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Analysis of household final consumption with a focus on the domestic market and the impact on employment

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Analysis of household final consumption with a focus on the domestic market and the impact on employment

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Abstract

The share of imports used in household final consumption in the Slovak economy is increasing. Both this share (27.2% in 2005) and its increase (4.8 p.p. since 2000) are relatively high in comparison with neighbouring countries. This analysis examines the structure of the household final consumption in terms of the origin (domestic production or imports) and compares it with the employment structure. From this comparison it is possible to identify which categories of imports destined for household final consumption are weighing negatively on the domestic production and – where the corresponding category in the domestic economy accounts for a significant share of total employment – whether such effect has a significant negative influence on employment. The direct and indirect impact on employment is evaluated using employment multipliers. After taking into account the importance of different product categories for household final consumption together with their exposure to foreign competition, the two most exposed categories were identified as: *Food products and beverages* and *Hotel and restaurant services*. Thus, the substitution of imports (used in the final consumption of households) in these categories with domestic alternatives has the greatest potential to increase employment. If domestic production of any of these product categories (used in the final consumption of households) had at least not declined between 2000 and 2005, total employment in the economy would have been 0.3% higher. If domestic production had accounted for the entire increase during that period in household final consumption in the categories of *Food products and beverages* and *Hotel and restaurant services*, total employment would have increased by 0.7% and 0.8%, respectively. This analysis further shows that in the product categories used in the final consumption of households containing the largest shares of import, there was downward pressure on domestic production and on related employment. The main exceptions were economic activities that are heavily reliant on inflows of foreign direct investment (production of cars and electronics). The import share in the final consumption of households in the case of *Food products and beverages* was the sixth highest (38.8%) in 2005 among European countries for which such data are available. The increase of this share since 2000 was the largest (18.0 p.p.) among these countries.

Introduction

The aim of this analysis is to explore the structure of the final consumption of households in terms of its origin from domestic production or imports and to compare it with the employment structure. On the basis of this comparison product categories are found in which the imports for the final consumption of households substitute the production of domestic companies, and, provided that such a particular production type represents an important share of the total employment in the economy, whether such substitution has a significant negative effect on employment.

Data on the final consumption of households (goods and services supplied from domestic production and from imports) can be obtained from two corresponding input-output tables (Tables 18 and 19, System of national accounts ESA 95) that represent the decomposition of the input-output table for the entire economy (Table 17, ESA 95). The tables contain the structure of domestic production or imports in the Slovak economy according to the Classification of Products by Activity (CPA) composed of 59 items at the class 2 disaggregation. From the output point of view, the use of both domestic production and imports for the final consumption of households is distinguished. Data are published at current prices in millions of euro calculated using the fixed conversion rate. There are two sets of input-output tables available for Slovakia, namely for 2000 and 2005. According to the Eurostat information[1] about input-output tables' availability for the EU member and candidate countries, Slovakia is one of the countries with relatively low availability of data, because it does not fulfil completely even the requirement for compulsory publication of input-output tables in 5-year intervals starting in 1995. However, more up-to-date statistical data on the structure of the final consumption of households (for example from the Household Budget survey) do not distinguish between origins (domestic production or import). Similarly data on the structure of imports from other sources (foreign trade statistics) do not contain information about the share of imported goods and services used for the final consumption of households. National accounts data on the employment structure in thousands of persons according to the General Industrial Classification of Economic Activities within the European Communities (NACE Rev. 1), that most closely corresponds to the classification used in the input-output tables, are available in annual frequency from 1995 to 2009. The source of all used data is the Eurostat.

The structure of the final consumption of households and employment

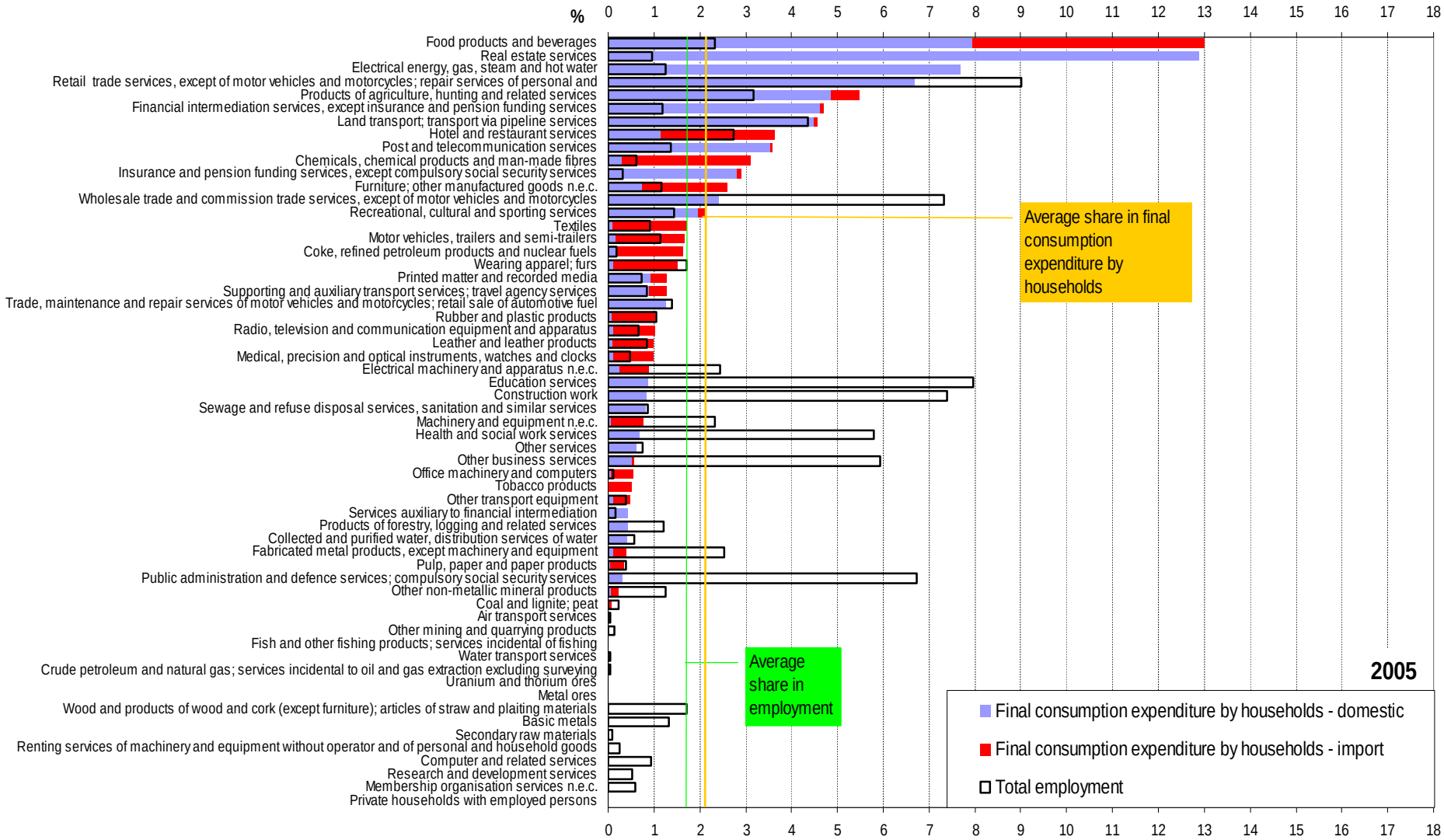
The structure of the final consumption of households, further partitioned according to its supply from domestic production or imports, is compared with the employment structure in Chart 1. The data on consumption represent percentage shares of the individual product sorts consumption in the total final consumption of households. Likewise the employment structure is shown as percentage shares of the number of persons employed in individual economic activities in the total employment in the economy. Individual data were sorted at first according to the shares in the final consumption of households in 2005.

