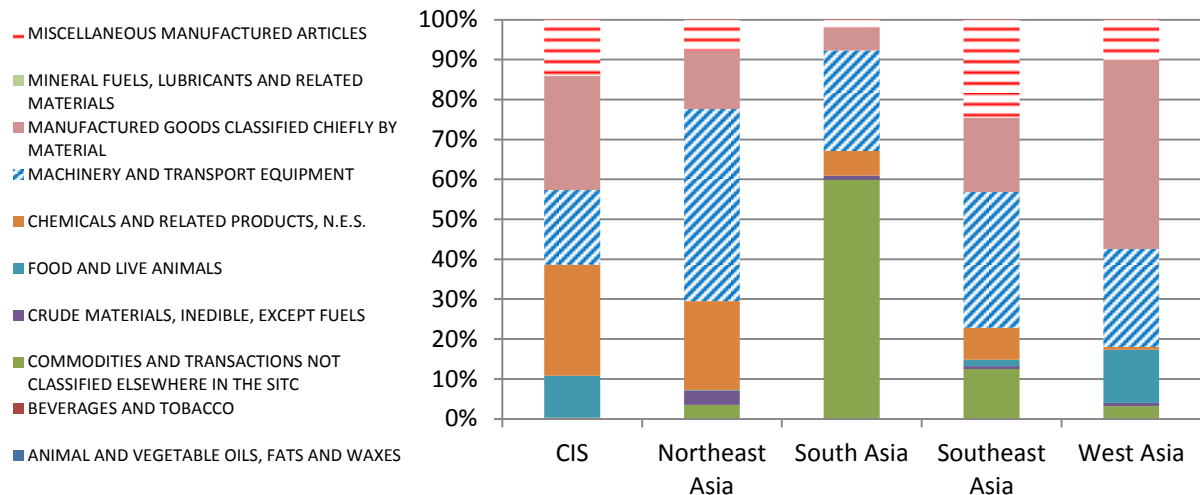
**Table 4**  
**Main import countries in each region, 2000**

CIS		Northeast Asia		South Asia		Southeast Asia		West Asia	
Kazakhstan	45,7 %	Japan	41,2 %	India	73,0 %	Malaysia	30,8 %	Israel	82,1 %
Tajikistan	29,2 %	China	33,9 %	Pakistan	12,0 %	Indonesia	20,8 %	United Arab Emirates	10,5 %
Uzbekistan	18,6 %	Taiwan	16,4 %	Iran	7,2 %	Singapore	16,2 %	Jordan	4,2 %
Turkmenistan	3,1 %	South Korea	6,4 %	Sri Lanka	4,8 %	Thailand	12,8 %	Qatar	1,7 %
Azerbaijan	2,3 %	Hong Kong	2,0 %	Bangladesh	2,8 %	Philippines	9,5 %	Other	1,5 %
Other	1,2 %		0,1 %		0,0 %	Vietnam	9,3 %		
						Other	0,7 %		
Total	100 %	Total	100 %	Total	100 %	Total	100 %	Total	100 %

Source: Eurostat, own calculations.

A more detailed look at the structure of foreign trade shows a significant shift in the commodity structure of the Slovak export to Asian countries. Whereas in 2000, the share of individual commodity groups was more or less balanced, at the end of 2011 the exports have been dominated by machinery and transport equipment in basically all country regions.

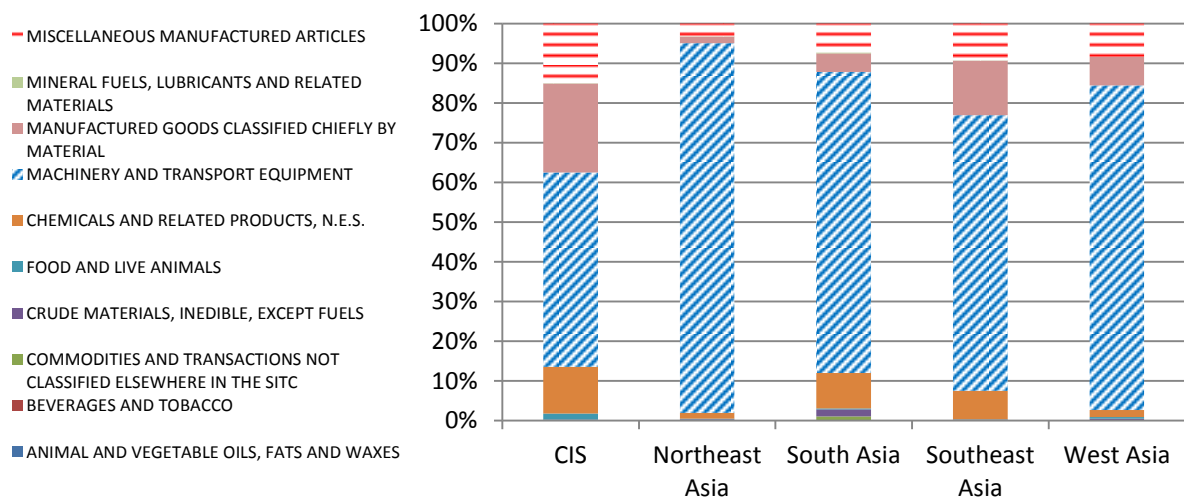
**Figure 10**  
**Slovak exports to Asian regions in 2000**



Source: Eurostat, own calculations.

The share of machinery and transport equipment exports has been especially high in North Asia (93.12 %), West Asia (81.7 %), South Asia (75.8%) and Southeast Asia (69.4%). The exports of of manufactured goods classified chiefly by material were strong in CIS (22.4%) and Southeast Asia (13.7 %). Similar development can be observer in the exports of miscellaneous manufacture articles.

**Figure 11**  
**Slovak exports to Asian regions in 2011**



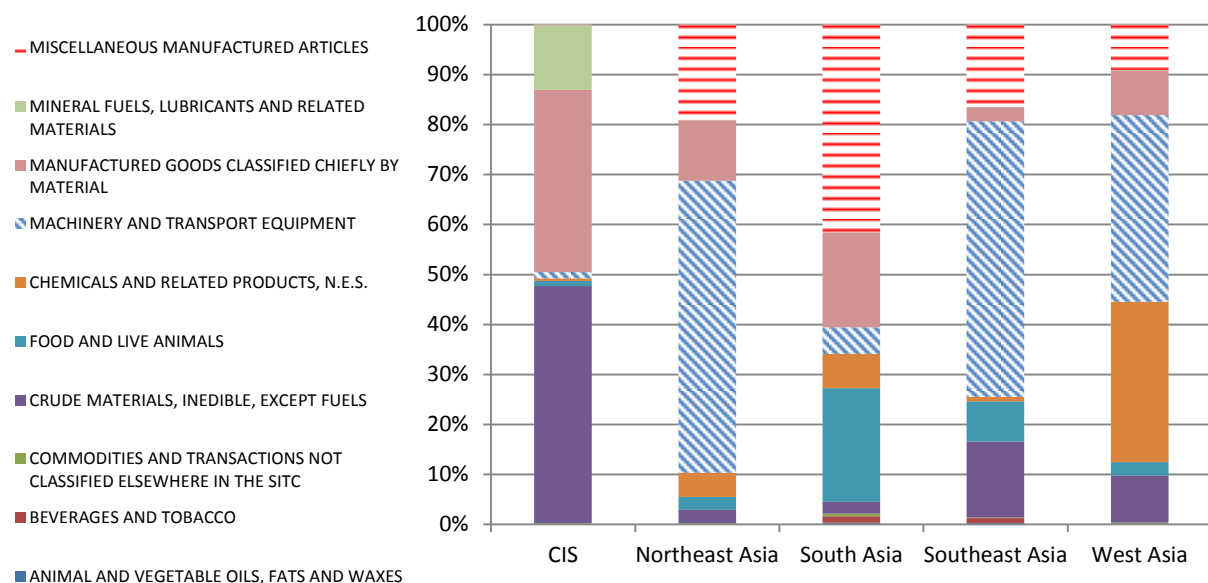
Source: Eurostat, own calculations.

The changes in the structure of imported goods show a mixed picture in the respective country groups. In the CIS the share of crude materials except fuels decreased by 47.3 percentage points to only 9.19 % in 2011. The share of mineral fuels, lubricants and related materials went up by 47.2 percentage points to 60.2 % from 2000 to 2011. The share of manufactured goods classified chiefly by material recorded a minor decrease by 7.1 percentage points to 29.3 %

In Northeast Asian country group, the decrease has been recorded in majority of goods with exception of machinery and transport equipment and miscellaneous manufactured articles. The share of machinery and transport equipment grew by 10.9 percentage points to 59.2 % and miscellaneous manufactured articles by 3.54 percentage points to 22.5 %

In the South Asian country group the highest increase in the share of imports by 22.6 percentage points has been recorded in miscellaneous manufactured. The shares of other product groups recorded only minor growth and the majority even recorded decline in the share of imports.

**Figure 12**  
**Slovak imports from Asian regions in 2000**



Source: Eurostat, own calculations.