The most significant components of the final consumption of households are:

1. ►***Food products and beverages*** **(13.0%)**
2. *Real estate services* (12.9%)

[1] http://epp.eurostat.ec.europa.eu/portal/page/portal/esa95_supply_use_input_tables/documents/AVAILABILITY_120416_15H35.xls

Chart 1: Structure of the final consumption of households and employment



Source: Calculations based on the Eurostat data.

3. *Electrical energy, gas, steam and hot water* (7.7%)
4. ►╬*Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods* (6.7%)
5. ►╬*Products of agriculture, hunting and related services* (5.5%)
6. *Financial intermediation services, except insurance and pension funding services* (4.7%)
7. ►*Land transport; transport via pipeline services* (4.6%)
8. **►╬*Hotel and restaurant services* (3.6%)**
9. *Post and telecommunication services* (3.6%)
10. ***Chemicals, chemical products and man-made fibres* (3.1%)**
11. *Insurance and pension funding services, except compulsory social security services* (2.9%)
12. ***Furniture; other manufactured goods n.e.c.* (2.6%)**
13. ►╬*Wholesale trade and commission trade services, except of motor vehicles and motorcycles* (2.4%)
14. ╬*Recreational, cultural and sporting services* (2.1%)

The rest of the shares of consumed products are lower than an average of 2.1% computed for products with nonzero final consumption of households in 2005. The 14 product sorts with higher than average share in the final consumption of households account for 75.4% in total. The 4 product sorts with a relatively high share of consumption covered from import are in bold. In the case of *Food products and beverages* the shares of domestic production and imports in the total final consumption of households are 8% and 5%, respectively. The imports of other three sorts of products for final consumption of households are more than two times higher than the respective domestic production. In a sum, the import covers 27.2% of the total consumption of households. For the sake of comparison, a similar chart containing the structure of final consumption of households and employment in 2000 is in the annex. The household consumption share saturated from imports attained a lower level of 22.4% in that year. The growth of imports at the expense of domestic production is related to the increasing openness of the Slovak economy, trade barriers removal after entering the EU and also to rising demand for foreign goods supported by increasing disposable income resulting from nominal convergence and catching up with developed countries, manifested by the exchange rate appreciation, growth of wages and domestic prices.

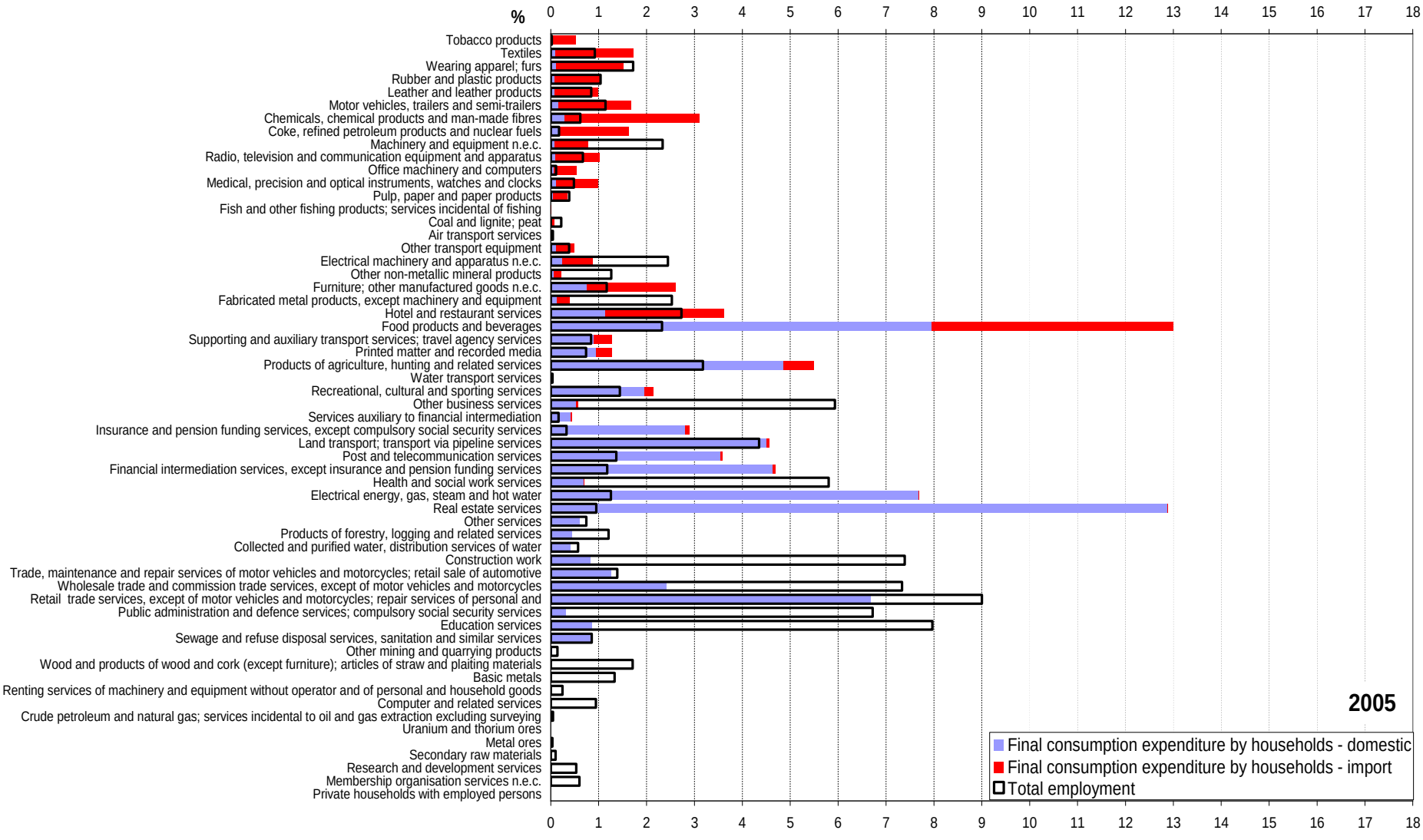
As it seems, the final consumption of households structure does not determine the employment structure completely. A higher number of economic activities with an above average share in the total employment (more than 1.8% - the average of activities with nonzero employment) is to be found in the group with a lower than average share in consumption. The correlation between the final consumption of households structure and employment structure is 0.24. Symbol ► marks the 6 items with a higher than average share in employment among the group of 14 most important consumption items. Regarding the foreign competition impact on the employment related to the production of goods for the final consumption of households, important are product sorts with significant shares of import and also shares in employment at the same time (they are both in bold and marked with symbol ►). These two conditions are fulfilled by 2 items: *Food products and beverages* and *Hotel and restaurant services*. If the imports of these goods grew at the expense of domestic production, the employment could potentially be jeopardised to a relatively larger extent. The share of domestic and imported production in these activities depends on consumer preferences. The high share of *hotel and restaurant services* originating from imports might be related to the preference of spending holiday abroad due to the geographic position of

Slovakia (small landlocked country with a limited number of tourist destinations, cold weather during winter, and also a relatively shorter ski season). The customers' focus on low priced goods plays probably a primary role in the case of *food products and beverages*, the product's quality or country of origin are less important.