Similar development can be also observed in the Southeast Asian country group, with growing share of miscellaneous manufactured articles on total imports and machinery and transport equipment. The share of machinery and equipment reached 60.1 % in 2011 and thus represented the second largest country group related to this product group. The share of Slovak imports from West Asia grew substantially only in two product categories. The share of machinery and transport equipment grew by 17.8 percentage points to 55.2 % and the share of

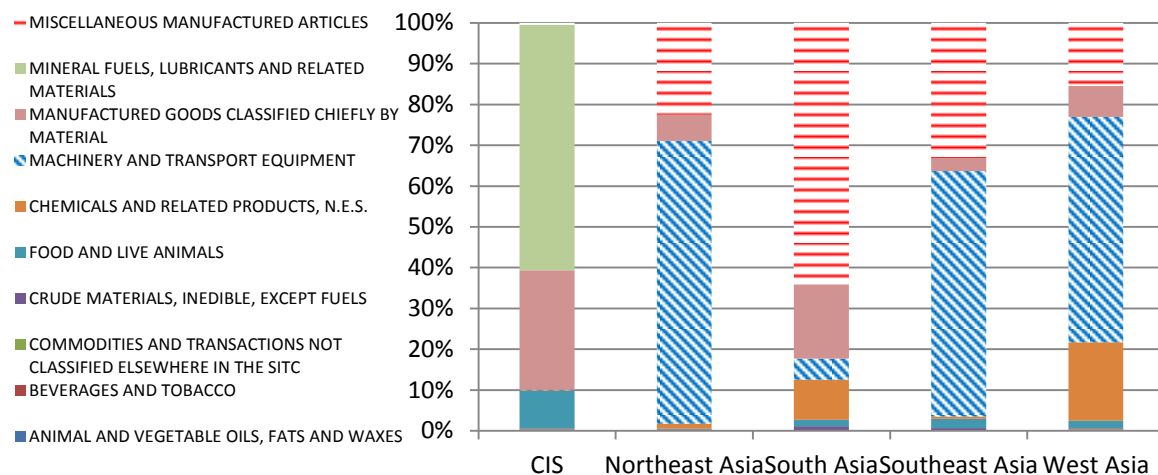


miscellaneous manufactured articles went up by 6.4 percentage points to 14.5 %. The share of the remaining product groups decreased.

In general we can observe two tendencies in the development of foreign trade:

- Increasing volume and share of imports of machinery and transport equipment, especially from Northeast Asia, Southeast Asia and West Asia. The share of imports of these goods reached 93.1 % on total imports from Northeast Asia and is also the highest in the rest of the country groups.
- Significant increase in exports of machinery and transport equipment to basically all Asian country groups.
- Increase of imports of mineral fuels, lubricants and related material from CIS and subsequent decrease of crude materials except fuels from CIS.

**Figure 13**  
**Slovak imports from Asian regions in 2011**



Source: Eurostat, own calculations.

### 3. DEVELOPMENT OF FOREIGN TRADE WITH FIRST TEN PRODUCT GROUPS WITH MOST IMPORTANT TRADING PARTNERS

The SITC classification on 3-digit level allows us to take a closer look at the first ten product groups for three most important trading partners in terms of export volume in each country group.

#### *West Asia*

The volume of exports to United Arab Emirates amounted to EUR 78.9 million in 2011. The share of motor cars and other motor vehicles principally designed for the transport of persons reached 52 % followed by telecommunications equipment with 9.5 % and electric power machinery (other than rotating electric plant) and parts with 4.1 %. Similar develop-

ment of the product structure can be observed with Israel, where the share of motor vehicles reached 60.5 % and telecommunication equipment reached 4.8 %. Other important products included office machines, rubber tyres, interchangeable tyre treads, tyre flaps and inner tubes for wheels of all kinds, manufactures of base metal and other products. The total export volume with Israel reached EUR 54.5 million. The export volume with Saudi Arabia reached EUR 38.6 million in 2011. The share of motor vehicles reached 42.1 % followed by electric power machinery and parts with 16.5 %, heating and cooling equipment and parts with 14.8 % and mechanical handling equipment and parts with 4.5 % on total exports to this country. It can be concludes that the West Asian countries are important export countries for motor vehicles export from Slovakia.

Table 5

**Share of first ten product groups in Slovak exports to main West Asian partners 2011**  
(EUR million)

United Arab Emirates			Israel			Saudi Arabia		
SITC	EUR mil.	Share	SITC	EUR mil.	Share	SITC	EUR mil.	Share
781	41,1	52,0 %	781	33,0	60,5 %	781	16,3	42,1 %
764	7,5	9,5 %	764	2,6	4,8 %	771	6,4	16,5 %
771	3,2	4,1 %	751	2,2	4,0 %	741	5,7	14,8 %
752	3,0	3,7 %	625	2,0	3,6 %	744	1,7	4,5 %
553	2,7	3,4 %	699	1,2	2,1 %	821	1,2	3,1 %
851	2,7	3,4 %	761	1,1	2,0 %	773	0,9	2,4 %
741	2,5	3,2 %	775	1,0	1,7 %	641	0,7	1,9 %
674	2,0	2,5 %	731	0,9	1,7 %	731	0,5	1,3 %
874	2,0	2,5 %	895	0,9	1,6 %	874	0,4	1,0 %
665	1,4	1,8 %	748	0,8	1,5 %	726	0,4	0,9 %
Total	78,9		Total	54,5		Total	38,6	
Share of first 10		86,1 %	Share of first 10		83,7 %	Share of first 10		88,6 %

Source: Eurostat, own calculations.

### ***South Asia***

The total volume of exports to Pakistan reached EUR 12.5 million in 2011. The share of pumps (other than pumps for liquids), air or other gas compressors and fans reached 52.3 %, followed by other machinery and equipment specialized for particular industries with 27.2 % and electric power machinery (other than rotating electric plant of group 716) and parts with 5.9 % of total exports. The total volume of exports to India reached EUR 68.3 million in 2011. The share of motor cars and other motor vehicles principally designed for the transport of persons reached 31.9 % followed by other machinery and equipment specialized for particular industries with 18.7 % and parts and accessories of the motor vehicles with 4.7 %. The volume of exports to Iran reached EUR 11 million in 2011. The share of nitrogen-function compounds

reached 16.4 % followed by glassware with 12.4 % and sanitary, plumbing and heating fixtures and fittings with 8.5 % share on total exports. In general the exports to South Asian region show more diverse exports composition compared with the previous country groups, although the highest volume and share of exports (to India) are similarly oriented towards motor cars and other motor vehicles.

**Table 6**

**Share of first ten product groups in Slovak exports to main South Asian partners 2011**  
(EUR million)

Pakistan			India			Iran		
SITC	EUR mil.	Share	SITC	EUR mil.	Share	SITC	EUR mil.	Share
743	6,5	52,3 %	781	21,8	31,9 %	514	1,8	16,4 %
728	3,4	27,2 %	728	12,8	18,7 %	665	1,4	12,4 %
771	0,7	5,9 %	784	4,7	6,8 %	812	0,9	8,5 %
781	0,3	2,3 %	541	4,3	6,3 %	278	0,9	8,1 %
764	0,3	2,1 %	748	3,8	5,5 %	792	0,8	7,5 %
634	0,2	1,7 %	726	2,0	2,9 %	743	0,6	5,8 %
724	0,1	1,0 %	845	1,9	2,7 %	746	0,5	4,9 %
057	0,1	0,9 %	891	1,1	1,7 %	748	0,5	4,2 %
674	0,1	0,9 %	742	1,1	1,6 %	718	0,4	4,0 %
269	0,1	0,6 %	771	1,0	1,5 %	742	0,3	3,0 %
Total	12,5			68,3			11,0	
Share of first 10		94,9 %	Share of first 10		79,7 %	Share of first 10		74,8 %

Source: Eurostat, own calculations.

### ***Commonwealth of Independent States***

The volume of exports to Kazakhstan reached EUR 53.1 million in 2011. The share of telecommunications equipment and accessories reached 15.1% followed by paper and paper-board with 10.1 % and medicaments (including veterinary medicaments) with 9.4 %. The volume of export to Azerbaijan reached EUR 24.7 million in 2011. The share of motor cars and other motor vehicles principally designed for the transport of persons reached 20.7 % followed by railway vehicles (including hover trains) and associated equipment with 17.1 % and sanitary, plumbing and heating fixtures and fittings with 6.8% share on total exports in 2011. The volume of exports to Uzbekistan reached EUR 10.2 million in 2011. The share of medicaments (including veterinary medicaments) reached 43.4 % followed by flat-rolled products of iron or non-alloy steel, not clad, plated or coated with 29.3% and electric power machinery with 5% share on total exports.

Table 7

Share of first ten product groups in Slovak exports to main CIS partners 2011 (EUR million)

Kazakhstan			Azerbaijan			Uzbekistan		
SITC	EUR mil.	Share	SITC	EUR mil.	Share	SITC	EUR mil.	Share
764	8,0	15,1 %	781	5,1	20,7 %	542	4,4	43,4 %
641	5,4	10,1 %	791	4,2	17,1 %	673	3,0	29,3 %
542	5,0	9,4 %	812	1,7	6,8 %	771	0,5	5,0 %
747	4,5	8,6 %	665	1,6	6,3 %	727	0,4	3,7 %
742	3,8	7,1 %	728	1,0	4,0 %	573	0,3	2,8 %
771	3,7	6,9 %	821	1,0	3,9 %	812	0,2	2,4 %
872	2,3	4,3 %	872	1,0	3,9 %	642	0,2	2,0 %
634	2,3	4,3 %	625	0,9	3,8 %	629	0,2	1,7 %
751	1,9	3,5 %	674	0,7	3,0 %	575	0,2	1,6 %
629	1,4	2,7 %	542	0,5	2,2 %	723	0,1	1,3 %
Total	53,1		Total	24,7		Total	10,2	
Share of first 10		72,0 %	Share of first 10		71,7 %	Share of first 10		93,2 %

Source: Eurostat, own calculations.

***Southeast Asia***

The volume of exports to Singapore reached EUR 16.8 million in 2011. The share of motor cars and other motor vehicles principally designed for the transport of persons reached 19.7% followed by telecommunications equipment and accessories with 14.6 % and electrical apparatus for switching or protecting electrical circuits or for making connections to or in electrical circuits<sup>3</sup> with 10.9 %. The volume of exports to Thailand reached EUR 16.54 million. The share of other machinery and equipment specialized for particular industries reached 17.5 % followed by rotating electric plant and parts with 16.9 % and electric power machinery with 7.2 % share on total exports. The volume of exports to Malaysia reached EUR 15.2 million in 2011. The share of motor cars and other motor vehicles principally designed for the transport of persons reached 26.4% followed by other machinery and equipment specialized for particular industries with 17.7% and pumps (other than pumps for liquids), air or other gas compressors and fans with 9.9 % share on total exports.