The same data are sorted according to the ratios of imports and domestic production in Chart 2. Imports dominate mainly in tradable goods, raw materials or crops not produced in Slovakia and products made of them (*Tobacco products*, *Coal and lignite; peat*, *Coke and refined petroleum products*, *Fish and other fishing products; services incidental of fishing*), services which can not be efficiently provided in a small country due to the economies of scale (*Air transport services*), or attractiveness of their supply is limited by geographic conditions (*Hotel and restaurant services*). On the other hand, nontradable goods and services dominate in the group with prevailing domestic production. The majority of employment is concentrated in this group; therefore overall it does not seem to be strongly threatened by imports for final consumption of households.

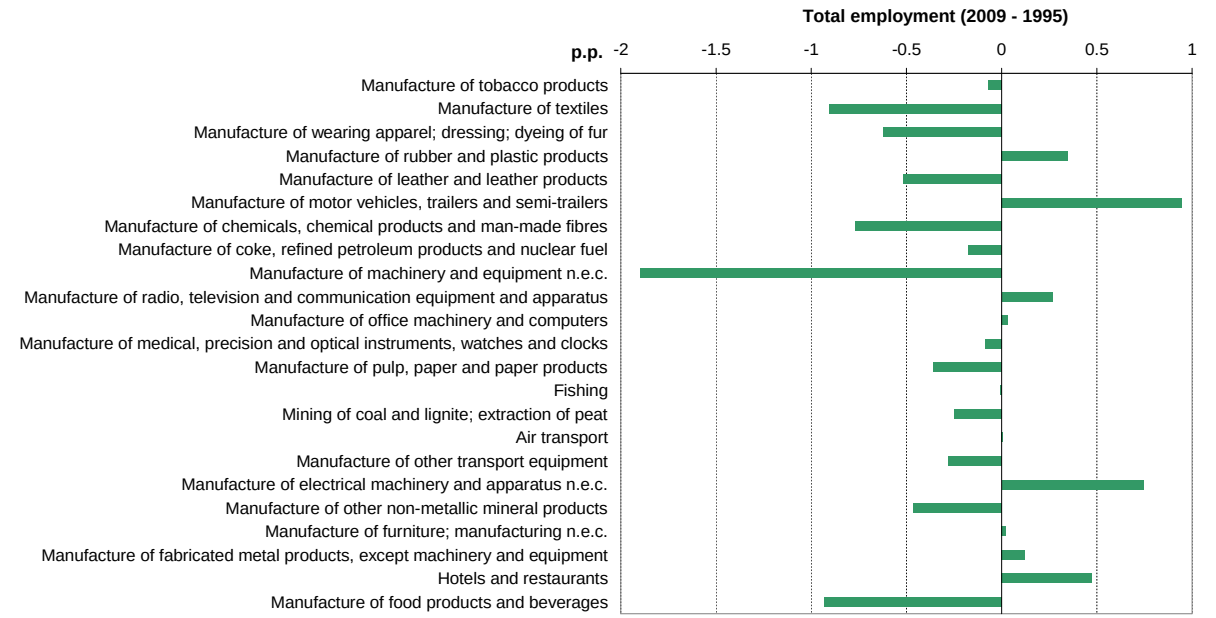
However, the structure of employment concentrated in product categories with a lower share of imports might be a consequence of the likely specialisation of the economy in activities with a lower foreign competitive pressure. In this case the structure of employment should indicate a declining trend in the activities threatened by imports. Chart 3 contains change in the employment structure calculated between 1995 and 2009 (differences between the shares of the individual economic activities in the employment at the end and at the beginning of the reference period in percentage points) for the production categories with the largest import shares. A decline of the share in total employment was observed in the majority of these economic activities (foremost in items *Manufacture of machinery and equipment n.e.c.*, *Manufacture of textiles*, *Manufacture of wearing apparel; dressing; dyeing of fur* and *Manufacture of chemicals, chemical products and man-made fibres*). Such products can be imported from countries with lower production costs. As for the above mentioned 2 product sorts with an above average share in total employment and also significant share of imports, the employment share decreased by 0.9 p.p. in the case of *Food products and beverages*; and, on the contrary, the share in employment in the total economy of *Hotel and restaurant services* increased by 0.5 p.p.. *Manufacture of motor vehicles, trailers and semi-trailers* and *Manufacture of electrical machinery and apparatus n.e.c.* are also sorts of activities with relatively high employment share growth; this is related to foreign direct investment inflows. The development of employment structure over time for the economic activities with significant share of imports for the final consumption of households is shown in the annex, together with changes in their domestic production and imports between 2000 and 2005.

Chart 2: Structure of the final consumption of households and employment (ordering according to the import shares)



Source: Calculations based on the Eurostat data.

Chart 3: Employment structure change between 1995 and 2009



Source: Calculations based on the Eurostat data.

Taking into account the interdependence of individual categories of economic activities

In the evaluation of possible impact of foreign competition (in the production for the final consumption of households) on the employment, the employment structure indicators analysed in previous section have taken into account only numbers of persons employed directly in the individual economic activities. However, the input-output tables capture also the intermediate consumption flows between individual activities. Hence it can be found out how a possible domestic production decrease in a certain product sort used for satisfying the final demand (for example due to import pressure) would influence the employment in the total economy not only directly, but also indirectly in the form of employment decline in activities that produce goods used in generating output of this production sort. The impact of a unit change in the final demand on the employment change is quantified in the form of employment multipliers[2] z_j for the individual economic activities. They have the following interpretation: if the final demand for product *j* changes by 1 unit (€1 million), the employment in the total economy will change by z_j units (thousands of persons).

employment multiplier vector $\mathbf{z} = \mathbf{e}(\mathbf{I} - \mathbf{A})^{-1}$

labour input coefficients vector $e_j = \frac{E_j}{X_j}$

number of persons employed in economic activity j E_j

total production in economic activity j $X_j = \sum_i x_{ij}$

intermediate consumption of domestic production of activity i in production of activity j x_{ij}

inverse Leontief matrix $(\mathbf{I} - \mathbf{A})^{-1}$

[2] Eurostat Manual of Supply, Use and Input-Output Tables (2008), Methodologies and working papers, Eurostat, European Communities.
http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-07-013/EN/KS-RA-07-013-EN.PDF

input coefficients of intermediate consumption of domestic production of activity i in activity j $a_{ij} = \frac{x_{ij}}{X_j}$

The employment multipliers calculation is based on the static input-output model where the vector of total production of individual activities is the sum of the intermediate consumption vector **Ax** and the final demand vector **y**: $\mathbf{Ax} + \mathbf{y} = \mathbf{x}$

The intermediate consumption in individual activities **Ax** is driven by requirements of their total production **x** for the production of all activities, these requirements are determined by the input coefficients matrix **A**. The input-output model with given final demand is solved for the total production: $\mathbf{x} = (\mathbf{I} - \mathbf{A})^{-1}\mathbf{y}$

The inverse Leontief matrix determines how much the total production of individual activities will change if the final demand for their production changes by a unit. The employment multipliers can be obtained by multiplying the inverse Leontief matrix with the labour input coefficient vector that determines the number of employment units necessary to generate a unit of total production in individual activities.

Similarly as in Chart 1, product categories in Chart 4 are sorted according to their shares in the final consumption of households; the difference to the previous case is the employment indicator represented by employment multipliers. The product sorts with relatively higher labour intensity achieve higher employment multiplier values in general (*Education services, Research and development services, Membership organisation services n.e.c., Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods, Wearing apparel; furs, Hotel and restaurant services, Health and social work services*). Among the selected 14 items with an above average share in the total final consumption of households are 5 product sorts that attain higher than average employment multiplier value (0.033 – 33 jobs created through an increase in final demand by 1 million euro), which are marked with symbol ⫴. From the foreign competition point of view the interesting items are again those with a high import share (in bold) and, at the same time, the production of which is, both directly and indirectly (through the intermediate consumption of other activities production), relatively labour intensive (higher than average employment multiplier). Only *Hotel and restaurant services* fulfil both of these two conditions simultaneously. The weighted average of employment multipliers with weights corresponding to the structure of household final consumption equals 0.029. Thus, if the final consumption of households increased by 1 million euro, while its structure remained unchanged, 29 jobs could be created in the total economy.

The structure of employment related to the final consumption of households originating from the domestic production represents a more complex indicator that takes into account the importance of individual product sorts for the final consumption of households and also the direct and indirect labour intensity of their production. The corresponding numbers of persons employed in individual economic activities E^c_j can be calculated using the product of employment multipliers z_j and final consumption of households supplied from the domestic production categorised according to the individual product sorts C^d_j:

$$E^c_j = z_j.C^d_j$$

Their sum over all the product sorts constitutes the total employment in the economy related to the final consumption of households originating from the domestic production. It achieved the level of 529.7-thousand persons in 2005, which represented 25.4% of the total number of employed persons. $\sum_j E^c_j = E^c = \mathbf{e}(\mathbf{I}-\mathbf{A})^{-1}\mathbf{C}^d$

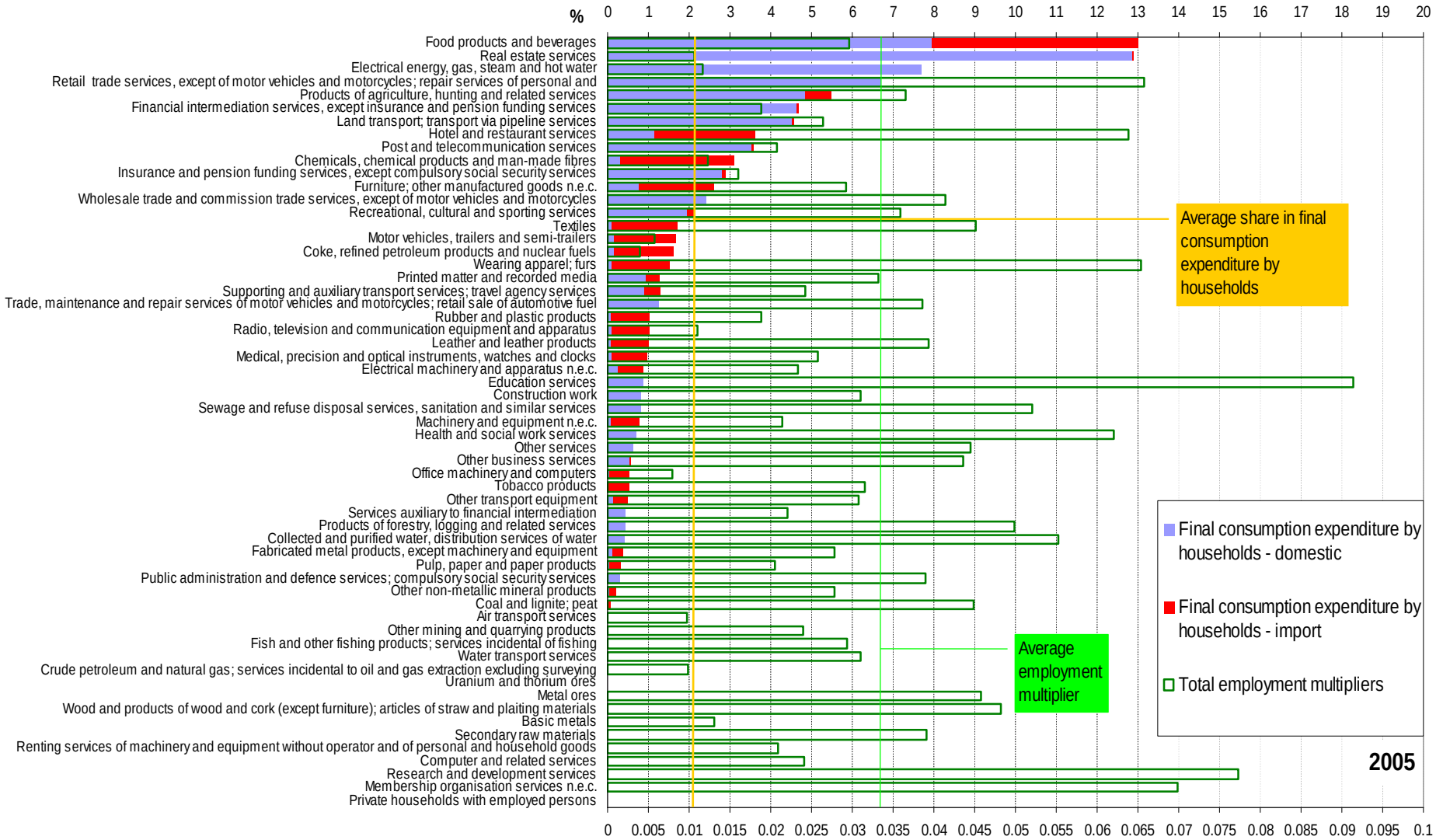
The shares of individual product sorts in the total employment related to the final consumption of households E^c generate the structure of this employment, according to which the individual product categories are sorted in Chart 5.

The product sorts with a share in the employment related to the final consumption of households higher than an average of 2.1% (calculated for the items with nonzero household consumption) are:

1. *Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods* (20.7%)
2. ***Food products and beverages* (11.1%)**
3. *Products of agriculture, hunting and related services* (8.4%)
4. *Real estate services* (6.4%)
5. *Land transport; transport via pipeline services* (5.6%)
6. *Wholesale trade and commission trade services, except of motor vehicles and motorcycles* (4.7%)
7. *Electrical energy, gas, steam and hot water* (4.2%)
8. *Financial intermediation services, except insurance and pension funding services* (4.1%)
9. *Education services* (3.7%)
10. *Post and telecommunication services* (3.5%)
11. ***Hotel and restaurant services* (3.5%)**
12. *Recreational, cultural and sporting services* (3.3%)
13. *Trade, maintenance and repair services of motor vehicles and motorcycles; retail sale of automotive fuel* (2.3%)
14. *Insurance and pension funding services, except compulsory social security services* (2.1%)