<sup>3</sup>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.

Table 8

**Share of first ten product groups in Slovak exports to main Southeast Asian partners 2011**  
(EUR million)

Singapore			Thailand			Malaysia		
SITC	EUR mil.	Share	SITC	EUR mil.	Share	SITC	EUR mil.	Share
781	3,31	19,7 %	728	2,90	17,5 %	781	4,03	26,4 %
764	2,46	14,6 %	716	2,80	16,9 %	728	2,70	17,7 %
772	1,83	10,9 %	771	1,19	7,2 %	743	1,51	9,9 %
743	1,38	8,2 %	699	1,00	6,0 %	764	1,05	6,9 %
598	1,11	6,6 %	772	0,96	5,8 %	737	0,78	5,1 %
515	0,83	4,9 %	514	0,92	5,5 %	894	0,59	3,9 %
851	0,75	4,5 %	743	0,87	5,3 %	771	0,45	3,0 %
871	0,73	4,4 %	515	0,68	4,1 %	542	0,40	2,6 %
874	0,63	3,8 %	784	0,56	3,4 %	634	0,39	2,5 %
718	0,39	2,3 %	742	0,55	3,3 %	651	0,34	2,2 %
Total	16,80		Total	16,54		Total	15,24	
Share of first 10		94,9 %	Share of first 10		79,7 %	Share of first 10		74,8 %

Source: Eurostat, own calculations.

### ***Northeast Asia***

The North Asian countries are among the most important exports partners of Slovakia in terms of volume, compared with the rest of Asian country groups. The volume of exports with China reached an impressive EUR 1.49 billion in 2011. The share of motor cars and other motor vehicles principally designed for the transport of persons reached 84.5 % which ranks China among the most important extra EU export markets. Only the volume of exports of motor cars and other motor vehicles reached EUR 1.259 billion in 2011. The share of other machinery and equipment specialized for particular industries reached 4 % and the share of 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) reached 1.9 % share on total exports. Other important export articles include 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; footwear, telecommunications equipment and furniture and parts.

The volume of export to South Korea reached EUR 98.6 million in 2011, which made South Korea the second largest trading partner in this region. The share of telecommunications equipment reached 23 % followed by motor cars and other motor vehicles principally designed for the transport of persons with 20 % and parts and accessories of the motor vehicles with 13.6 % share on total exports. Other important exports articles include rubber tyres,

interchangeable tyre treads, tyre flaps and inner tubes for wheels of all kinds and electrical apparatus for switching or protecting electrical circuits or for making connections to or in electrical circuits. The volume of exports to Japan reached EUR 65.9 million in 2011. The share of motor cars and other motor vehicles principally designed for the transport of persons reached 66 % (EUR 43.5 million) followed by minor share of baby carriages, toys, games and sporting goods with 2.8 % and thermionic, cold cathode or photo-cathode valves and tubes with 2.3 %.

**Table 9**

**Share of first ten product groups in Slovak exports to main Northeast Asian partners 2011**  
(EUR million)

China			South Korea			Japan		
SITC	EUR mil.	Share	SITC	EUR mil.	Share	SITC	EUR mil.	Share
781	1259,46	84,5 %	764	22,75	23,0 %	781	43,49	66,0 %
728	59,35	4,0 %	781	19,74	20,0 %	894	1,87	2,8 %
748	28,91	1,9 %	784	13,44	13,6 %	776	1,53	2,3 %
743	20,59	1,4 %	625	4,87	4,9 %	592	1,35	2,0 %
851	11,43	0,8 %	772	4,31	4,4 %	821	1,29	2,0 %
764	11,02	0,7 %	743	3,43	3,5 %	748	1,13	1,7 %
821	6,81	0,5 %	514	3,33	3,4 %	741	1,04	1,6 %
741	6,58	0,4 %	713	2,20	2,2 %	728	0,96	1,5 %
742	6,10	0,4 %	776	1,96	2,0 %	851	0,94	1,4 %
582	5,46	0,4 %	771	1,77	1,8 %	514	0,90	1,4 %
Total	1490,79		Total	98,69		Total	65,91	
Share of first 10		95,0 %	Share of first 10		78,8 %	Share of first 10		82,7 %

Source: Eurostat, own calculations.

In general the highest volume of exports to all Asian countries has been recorded in following SITC categories (table 10):

- The share of motor cars and other motor vehicles principally designed for the transport of persons reached 67.3 % on total exports and amounted to EUR 1.5 billion in 2011.
- The second largest export volume (EUR 95 million) has been recorded with other machinery and equipment specialized for particular industries with 4.2 % share on total exports.
- The third largest export volume at EUR 84 million has been recorded in telecommunications equipment and parts with 3.7 % share on total exports.

The table 10 shows, that approximately 75 % of Slovak exports are composed of three product categories with other categories having only minor share on total exports. This makes the Slovak exports vulnerable to business cycle fluctuation on markets with these products.

Table 10

**Share of first ten product groups on total exports to all Asian regions and countries in 2011**

SITC	Volume in EUR	Share on total
Motor cars and other motor vehicles	1 520 392 318	67,3 %
Other machinery and equipment	95 175 286	4,2 %
Telecommunications equipment	84 477 289	3,7 %
Pumps (other than pumps for liquids)	45 553 597	2,0 %
Transmission shafts	38 743 054	1,7 %
Electric power machinery	26 188 909	1,2 %
Parts and accessories of the motor vehicles	25 927 920	1,1 %
Heating and cooling equipment and parts	21 528 903	1,0 %
Footwear	20 263 130	0,9 %
Furniture and parts	14 479 181	0,6 %

Source: Eurostat, own calculations.

In order to measure the degree of concentration of the Slovak exports we have calculated the Herfindahl-Hirschman index (HHI) shown in table 11 (Hirschman, 1945). The calculations are based on SITC 3 digit classification.

Table 11

**Values of Herfindahl – Hirschman index**

West Asia	UNITED ARAB EMIRATES		ISRAEL		SAUDI ARABIA	
	Export	Import	Export	Import	Export	Import
2000	0.367	0.666	0.388	0.306	0.538	0.582
2011	0.536	0.39	0.611	0.387	0.48	0.724
Southeast Asia	SINGAPORE		THAILAND		MALAYSIA	
	Export	Import	Export	Import	Export	Import
2000	0.727	0.473	0.37	0.205	0.832	0.354
2011	0.302	0.46	0.285	0.448	0.35	0.324
South Asia	PAKISTAN		INDIA		IRAN	
	Export	Import	Export	Import	Export	Import
2000	0.638	0.461	0.633	0.386	0.464	0.525
2011	0.694	0.53	0.389	0.308	0.268	0.965
Northeast Asia	CHINA		SOUTH KOREA		JAPAN	
	Export	Import	Export	Import	Export	Import
2000	0.362	0.146	0.441	0.243	0.474	0.202
2011	0.846	0.344	0.346	0.342	0.662	0.407
CIS	KAZAKHSTAN		AZERBAIJAN		UZBEKISTAN	
	Export	Import	Export	Import	Export	Import
2000	0.243	0.509	0.468	0.602	0.453	0.97
2011	0.254	0.742	0.297	n/a	0.53	0.628

Source: Eurostat, own calculations.

In most countries the concentration has changed during the last decade. The value of the index increased in the case of United Arab Emirates and Israel and the decreased in Saudi Arabia. Regarding imports the value of the indicator decreased in the case of United Arab Emirates and increased in Israel and Saudi Arabia. This suggests that the share of exports (mainly motor vehicles) intensified during the observed period. This development is especially visible in the case of China where the value of the index increased from 0.362 to 0.846. Regarding imports, the values of the indicator are high especially in case of Saudi Arabia, Iran and Kazakhstan.

When we take closer look at the development of Finger-Kreinin similarity index we can see different development in the respective Asian countries (Finger – Kreinin, 1979<sup>4</sup>). In West Asian countries the values of the index changed only slightly. In Southeast Asian group the values of the index went up in case of Thailand and decreased in the case of Singapore and Malaysia. In South Asian countries the values of the index grew in all observer countries, mainly in the case of India and Iran. In Northeast Asian group, which represent the highest volume of exports and imports, the index went up in all countries, mainly South Korea and Japan. In CIS group the values increased notably especially in the case of Uzbekistan.

**Table 12**  
**Values of Finger-Kreinin Index**

<b>West Asia</b>	<b>UNITED ARAB EMIRATES</b>	<b>ISRAEL</b>	<b>SAUDI ARABIA</b>
Import	0.544	0.629	0.8
Export	0.588	0.541	0.812
<b>Southeast Asia</b>	<b>SINGAPORE</b>	<b>THAILAND</b>	<b>MALAYSIA</b>
Import	0.793	0.455	0.809
Export	0.457	0.708	0.432
<b>South Asia</b>	<b>PAKISTAN</b>	<b>INDIA</b>	<b>IRAN</b>
Import	0.79	0.562	0.516
Export	0.819	0.676	0.629
<b>Northeast Asia</b>	<b>CHINA</b>	<b>SOUTH KOREA</b>	<b>JAPAN</b>
Import	0.366	0.626	0.468
Export	0.413	0.741	0.574
<b>CIS</b>	<b>KAZAKHSTAN</b>	<b>AZERBAIJAN</b>	<b>UZBEKISTAN</b>
Import	0.667	0	0.476
Export	0.667	0.632	0.73

Source: Eurostat, own calculations.