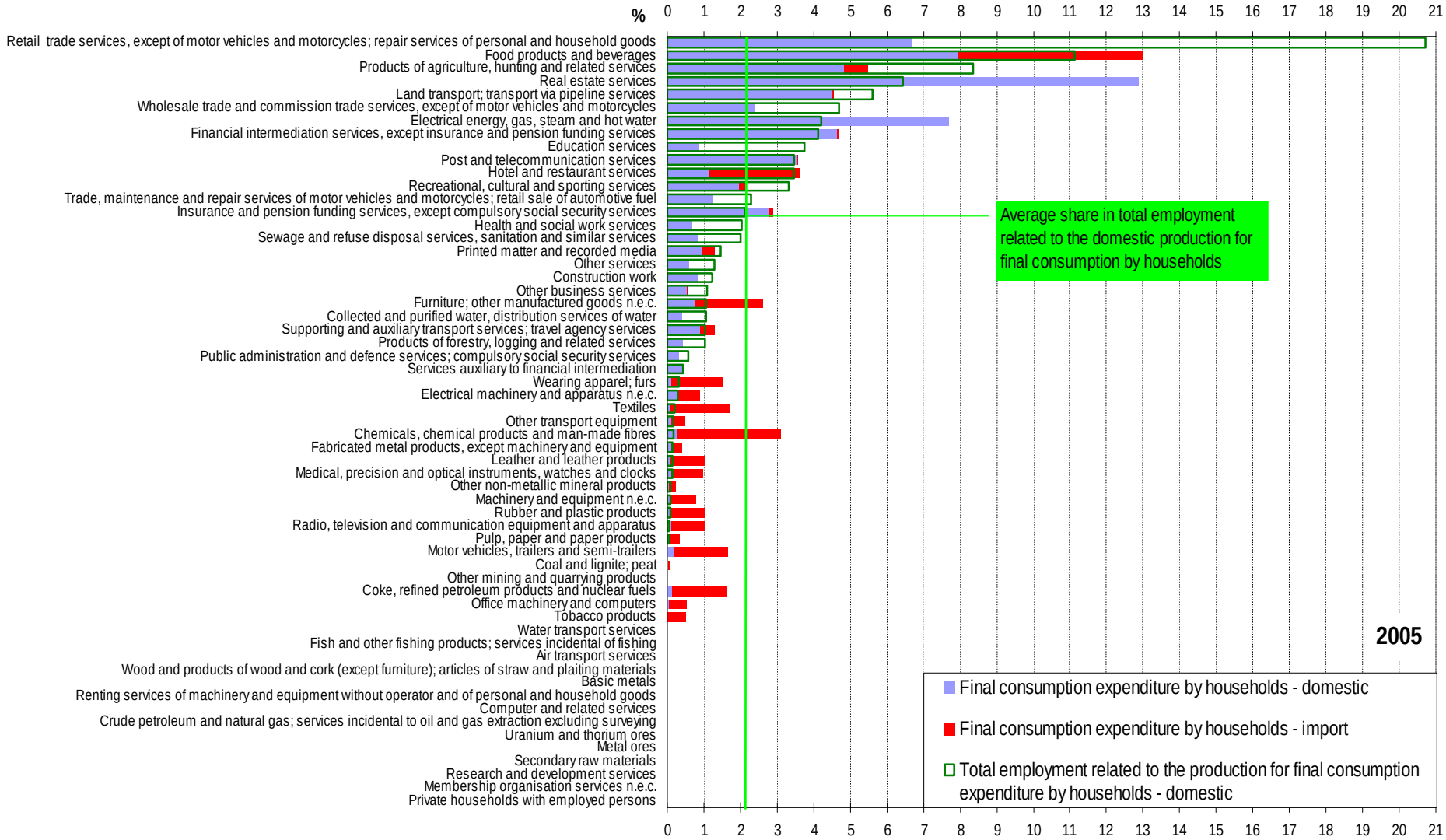
2 good sorts with a significant share of the final consumption of households originating from imports are in bold. Potential shift in consumers preferences from imports to the domestic production in *Food products and beverages* and *Hotel and restaurant services* might have the strongest positive impact on the total employment in the economy. The same 2 product sorts have been identified as potentially the most sensitive to foreign competition from the employment point of view also when considering only the direct employment (in the previous part of the analysis). The remaining product sorts with dominant import share have mostly a low share in the employment related to the final consumption of households. Possible further growth of household demand for imports of these product sorts should not threaten the employment substantially.

Chart 4: Final consumption of households structure and employment multipliers



Source: Calculations based on the Eurostat data.

Chart 5: Individual product sorts shares in the total employment related to the final consumption of households



Source: Calculations based on the Eurostat data.

The information about the structure of the final consumption of households and the employment multipliers implies the following interpretation for important production sorts with strong competitive pressure from abroad (all absolute data are at current prices calculated using the conversion rate):

- If the entire final consumption of households in 2005 related to item *Food products and beverages* had been satisfied only from the domestic production, which would have increased by €1,260 million (substituting the imports representing a share of 38.8% in this item), the number of jobs in the total economy would have increased (ceteris paribus) by 37,360 (1.8%).

- If the increase in the household final consumption of *Food products and beverages* by €509 million (18.6%) observed between 2000 and 2005 had been supplied only from the domestic production, the number of jobs in the total economy would have increased by 15,103 (0.7% in comparison to the level in 2000). However, the actual domestic production for the final consumption of households in the mentioned item fell by €182 million (6.6% of the total final consumption of households in this category) and was substituted by imports. Total imports for the final consumption of households in this item grew by €691 million (25.3% of the total level of this particular category of household final consumption in 2000). For this diminished domestic production, 5,396 (0.3%) jobs less were needed in the total economy.

- Covering the whole final consumption of households in item *Hotel and restaurant services* in 2005 only from the domestic production would have required its increase by €618 million that would have substituted the entire previous import share of 68.3% in this category. In such a case, 39,447 jobs would have been created in the total economy (an increase by 1.9%). Compared to the previous case (*Food products and beverages*), a higher impact on employment in spite of lower increase of final demand is caused by a higher labour intensity (direct and indirect) of the production in category *Hotel and restaurant services*, reflected in a more than double value of the corresponding employment multiplier (Chart 4).

- If the domestic production had been able to cover the entire increase in the household final consumption of *Hotel and restaurant services* amounting to €245 million (37.1%) observed between 2000 and 2005, 15,630 jobs would have been created in the total economy (an increase by 0.8% in comparison to the level in 2000). However, the actual import in the given category increased by €335 million (50.8% of the total level of that particular item of the household final consumption in 2000), thereby it expelled €90 million of the domestic production (13.7% of the total final consumption of households in the mentioned category in 2000). As a result, the need for jobs decreased by 5,772 (0.3%) in the total economy.

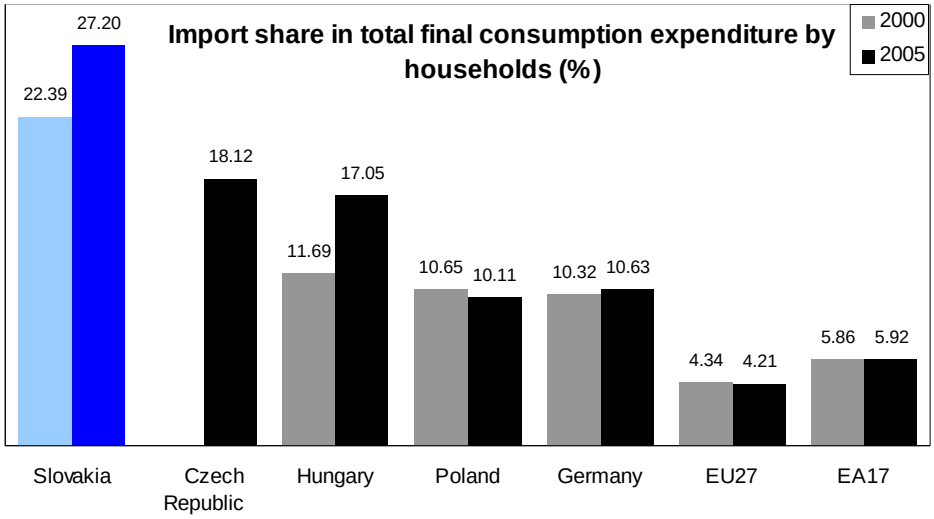
Import shares in the selected categories of household final consumption compared with other economies

The structure of the total final consumption of households in Slovakia in 2005 by its origin (domestic production or imports) is compared with the data for the remaining V4 countries, Germany, the EU and the euro area (Chart 6). The highest import share was registered in Slovakia, followed by the Czech Republic and Hungary. Poland and Germany, which economies are larger and more closed, achieved approximately only half the import

share of the average of the latter three countries. The euro area and the EU recorded the lowest import share (half the average of Germany and Poland). Imports only from third countries were taken into account in case of these country unions.