<sup>4</sup> The Finger-Kreinin index of similarity between trade distributions

$$FK_{ij} = 1 - [\frac{1}{2} \sum_k |(x_{ik} / \sum_k x_{ik}) - (x_{jk} / \sum_k x_{jk})|]$$

where:

$x_{ik}$  = country i's exports of product k

$x_{jk}$  = country j's exports of product k



#### 4. DEVELOPMENT OF EXPORTS OF MAIN PRODUCT GROUPS TO MAIN ASIAN REGIONS

In 2000 the export to all Asian regions has been diverse. The highest share of exports to CIS has been recorded in manufactured goods classified chiefly by material with 28.5 % share, followed by chemicals and related products with 27.8 % share, machinery and transport equipment with 18.6 % and miscellaneous manufactured articles with 14.1 % share on total export to this region. The highest share of export to Northeast Asia has been recorded in machinery and transport equipment with 48.1 % followed by chemicals and related products with 22.3 %, manufactured goods classified chiefly by material with 14.7 % and miscellaneous manufactured articles with 7.7 % share on total exports. The highest share of export to South Asia has been recorded in Commodities and transactions not classified elsewhere in the SITC with 59.8 % followed by machinery and transport equipment with 25.2 % and manufactured goods classified chiefly by material with 5.8 %. The highest share of exports to Southeast Asia has been recorded with machinery and transport equipment with 34 % followed by miscellaneous manufactured articles with 24.6 % and manufactured goods classified chiefly by material with 18.6 % share on total exports. The highest share of export to West Asia has been recorded in manufactured goods classified chiefly by material with 47.2 % followed by machinery and transport equipment with 24.5 % and miscellaneous manufactured articles with 10.2 % share on total exports (table 11).

**Table 13**  
**Slovak exports by SITC groups 2000** (share on total in %)

SITC	CIS	Northeast Asia	South Asia	Southeast Asia	West Asia
Animal and vegetable oils, fats and waxes	0,09 %	0,00 %	0,00 %	0,00 %	0,00 %
Beverages and tobacco	0,06 %	0,05 %	0,00 %	0,00 %	0,05 %
Commodities and transactions not classified elsewhere in the sitc	0,12 %	3,41 %	59,88 %	12,46 %	3,15 %
Crude materials, inedible, except fuels	0,00 %	3,59 %	1,02 %	0,75 %	0,74 %
Food and live animals	10,50 %	0,13 %	0,00 %	1,60 %	13,31 %
Chemicals and related products, n.e.s.	27,88 %	22,30 %	6,18 %	7,99 %	0,75 %
Machinery and transport equipment	18,65 %	48,10 %	25,21 %	34,02 %	24,53 %
Manufactured goods classified chiefly by material	28,52 %	14,67 %	5,78 %	18,58 %	47,23 %
Mineral fuels, lubricants and related materials	0,08 %	0,00 %	0,00 %	0,00 %	0,00 %
Miscellaneous manufactured articles	14,10 %	7,76 %	1,93 %	24,59 %	10,23 %
Total	100 %	100 %	100 %	100 %	100 %

Source: Eurostat, own calculations.

In 2007 the structure of the exports shifted mostly towards the export of machinery and transport equipment. The highest share of exports in this category has been recorded with

Northeast Asia with 87.9 % followed by Southeast Asia with 80.4 %, West Asia with 78.7%, South Asia with 56.3 % and CIS with 51.5 %. The second largest share on exports has been recorded with manufactured goods classified chiefly by material and miscellaneous manufactured articles. The share of miscellaneous manufactured articles has been significant in South Asia and CIS, whereas the share of manufactured goods classified chiefly by material was the highest in CIS, South Asia and West Asia (table 12).

**Table 14**  
**Slovak exports by SITC groups 2007** (share on total in %)

SITC	CIS	Northeast Asia	South Asia	Southeast Asia	West Asia
Animal and vegetable oils, fats and waxes	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %
Beverages and tobacco	0,05 %	0,00 %	0,00 %	0,00 %	0,02 %
Commodities and transactions not classified elsewhere in the sitc	0,06 %	0,01 %	1,05 %	4,05 %	0,01 %
Crude materials, inedible, except fuels	0,16 %	0,97 %	2,05 %	0,21 %	0,19 %
Food and live animals	1,81 %	0,09 %	0,14 %	0,30 %	1,78 %
Chemicals and related products, n.e.s.	10,32 %	2,98 %	5,03 %	5,82 %	0,86 %
Machinery and transport equipment	51,53 %	87,92 %	56,28 %	80,46 %	78,74 %
Manufactured goods classified chiefly by material	21,53 %	4,00 %	17,29 %	2,09 %	10,14 %
Mineral fuels, lubricants and related materials	0,25 %	0,00 %	0,00 %	0,00 %	0,00 %
Miscellaneous manufactured articles	14,30 %	4,02 %	18,16 %	7,06 %	8,25 %
Total	100 %	100 %	100 %	100 %	100 %

*Source:* Eurostat, own calculations.

In 2009 the volume of exports were hit by the effects of global financial and economic crisis. However, the share of individual categories changed only slightly. The largest decrease has been recorded in machinery and transport equipment followed by miscellaneous manufactured articles and manufactured goods classified chiefly by material. The share of exports in this category even increased in Northeast Asia, South Asia and declined in the rest of the Asian regions. The shares of manufactured goods classified chiefly by material declined in South Asia and CIS. The share of export in this category went up in the rest of the regions.

At the end of 2011 the dominant share of machinery and transport equipment on total export increased even further. The share of export in this category to Northeast Asia reached 93.1 %, to West Asia 81.7%, with South Asia 75.7 %, with Southeast Asia 69.4 % and with CIS 48.9 % on total exports.

It can be concluded, that during the last decade the commodity structure of Slovak exports shifted significantly towards exports of machinery and transport equipment (especially motor vehicles) and became less diversified. A present the major export volume is being achieved with machinery and transport equipment, manufactured goods classified chiefly by material and miscellaneous manufactured articles.

**Table 15**  
**Slovak exports by SITC groups 2009** (share on total in %)

SITC	CIS	Northeast Asia	South Asia	Southeast Asia	West Asia
Animal and vegetable oils, fats and waxes	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %
Beverages and tobacco	0,11 %	0,00 %	0,00 %	0,00 %	0,03 %
Commodities and transactions not classified elsewhere in the sitc	0,07 %	0,01 %	7,46 %	0,02 %	0,00 %
Crude materials, inedible, except fuels	0,34 %	0,56 %	1,51 %	0,34 %	0,70 %
Food and live animals	1,59 %	0,10 %	0,05 %	0,27 %	1,20 %
Chemicals and related products, n.e.s.	20,55 %	3,03 %	5,76 %	3,90 %	0,53 %
Machinery and transport equipment	42,26 %	88,09 %	71,15 %	78,87 %	68,34 %
Manufactured goods classified chiefly by material	20,65 %	2,08 %	3,62 %	8,49 %	12,14 %
Mineral fuels, lubricants and related materials	0,27 %	0,00 %	0,00 %	0,00 %	0,02 %
Miscellaneous manufactured articles	14,16 %	6,12 %	10,44 %	8,11 %	17,04 %
Total	100 %	100 %	100 %	100 %	100 %

Source: Eurostat, own calculations.

**Table 16**  
**Slovak exports by SITC groups 2011** (share on total in %)

SITC	CIS	Northeast Asia	South Asia	Southeast Asia	West Asia
Animal and vegetable oils, fats and waxes	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %
Beverages and tobacco	0,00 %	0,01 %	0,00 %	0,13 %	0,02 %
Commodities and transactions not classified elsewhere in the sitc	0,01 %	0,01 %	1,10 %	0,00 %	0,01 %
Crude materials, inedible, except fuels	0,26 %	0,35 %	1,76 %	0,14 %	0,45 %
Food and live animals	1,52 %	0,15 %	0,26 %	0,08 %	0,41 %
Chemicals and related products, n.e.s.	11,77 %	1,42 %	8,94 %	7,15 %	1,81 %
Machinery and transport equipment	48,91 %	93,12 %	75,76 %	69,42 %	81,75 %
Manufactured goods classified chiefly by material	22,41 %	1,66 %	4,66 %	13,75 %	7,14 %
Mineral fuels, lubricants and related materials	0,08 %	0,00 %	0,22 %	0,00 %	0,00 %
Miscellaneous manufactured articles	15,03 %	3,29 %	7,29 %	9,33 %	8,43 %
Total	100 %	100 %	100 %	100 %	100 %

Source: Eurostat, own calculations.

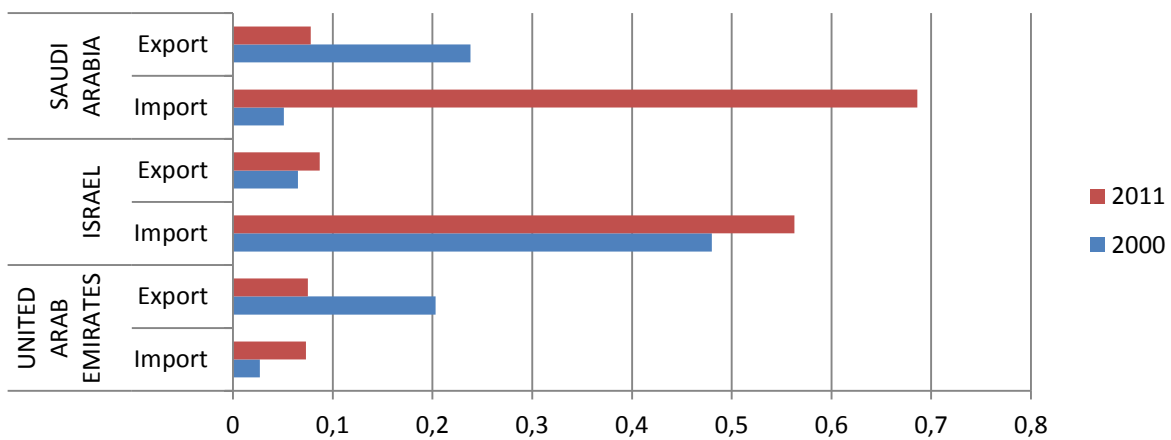
## 5. DEVELOPMENT OF HIGH-TECHNOLOGY EXPORTS AND IMPORTS

The share of high-technology imports and exports differs among the respective country groups as well as individual countries. In West Asian region the share of high-tech exports is relatively the same in all observed countries and lies between 7 – 8 %. In case of imports the highest share of high-tech imports can be observed with Saudi Arabia and Israel (figure 14).

In Southeast Asian countries, the share of high-technology exports and imports is higher than in the previous country group. In 2011 the highest share of high-technology exports has been recorded with Thailand and Malaysia followed by Singapore. The data shows that especially in the case of Singapore Slovakia seems to have lost its export markets in Singapore, where the share of high-technology exports decreased from 73.4 % to 27.6 %. In other countries in this group an opposite trend can be observed, the share of high-tech exports has grown substantially especially to Malaysia and Thailand (figure 15). The share of imports remained approximately the same with Singapore and in the case of Thailand and Malaysia.

Figure 14

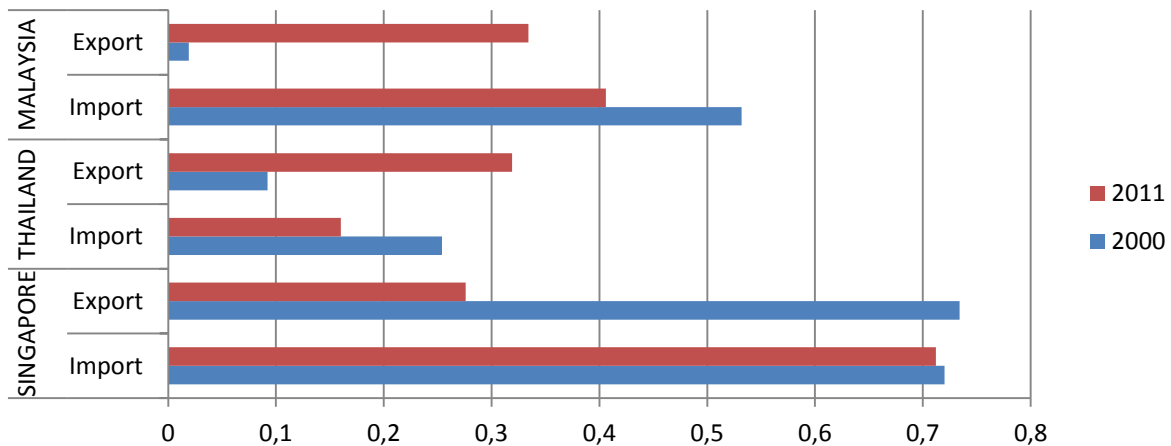
**Share of high-tech imports and exports in 2000 and 2011 (West Asian region)**



Source: Eurostat, own calculations.

Figure 15

**Share of high-tech imports and exports in 2000 and 2011 (West Asian region)**



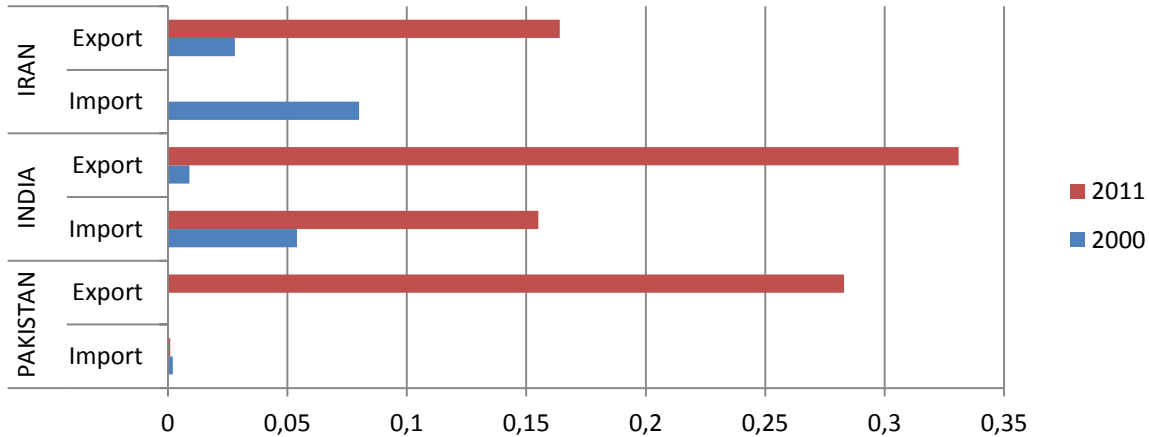
Source: Eurostat, own calculations.

In the South Asian group, the share of high-technology imports increased in all observed countries. The highest share of high-technology exports has been recorded with India (33.1 %) and Pakistan (28.3 %). The share of high-technology exports to Iran reached 16.4 %.

The import of high-technology products from these countries has been recorded only with India by 10.1 percentage points at the end of 2011.

Figure 16

**Share of high-tech imports and exports in 2000 and 2011 (South Asian region)**

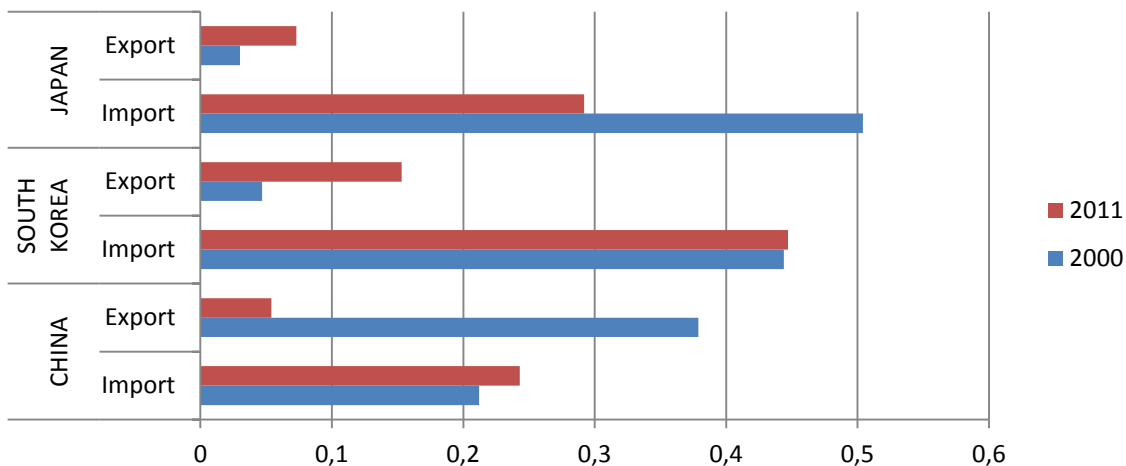


Source: Eurostat, own calculations.

In Northeast Asian group the share of exports of high-technology products has changed during the last decade especially in the case of China and South Korea. Whereas in China the share of high-technology products decreased significantly from 37.9 % in 2000 to only 5.4 % in 2011, in case of South Korea the share of high-technology exports went up from 4.7 % in 2000 to 15.3 % in 2011. The share of high-technology export to Japan recorded a minor increase from 3 % to 7.3 % in 2011. The share of high-technology imports from China and Japan remained relatively stable with minor increase of imports from China by 3.1 percentage points and 0.3 percentage points from South Korea. In the case of Japan, the share of high-technology imports declined by 21.2 percentage points from 50.4% to 29.2 % in 2011 (figure 17).

Figure 17

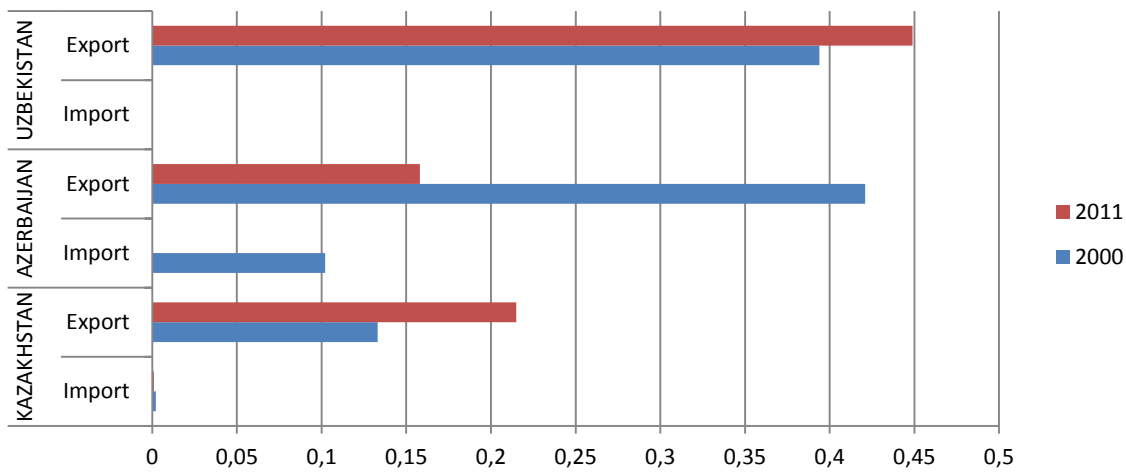
**Share of high-tech imports and exports in 2000 and 2011 (Northeastasian region)**



Source: Eurostat, own calculations.