Compared to 2000, the share of imports in the final consumption of households grew by 4.8 p.p. in Slovakia and 5.4 p.p. in Hungary. Data for the Czech Republic for 2000 are not available. The share of imports rose by only 0.3 p.p. in Germany and, in contrast, it decreased by 0.5 p.p. in Poland. The share of imports recorded almost no change in the EU and the euro area.

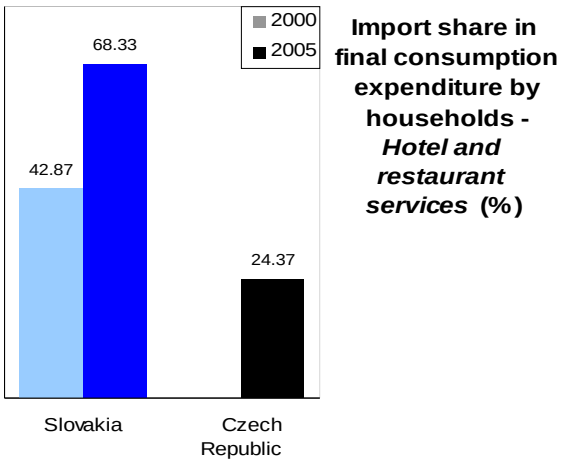
Chart 6: Import share in the total final consumption of households



Source: Calculations based on the Eurostat data.

The reported coverage of the entire final consumption of households of *Hotel and restaurant services* only by the domestic production shown in the input-output tables for Hungary, Poland and Germany complicates an analogous comparison in this category. The import share in this item is close to zero in the case of the entire EU and the euro area, too. Therefore, only the comparison between Slovakia and the Czech Republic is shown in Chart 7. Compared to the Czech Republic, Slovakia recorded a higher share of imports in 2005; this share grew since 2000.

Chart 7: Import share in the final consumption of households in the item *Hotel and restaurant services*

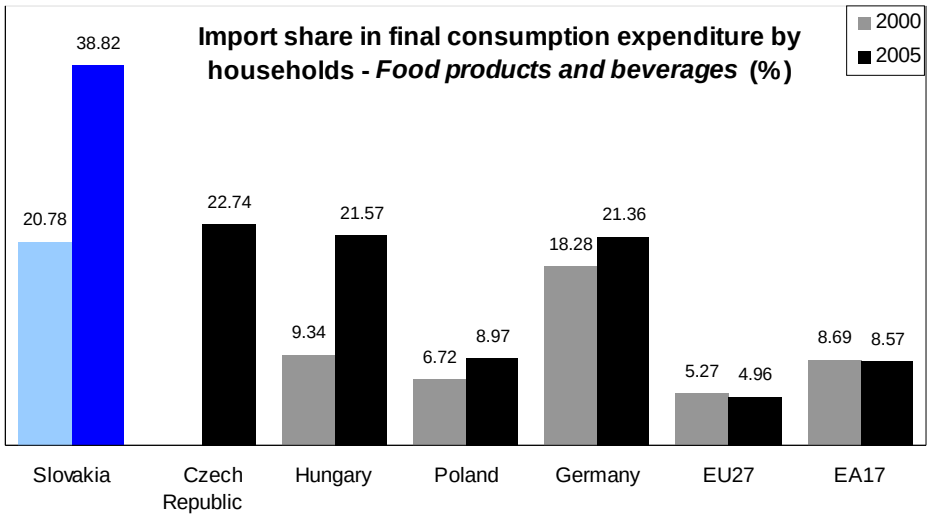


Source: Calculations based on the Eurostat data.

Category *Food products and beverages* is the next final consumption of households item that was identified as significant and, at the same time, exposed to foreign competitive pressure. Chart 8 shows the comparison of its structure with other countries. Slovakia again recorded the highest share of imports in 2005 followed by the Czech Republic, Hungary and Germany with only slightly higher than half import shares values. Poland, similarly to the entire euro area, imported a relatively low share of final consumption of households in the given category, namely a half the import share of the average for the latter three countries only. The EU recorded only half the import share again in comparison to the latter two economies, whereby imports only from third countries were taken into account as in the case of the euro area.

The share of imports in the final consumption of households of *Food products and beverages* grew in all countries under review since 2000. It increased the most in Slovakia (by 18.0 p.p.) and Hungary (by 12.2 p.p.). The increases in two more closed economies, Germany (by 3.1 p.p.) and Poland (by 2.3 p.p.), were substantially lower. The import share remained almost unchanged again in both the EU and the euro area. The Czech Republic data for 2000 are not available.

Chart 8: Import share in the final consumption of households in the item *Food products and beverages*



Source: Calculations based on the Eurostat data.

A similar chart containing also additional EU member and candidate countries is in the annex. Slovakia attained the sixth highest share of import for the final consumption of households in item *Food products and beverages* in 2005 and the highest increase of this share since 2000 among the countries with comparable data.

Conclusion

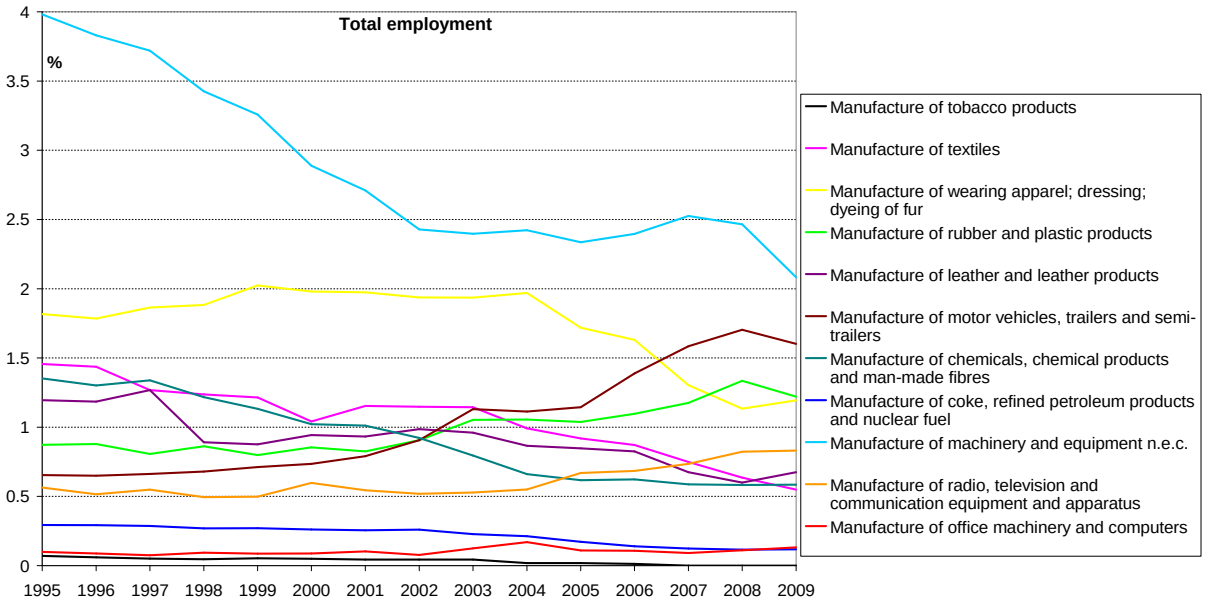
The share of the final consumption of households originating from imports increased between 2000 and 2005 (the only years, for which data in the required structure are available). This was due to the growing openness of the Slovak economy related to the European integration and globalisation together with the growing demand for foreign goods resulting from rising disposable income and Slovakia's convergence to developed countries. Imports dominated mainly in tradable goods, non-domestic raw materials or crops and services limited by economies of scale or geographic conditions. Services prevailed among items with