The share of exports of high-technology products to CIS countries has changed during the last decade in all countries. The share of high-technology exports to Kazakhstan increased from 13.3 % to 21.5 % and from 39.4 % to 44.9 % to Uzbekistan. The share of exports to Azerbaijan declined rapidly from 42.1 % to 15.8 %. The share of high-technology imports to CIS countries during the last decade declined to negligible amount, where only in Kazakhstan the share of imports from this country reached insignificant 0.1 % on total imports. The share and volume of high-technology imports from Azerbaijan and Uzbekistan reached 0 %.

Figure 18  
Share of high-tech imports and exports in 2000 and 2011 (CIS region)



Source: Eurostat, own calculations.

Table 17  
High tech exports and imports shares with Asian countries in 2000 and 2011

West Asia	United Arab Emirates		Israel		Saudi Arabia	
	Import	Export	Import	Export	Import	Export
2000	2.7 %	20.3 %	48.0 %	6.5 %	5.1 %	23.8 %
2011	7.3 %	7.5 %	56.3 %	8.7 %	68.6 %	7.8 %
Southeast Asia	Singapore		Thailand		Malaysia	
	Import	Export	Import	Export	Import	Export
2000	72.0 %	73.4 %	25.4 %	9.2 %	53.2 %	1.9 %
2011	71.2 %	27.6 %	16.0 %	31.9 %	40.6 %	33.4 %
South Asia	Pakistan		India		Iran	
	Import	Export	Import	Export	Import	Export
2000	0.2 %	0.0 %	5.4 %	0.9 %	8.0 %	2.8 %
2011	0.1 %	28.3 %	15.5 %	33.1 %	0.0 %	16.4 %
Northeast Asia	China		South Korea		Japan	
	Import	Export	Import	Export	Import	Export
2000	21.2 %	37.9 %	44.4 %	4.7 %	50.4 %	3.0 %
2011	24.3 %	5.4 %	44.7 %	15.3 %	29.2 %	7.3 %
CIS	Kazakhstan		Azerbaijan		Uzbekistan	
	Import	Export	Import	Export	Import	Export
2000	0.2 %	13.3 %	10.2 %	42.1 %	0.0 %	39.4 %
2011	0.1 %	21.5 %	0.0 %	15.8 %	0.0 %	44.9 %

Source: Eurostat, own calculations.

We have calculated the share of high-technology products in the Slovak trade with the main Asian countries. We can see that Slovak exports are much more high-tech intensive than imports in the case of the CIS and West Asian countries. The highest share of high-technology exports can be observed in scientific instruments to Azerbaijan and Kazakhstan and pharmaceutical products to Uzbekistan (table 18).

Table 18

**Share of high-technology product groups in Slovak high-tech export to CIS in 2011**

	Azerbaijan		Kazakhstan		Uzbekistan	
	EUR mil.	%	EUR mil.	%	EUR mil.	%
Aerospace	0.24	5.6%	1.10	8.8%	0.00	0.0%
Computers office machines	0.79	18.8%	2.00	16.0%	0.10	2.2%
Electronics, telecommunications	0.04	0.8%	0.22	1.7%	0.02	0.5%
Pharmacy	0.59	14.0%	5.00	40.1%	4.44	97.1%
Scientific instruments	1.27	30.1%	3.75	30.1%	0.00	0.1%
Electrical machinery	0.24	5.8%	0.15	1.2%	0.01	0.1%
Chemistry	0.00	0.0%	0.02	0.2%	0.00	0.0%
Non-electrical machinery	1.05	24.9%	0.11	0.8%	0.00	0.0%
Arms and ammunition	0.00	0.0%	0.13	1.0%	0.00	0.0%
High Tech	4.20	100.0%	12.48	100.0%	4.57	100.0%

Source: Eurostat, own calculations.

The Northeast Asian countries represent the highest export market for high-technology products in terms of volume. The highest share of high-technology export to China can be observed in the category of non-electrical machinery with 74.9 % share on total high-technology exports. It includes the exports of other machinery and equipment specialized for particular industries; power-generating machinery and parts, machine tools working by removing metal or other material. The highest share of export to Japan has been recorded with electronics and telecommunications (40.9 %) followed by non-electrical machinery (12.7 %) and scientific instruments (12.7 %). The export to South Korea is predominantly focused on electronics and telecommunications (44.8 %), scientific instruments (19.1 %) and non-electrical machinery (10.1 %).

The dominant share of non-electrical machinery exports to South Asian countries is shown in table 20. The share is especially high in Pakistan and India. However, in Iran, besides non-electrical machinery an important share of exports can be observed in aerospace (according to SITC classification 792 - aircraft and associated equipment; spacecraft (including satellites) and spacecraft launch vehicles). The export of pharmacy products is also significant to India with 18.4 % share on total high-technology exports.

Table 19

**Share of high-technology product groups in Slovak high-tech export to Northeast Asia in 2011**

	China		Japan		South Korea	
	EUR mil.	%	EUR mil.	%	EUR mil.	%
Aerospace	3.40	4.0 %	0.66	12.1 %	0.85	5.3 %
Computers office machines	1.36	1.6 %	0.30	5.5 %	0.91	5.7 %
Electronics, telecommunications	7.84	9.3 %	2.24	40.9 %	7.14	44.8 %
Pharmacy	0.00	0.0 %	0.00	0.0 %	1.02	6.4 %
Scientific instruments	3.69	4.4 %	0.70	12.7 %	3.05	19.1 %
Electrical machinery	2.52	3.0 %	0.12	2.1 %	1.17	7.4 %
Chemistry	2.28	2.7 %	0.00	0.0 %	0.16	1.0 %
Non-electrical machinery	63.08	74.9 %	1.47	26.8 %	1.61	10.1 %
Arms and ammunition	0.00	0.0 %	0.00	0.0 %	0.04	0.2 %
High Tech	84.16	100.0 %	5.49	100.0 %	15.94	100.0 %

Source: Eurostat, own calculations.

Table 20

**Share of high-technology product groups in Slovak high-tech export to South Asia in 2011**

	India		Iran		Pakistan	
	EUR mil.	%	EUR mil.	%	EUR mil.	%
Aerospace	0.79	3.4 %	0.93	48.6 %	0.00	0.1 %
Computers office machines	0.31	1.3 %	0.04	1.9 %	0.01	0.3 %
Electronics, telecommunications	1.84	7.8 %	0.06	3.3 %	0.03	0.8 %
Pharmacy	4.30	18.4 %	0.00	0.0 %	0.06	1.8 %
Scientific instruments	0.81	3.5 %	0.10	5.4 %	0.03	0.8 %
Electrical machinery	0.08	0.4 %	0.01	0.6 %	0.00	0.0 %
Chemistry	0.01	0.1 %	0.00	0.0 %	0.00	0.0 %
Non-electrical machinery	14.13	60.3 %	0.77	40.1 %	3.40	96.2 %
Arms and ammunition	1.14	4.9 %	0.00	0.0 %	0.00	0.0 %
High Tech	23.41	100.0 %	1.92	100.0 %	3.54	100.0 %

Source: Eurostat, own calculations.

In general the exports of high-technology products to Southeast Asian countries is relatively small and does not exceed EUR 6 million per country. The most important exports are pharmacy products to Malaysia, followed by electronics, telecommunications and scientific instruments to Singapore and Thailand (table 21).

Similar development, in terms of export volume can be observed with West Asian countries, however the export structure is more diversified (table 22). In case of Israel, the highest export share can be observed with computers office machines (46.7 %), non-electrical machinery (21.6 %) and scientific instruments (14.6%). The highest share of high-technology exports to Saudi Arabia can be observed with non-electrical machinery (32.7 %) followed by electronics, telecommunications (31.1 %) and scientific instruments (15.9 %). Regarding



United Arab Emirates, the highest export share can be observed with computers and office machines (38.9 %) followed by scientific instruments (26.6 %) and aerospace products (25 %).

**Table 21**

**Share of high-technology product groups in Slovak high-tech export to Southeast Asia in 2011**

	Malaysia		Singapore		Thailand	
	EUR mil.	%	EUR mil.	%	EUR mil.	%
Aerospace	0.32	6.0 %	0.65	12.3 %	0.25	4.5 %
Computers office machines	0.21	3.8 %	0.50	9.5 %	0.10	1.7 %
Electronics, telecommunications	0.24	4.4 %	2.08	39.5 %	1.31	24.0 %
Pharmacy	0.68	12.6 %	0.01	0.1 %	0.02	0.3 %
Scientific instruments	0.34	6.2 %	1.43	27.2 %	0.26	4.7 %
Electrical machinery	0.01	0.3 %	0.19	3.6 %	0.13	2.4 %
Chemistry	0.00	0.0 %	0.00	0.0 %	0.00	0.0 %
Non-electrical machinery	3.61	66.7 %	0.40	7.6 %	3.23	59.1 %
Arms and ammunition	0.00	0.0 %	0.01	0.2 %	0.17	3.2 %
<i>High Tech</i>	<i>5.42</i>	<i>100.0 %</i>	<i>5.27</i>	<i>100.0 %</i>	<i>5.46</i>	<i>100.0 %</i>

*Source:* Eurostat, own calculations.

**Table 22**

**Share of high-technology product groups in Slovak high-tech export to West Asia in 2011**

	Israel		Saudi Arabia		United Arab Emirates	
	EUR mil.	%	EUR mil.	%	EUR mil.	%
Aerospace	0.25	5.0 %	0.38	11.2 %	1.96	25.0 %
Computers office machines	2.33	46.7 %	0.21	6.2 %	3.05	38.9 %
Electronics, telecommunications	0.09	1.7 %	1.06	31.1 %	0.18	2.3 %
Pharmacy	0.15	3.0 %	0.01	0.2 %	0.00	0.0 %
Scientific instruments	0.73	14.6 %	0.54	15.9 %	2.09	26.6 %
Electrical machinery	0.14	2.7 %	0.09	2.7 %	0.19	2.4 %
Chemistry	0.01	0.2 %	0.00	0.0 %	0.05	0.6 %
Non-electrical machinery	1.08	21.6 %	1.12	32.7 %	0.33	4.1 %
Arms and ammunition	0.22	4.5 %	0.00	0.0 %	0.00	0.0 %
<i>High Tech</i>	<i>4.99</i>	<i>100.0 %</i>	<i>3.42</i>	<i>100.0 %</i>	<i>7.85</i>	<i>100.0 %</i>

*Source:* Eurostat, own calculations.

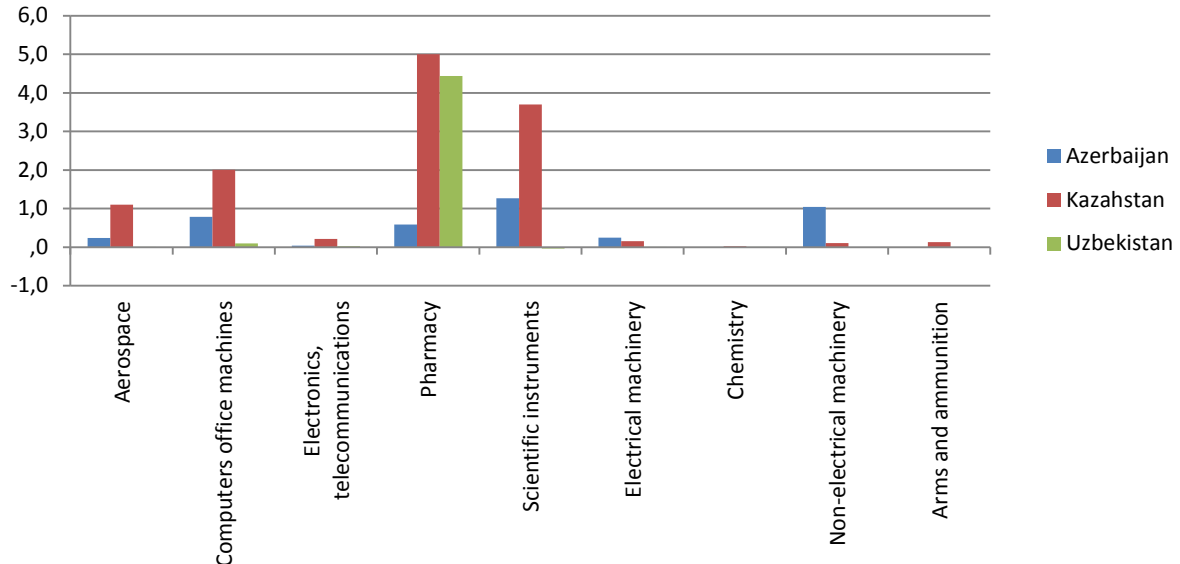
Besides the exports volumes and its individual shares, it is important to have a closer look at the trade balance with high-technology products. Whereas with the CIS countries Slovakia recorded positive trade balance in all high-technology products (figure 19) the development of trade balance with the rest of the country groups is mostly negative.

Negative trade balance is especially high with Northeast Asian countries, namely South Korea with scientific instruments (product code 871 optical instruments and apparatus) and electronics and telecommunications (product code 874 - measuring, checking, analysing and controlling instruments and apparatus). The negative trade balance with China is caused mainly by high imports of computers and office machines as well as electronics and telecom-

munication products. Positive trade balance with China can be observed only with non-electrical machinery products (figure 20).

Figure 19

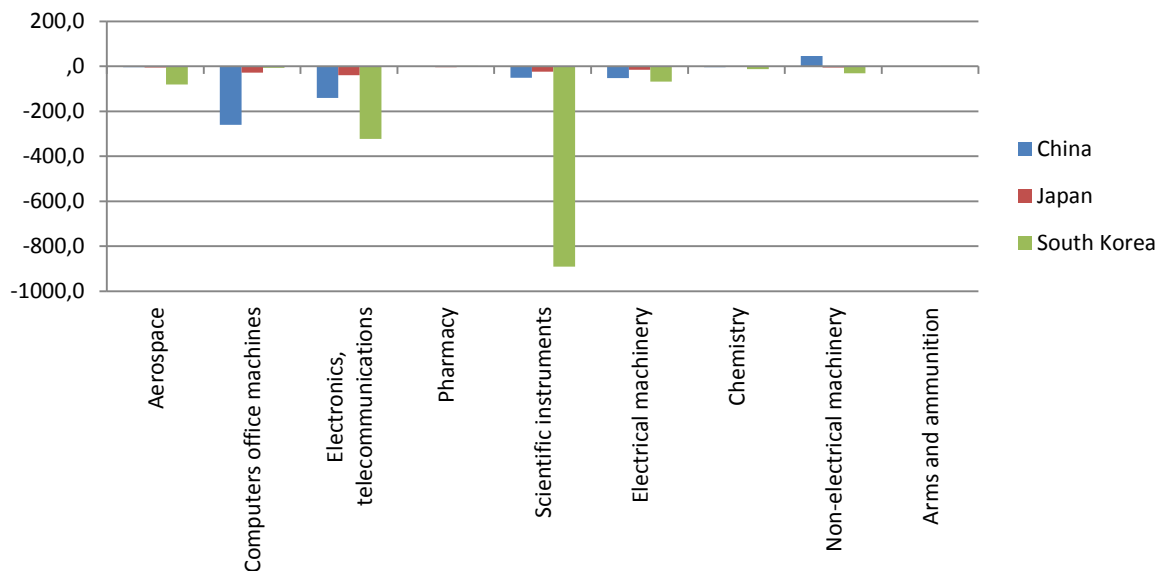
**Trade balance with high-tech products in 2011 in CIS countries**



Source: Eurostat, own calculations.

Figure 20

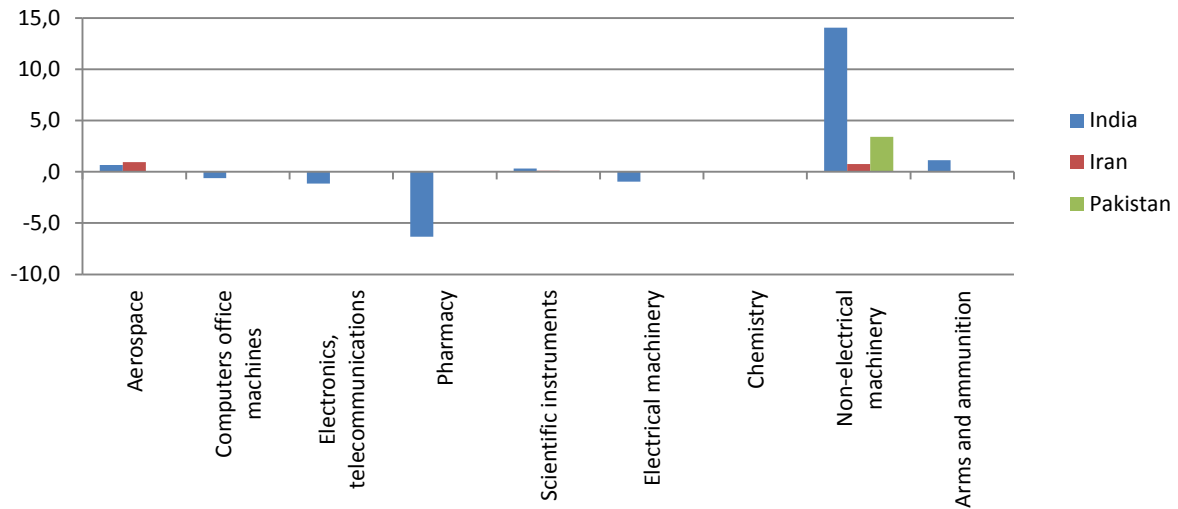
**Trade balance with high-tech products in 2011 in Northeast Asian countries**



Source: Eurostat, own calculations.

In the South Asia regions the trade balance is negative mainly with pharmaceutical products, electrical machinery and electronics and telecommunications imported from India. Positive trade balance can be observed in case of non-electrical machinery with all countries in this respective geographical group.

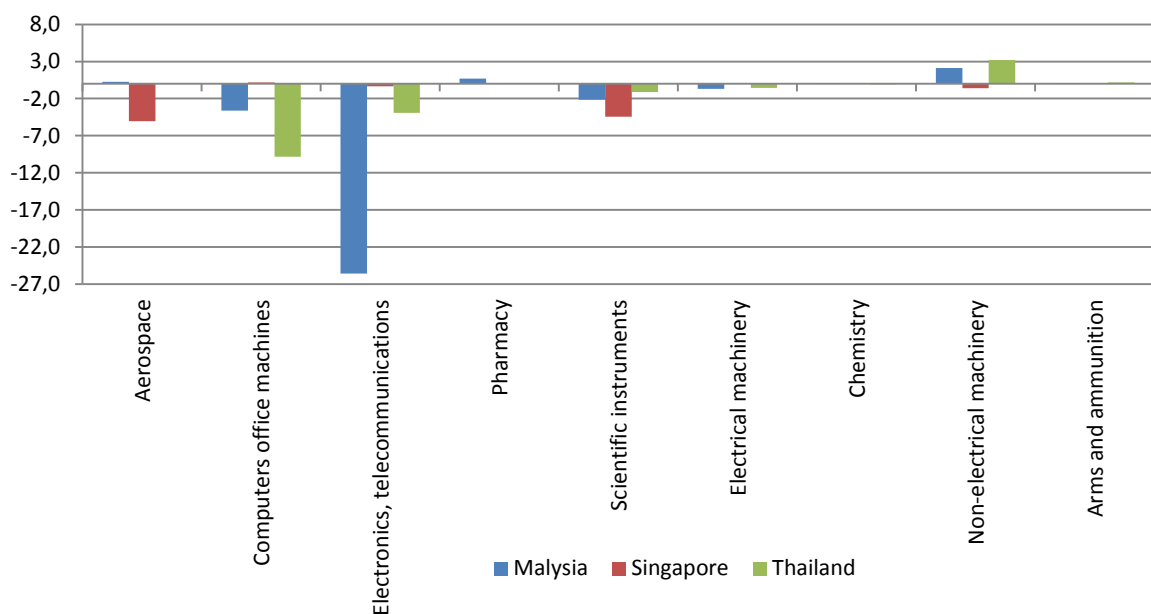
Figure 21

**Trade balance with high-tech products in 2011 in South Asian countries**

Source: Eurostat, own calculations.