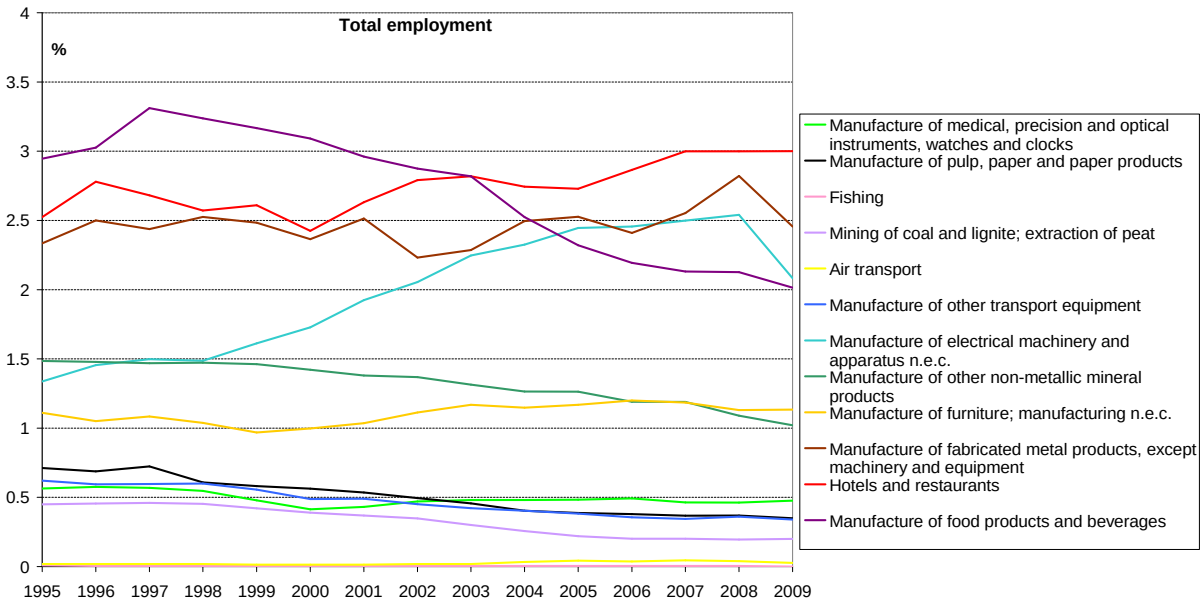
dominant domestic production. Concerning employment, the substantial part of its structure was concentrated outside the group of economic activities with significant share of competing imports used for the final consumption of households. Two product sorts showed simultaneously above-average import shares in the final consumption and also above-average shares of employed persons in total employment in 2005: *Food products and beverages* and *Hotel and restaurant services*. An increase of imports at the expense of domestic production in these items might potentially jeopardise the total employment to a relatively larger extent. The employment structure can be influenced by natural shifts in employment to activities with weaker competitive pressure from abroad. A decline of shares in the total employment in the period from 1995 to 2009 prevailed in economic activities where the production for the final consumption of households competed with imports. This was mainly the case of products imported from countries with low production costs. Increases of employment shares were recorded mainly in economic activities with foreign direct investment inflow. The same two product sorts with a relatively higher employment sensitivity to foreign competition were identified through the analysis of the structure of employment related to the household final consumption, when also intermediate consumption flows between individual economic activities (both direct employment in an activity and indirect employment in its supplying activities) were considered. If the domestic production of *food products and beverages* had not decreased between 2000 and 2005 or if the entire increase of their final consumption by households had been supplied from domestic production, the total employment in the economy would have increased by 0.3% and 0.7%, respectively. Under the same assumptions, a similar impact on employment would have also been observed in the case of *hotel and restaurant services* (0.3% and 0.8%, respectively). The increase in the total employment in the economy for both production sorts together would have amounted to 11,168 and 30,733 jobs, respectively. The remaining product sorts with dominant import shares showed mainly a low share in employment related to the final consumption of households. Therefore, a possible further rise in household demand for imports related to these product sorts should not pose a substantial threat to employment. If the share of the total final consumption of households satisfied from imports had remained unchanged between 2000 and 2005 (hence the share of domestic production in the final consumption of households would have been higher by 4.8 p.p.), total employment in the economy would have increased by 35,053 jobs (1.7%), assuming an unchanged structure of the final consumption of households by production sorts.

When interpreting the analysis results it is necessary to take into account also the limiting factors: the input data are available only at current prices (possible price influence on intermediate consumption flows between the individual production sorts but also on changes of the household final consumption structure over time) and the assumption of fixed production technology. The labour needs grow proportionally to production growth. However, changes in technology and substitution of inputs can occur in reality (for example the substitution of labour by an automated production line profitable starting from a certain production volume).

Annex

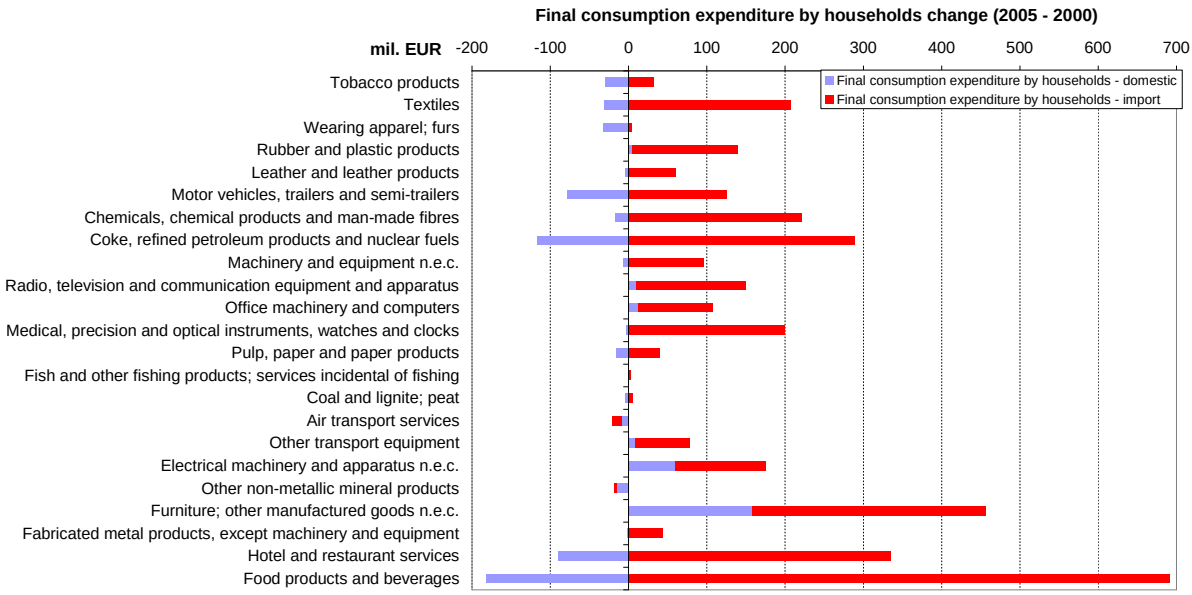
Developments in shares of individual economic activities in the total employment (activities with relatively significant shares of competing imports in the final consumption of households):



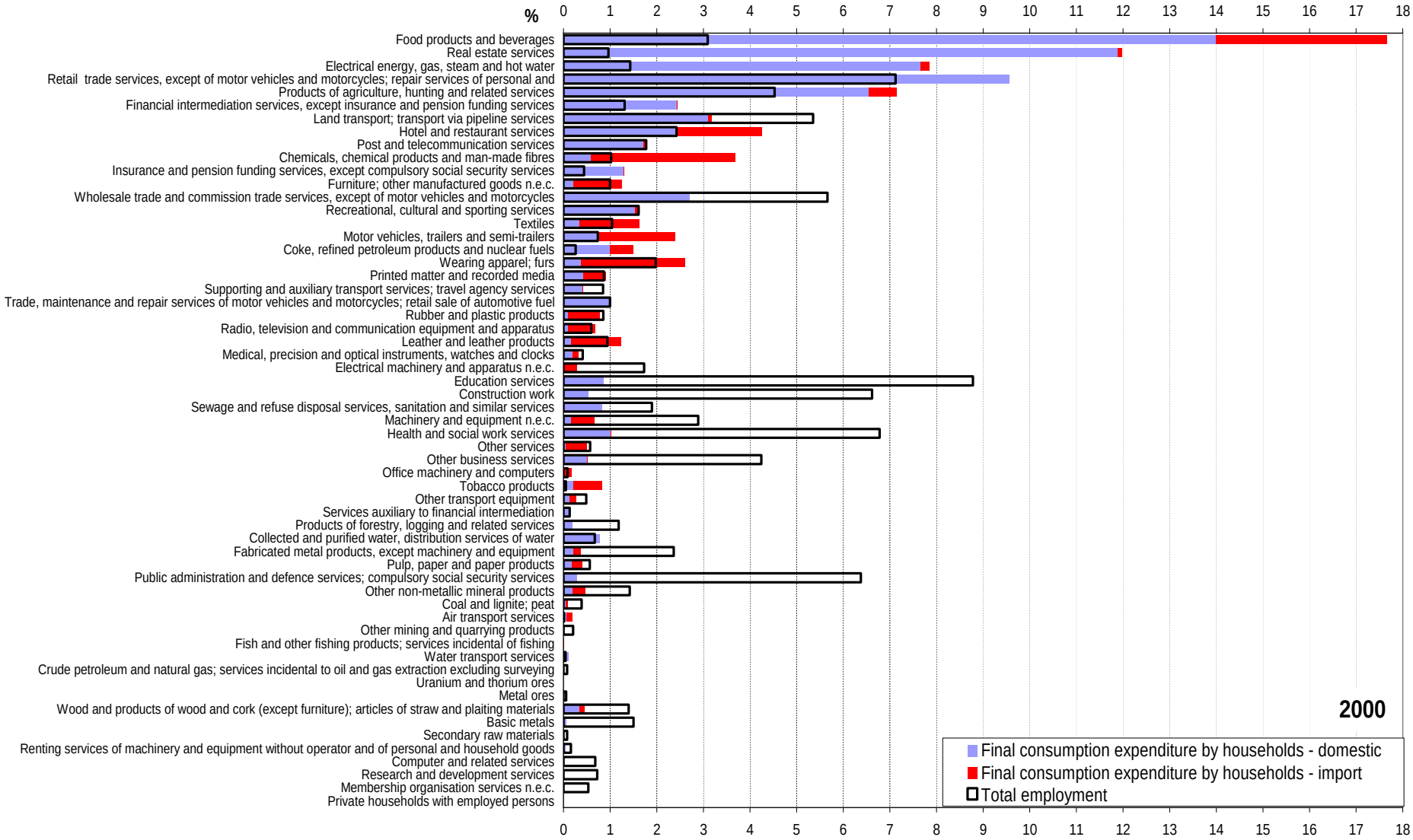


Source: Calculations based on the Eurostat data.

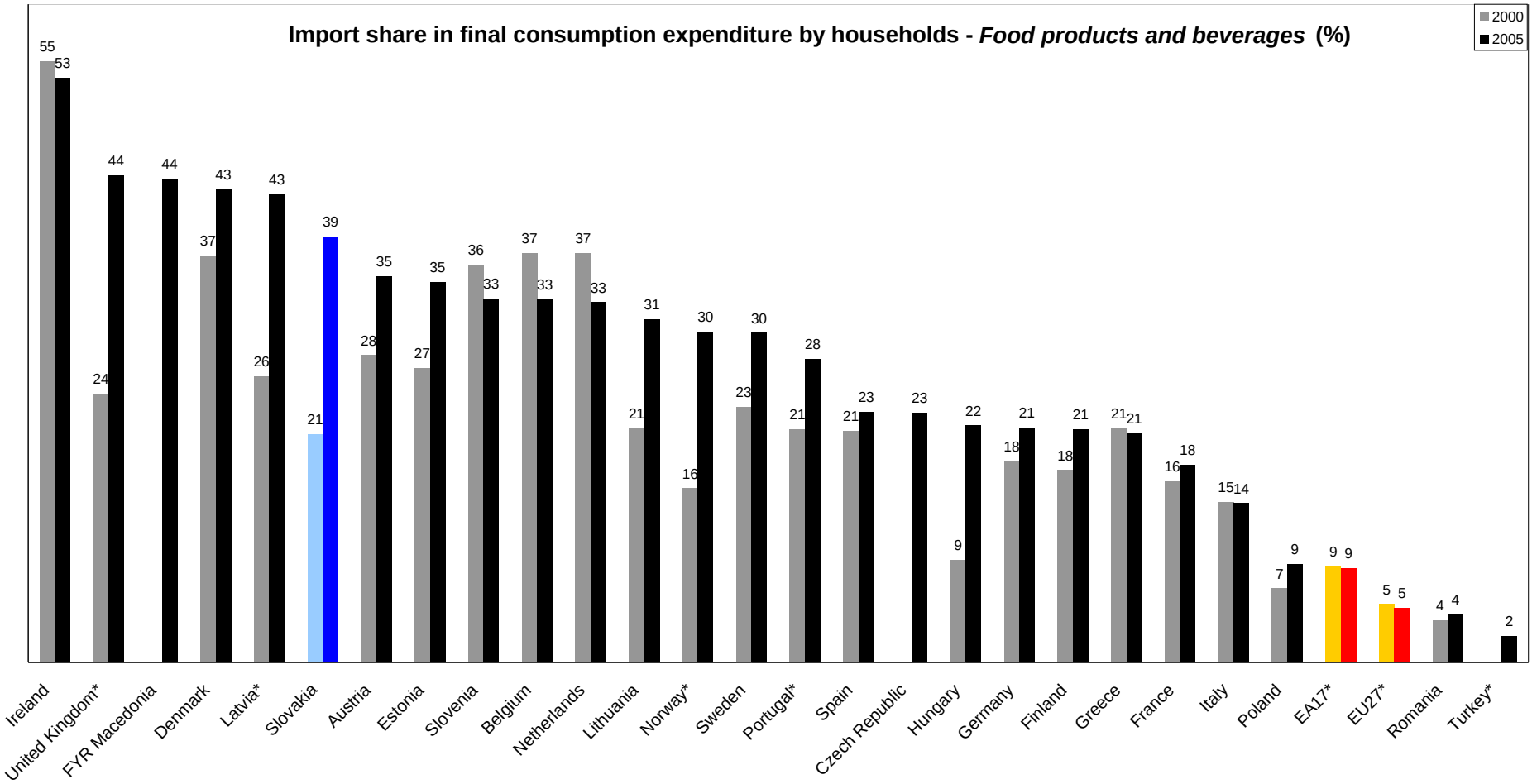
Changes in domestic production and imports for the final consumption of households between 2000 and 2005 (economic activities under strong foreign competitive pressure):



Source: Calculations based on the Eurostat data.



Source: Calculations based on the Eurostat data.



Source: Calculations based on the Eurostat data.

*Notes: United Kingdom – data for 1995 and 2005.
Latvia – data for 1996 and 1998.
Norway – data for 2001 and 2005.
Portugal – data for 1999 and 2005.
Turkey – data for 2002.
EU27 and EA17 – import only from third countries.