The trade balance with Southeast Asian countries is mainly negative in all product groups (figure 22). In case of Malaysia, the trade balance is negative mainly with electronics and telecommunications (EUR 25.6 million), scientific instruments and computers and office machines (EUR 3.6 million). In the case of Singapore, the trade balance is also negative with scientific instruments and aerospace products. In case of Thailand the negative trade balance can be observed with computers and office machines (EUR 9.8 million) and positive trade balance with non-electrical machinery (EUR 3.1 million).

Figure 22

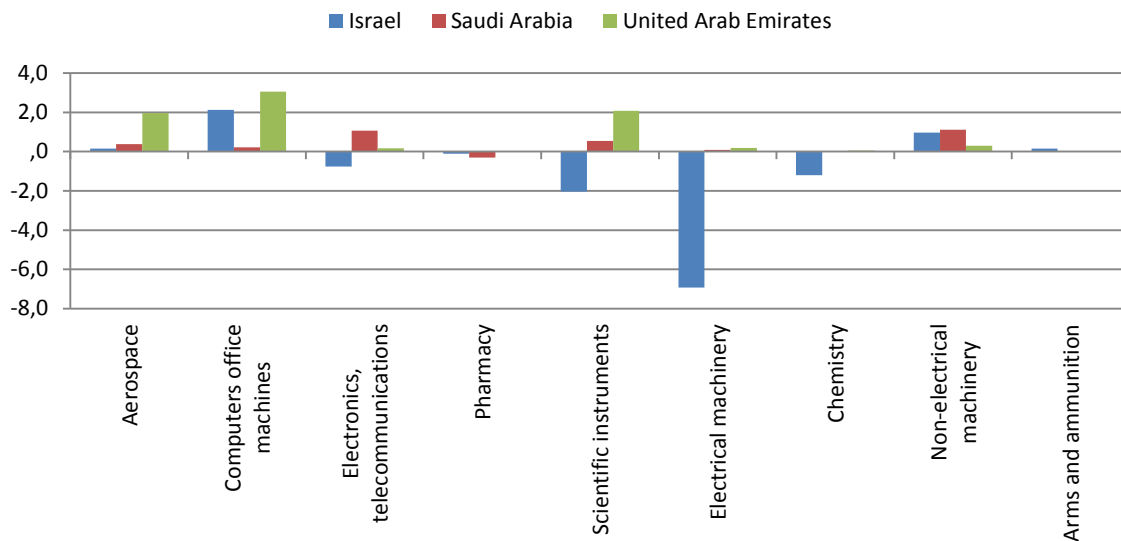
**Trade balance with high-tech products in 2011 in Southeast Asian countries**

Source: Eurostat, own calculations.

The trade balance with West Asian countries shows that the trade with countries in this group is mainly positive (figure 23). The only exception being the trade with electrical machinery, scientific instruments, chemistry and electronics and telecommunication with Israel. The trade balance with rest of the countries shows a positive trade balance especially with computers and office machines, non-electrical machinery, scientific instruments and aerospace products (mainly with United Arab Emirates).

Figure 23

**Trade balance with high-tech products in 2011 in West Asian countries**



Source: Eurostat, own calculations.

## 6. CONCLUSIONS

Slovakia is a small and open economy and the majority of its exports and imports is being done with the EU countries. The share of exports to Asia represent only 3.9 % share on its total exports. The volume of exports to Asian region is steadily growing and especially since 2009, the volume of exports has been growing faster than exports to EU countries. The volume share of goods is being exported to Northeast Asia (Hong Kong, China, Japan, South Korea, Macao, Mongolia and Taiwan) and the volume of exports to this regions further increased especially after 2009 and reached EUR 1.7 billion at the end of 2011. The share of Slovak exports to this reached 76.6 % on total exports to Asia. The second largest volume of goods is being exported to West Asian countries (Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen) and amounted to EUR 246.9 million at the end of 2011. The share of exports to this region amounts to 10.9 % on total exports to Asia. The share of exports to the rest of Asian regions amounts to 3.3 % - 4.6 %. Similar development can be observed in the case of imports, where the Northeast Asian countries represent 90.3 % share on total imports from Asia followed by the Southeast Asian countries with only 6.2 % share on total imports. However, the volume of

imports from these main trading partners (especially Northeast Asia) is significantly higher than the volume of exports, which leads to large trade balance deficits. At the end of 2011, the trade balance deficit with Northeast Asia (especially China) reached EUR 4.5 billion which represents 96.9 % of total trade balance deficit of foreign trade with Asian countries. In general we can observe two tendencies in the development of foreign trade. Increasing volume and share of imports of machinery and transport equipment, especially from Northeast Asia, Southeast Asia and West Asia. The share of imports of these goods reached 93.1 % on total imports from Northeast Asia and is also the highest in the rest of the country groups. Significant increase in exports of machinery and transport equipment to basically all Asian country groups. Increase of imports of mineral fuels, lubricants and related material from CIS and subsequent decrease of crude materials except fuels from CIS. Moreover, approximately 75 % of Slovak exports are composed of only three product categories with other categories having only minor share on total exports. This makes the Slovak exports vulnerable to business cycle fluctuation on foreign markets with these products. The share of motor cars and other motor vehicles principally designed for the transport of persons reached 67.3 % on total exports and amounted to EUR 1.5 billion in 2011. The second largest export volume (EUR 95 million) has been recorded with other machinery and equipment specialized for particular industries with 4.2 % share on total exports. The third largest export volume (EUR 84 million) has been recorded in telecommunications equipment and parts with 3.7 % share on total exports.

This facts are also supported by the calculated values of Herfindahl-Hirschman index. In most countries the degree of concentration has changed during the last decade. This suggests that the share of exports (mainly motor vehicles) went up during the observed period. This development is especially visible in the case of China where the value of the index suggests high concentration. Regarding imports, the values of the indicator are high especially in case of Saudi Arabia, Iran and Kazakhstan.

Given the structure of the Slovak economy with important role of multinational companies (automotive industry, consumer electronic industry), the manoeuvring space for policy makers in addressing the significant trade deficit with Asian countries (especially China) is rather limited. The dominant share of motor vehicles which represents 67.3 % of total exports to Asia can be seen as vulnerability, but on the other hand, the exports of motor vehicles to these countries contributed to fast recovery of Slovak exports after the recession in 2009. The recommendation to diversify the structure of the domestic seems to be self-evident, however, the structural shift to more knowledge-intensive exports with higher value added requires a long-term and coherent strategy and implementation of relevant policy instruments in this area.

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## ANNEX

### ANNEX 1 - 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 maté
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 there-with; 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 within 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 switching 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 microassemblies;

	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-motorized; 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

**ANNEX 2 - HIGH-TECHNOLOGY PRODUCTS LIST – SITC REVISION 4**

<b>Group</b>	<b>Code</b>	<b>Title<sup>5</sup></b>
<b>Aerospace</b>	(714-714.89-714.99)+ 792.1+ 792.2+792.3+792.4+ 792.5+ 792.91+ 792.93+ 874.11	Aeroplane motors, excluding 714.89 and 714.99 Helicopters Aeroplanes and other aircraft, mechanically-propelled (other than helicopters) Spacecraft (including satellites) and spacecraft launch vehicles Propellers and rotors and parts thereof Undercarriages and parts thereof Direction finding compasses; other navigational instruments and appliances
<b>Computers-office machines</b>	751.94+ 751.95+ 752+ 759.97	Multifunction office machines, capable of connecting to a computer or a network Other office machines, capable of connecting to computer or a network Computers Parts and accessories of group 752
<b>Electronics-telecommunications</b>	763.31+ 763.8+ (764-764.93-764.99)+ 772.2+ 772.61+ 773.18+ 776.25+ 776.27+ 776.3+ 776.4+ 776.8+ 898.44+ 898.46	Sound recording or reproducing apparatus operated by coins, bank cards, etc Video apparatus Telecommunications equipment, excluding 764.93 and 764.99 Printed circuits Electrical boards and consoles < 1000V Optical fibre cables Microwave tubes Other valves and tubes Semiconductor devices Electronic integrated circuits Piezoelectric crystals Optical media Semiconductor media
<b>Pharmacy</b>	541.3+ 541.5+ 541.6+ 542.1+ 542.2	Antibiotics Hormones and their derivatives Glycosides, glands, antisera, vaccines Medicaments containing antibiotics or derivatives thereof Medicaments containing hormones or other products of subgroup 541.5

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<sup>5</sup> In some cases the titles have been shortened. For full description see <<http://unstats.un.org/unsd/cr/registry>>.



<b>Scientific instruments</b>	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)+	Measuring instruments and apparatus, excluding 874.11, 874.2
	881.11+	Photographic cameras
	881.21+	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
<b>Electrical machinery</b>	(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
<b>Chemistry</b>	522.22+	Selenium, tellurium, phosphorus, arsenic and boron
	522.23+	Silicon
	522.29+	Calcium, strontium and barium
	522.69+	Other inorganic bases
	525+	Radioactive materials
	531+	Synthetic organic colouring matter and colour lakes
	574.33+	Polyethylene terephthalate
<b>Non-electrical machinery</b>	591	Insecticides, disinfectants
	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
<b>Armament</b>	891	Arms and ammunition