Trade Sustainability Impact Assessment for the FTA between the EU and Ukraine within the Enhanced Agreement ANNEXES

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2 Annex II Other trade relations of Ukraine and WTO accession issues in detail

As of June 2007, Ukraine has established bilateral free trade regime agreements with all the CIS countries (altogether accounting for 39.4% of Ukraine's total commodity trade in 2006, including 26.9% with Russia) and Macedonia (less that 1%) established in 2001. Free trade regime with the CIS countries provides for exemption of import duties but include no provisions with regard to trade in services, investment, government procurement and other important trade-related measures. Some of these bilateral free trade regime agreements (with Belarus, the Russian Federation, Moldova and Kazakhstan) envisage a number of limitations and exemptions from free trade regime; in particular, regarding certain sensitive commodities (i.e. sugar, spirits, confectionary, metal scrap, etc.). During 2005-2006 Ukraine and its CIS partners agreed schedules for gradual abolishment of respective exemptions.

Ukraine also participates at the Organization for Democracy and Economic Development – GUAM comprising Azerbaijan, Georgia, Moldova, and Ukraine – countries united by a common goal to create "a regional space of democracy, security, and stable economic and social development" and develop energy transport cooperation in the Black Sea region. During the summit in May 2006, the GUAM members initiated entry into force of the 2002 agreement with a view of creation of a free-trade zone. However, implementation of multilateral FTA within the GUAM still requires further efforts in terms of unification of tariff policies, customs procedures, as well as harmonization of trade-related measures.

Ukraine submitted its official request for joining the General Agreement on Tariffs and Trade (GATT) in late 1993 and the Working Party on the accession of Ukraine to the World Trade Organization (WTO) was established on 17 December 1993. The Memorandum of the Foreign Trade Regime was agreed upon in 1994. During the more than 13-year WTO accession process, Ukraine passed through intensive rounds of multilateral and bilateral negotiations with the WTO members, as well as through substantial legal transformations and trade liberalisation.

Presently, the negotiation process on Ukraine's accession to the WTO has approached its final stage as Ukraine has almost concluded its bilateral talks with interested countries and already agreed all import tariff lines for goods (which are reflected in Ukraine's tariff offer), as well as finalised its offer regarding conditions of market access for services

2.1 Bilateral market access negotiations in goods and services

Ukraine has concluded its bilateral negotiations on market access for goods and services with 49 out of 50 WTO member countries from its Working Party (see Table 2.1).

Table 2.1 Status of Ukraine's bilateral negotiations on market access

Bilateral protocols signed: 49 countries - Argentina, Armenia, Australia, Bulgaria, Brazil, Canada, China, Colombia, Cuba, Croatia, Czech Republic, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, EU, Georgia, Honduras, Hungary, Iceland, India, Indonesia, Israel, Japan, Latvia, Lithuania, Malaysia, Mexico, Moldova, Mongolia, Morocco, New Zealand, Norway, Panama, Paraguay, Peru, Poland, Romania, South Korea, Slovak Republic, Slovenia, Sri Lanka, Switzerland, Taiwan, Thailand, Turkey, Uruguay, and USA
Ongoing negotiations: 1 country – Kyrgyzstan

The relatively large number of WTO members having expressed their interest in negotiating market access conditions with Ukraine is an indication to the level of attractiveness of Ukraine's domestic market to its current and potential trading partners.

Negotiations with the USA started, in 1997, and were concluded only in March 2006. The main concerns of the USA regarded market access in audiovisual services, implementation and enforcement of national legislation on intellectual property rights protection.[1]

The ongoing negotiations with Kyrgyzstan have been protracted so long and have not yet been concluded because of the Kyrgyz insistence on repaying the debt, which Ukraine inherited from the Soviet Union times (27 million US dollars). Kyrgyzstan also requested abolishing of antidumping measures for electric bulbs applied by Ukraine, as well as zero tariff bindings on a wide range of goods including the most sensitive for Ukraine: agricultural products.[2]

2.2 Multilateral negotiations and legal reform

Since its establishment in December 1993, the Working Party on the accession of Ukraine to the World Trade Organization has been gathering 16 times for its formal meetings, with the last one taking place in June 2006. The Working party on Ukraine's accession to the WTO consists of 50 WTO Members.

[1] The negotiations with other countries included a number of other important matters, for example, Australia expressed most interest in the issues of market access for sugar, sugar prices and other support for the sugar industry in Ukraine, the aggregate level of domestic support for agricultural products, intellectual property rights (application of geographical indications for certain types of products), and market access in legal services. Japan was concerned about certification of electric and electronic goods, application of sanitary-epidemologic expertise for audio and video products and restrictions on branching into financial services. The milestones of bilateral negotiations with Moldova were the introduction of a new free trade agreement between the countries, joint customs posts, licensing procedures for certain types of activities and services, and conditions of foreign natural persons' residence and employment in Ukraine.

[2] According to the Ukrainian government, the two countries have already achieved an agreement on the problematic issues, including the debt issue, and will sign a bilateral protocol in the nearest future.

The first draft of the Report of the Working Party summarising Ukraine's progress and conditions of entry was prepared in March 2004 and after that revised several times. The next 17th formal meeting of the Working Party will analyse and hopefully approve the last version of the Working Party's Report. [3]

In the framework of the Working Party multilateral sessions, all aspects of Ukraine's existing trade and legal regimes were discussed, and its accession commitments were formulated. During the course of the multilateral negotiations, Ukraine has gradually fulfilled the results of these negotiations through introducing a great deal of legal changes, which were to harmonise Ukraine's legislation with the provisions of the WTO Agreements and the commitments taken by Ukraine during the negotiation process. This process was notably sped up during the recent period (2005-2006), when the Ukrainian government managed to resolve a number of problematic issues that it had failed to resolve for quite some time. According to the Ukrainian Ministry of Economic Affairs, during the two last years, 38 WTO-related laws were adopted by the Parliament.[4] The latest legal changes, namely 20 draft laws, were passed during November-December 2006. [5]

During 2005, Ukraine passed 4 laws that amended the custom duty rates for many industrial and agricultural goods in accordance with Ukraine's market access commitments.[6]

Box 2.1 The EU-Ukraine Action Plan 2

The most recently passed laws in Ukraine envisage the following policy changes: gradual reduction of export duties connected with ferrous and non-ferrous metals (export ban on scrap non-ferrous metals was eliminated and replaced by export duties), live cattle and leather raw materials (all effective upon the WTO accession); lowering the fees connected with import licensing for alcoholic and tobacco products; protection of intellectual property rights; abolishment of a ban on imports of old-aged vehicles to Ukraine (upon WTO accession); lifting of citizenship requirements for performing auditing and attorney services; amendment of two framework laws on veterinary medicine and on foreign economic activities; allowing establishment of branches of foreign banks and insurance companies (upon accession and in 5 years respectively), elimination of export quotas and trade related investment measures (TRIMS) in the sugar industry (upon accession); introduction of tariff quotas for importation of raw cane sugar amounted to 260 000 tons per year (upon accession) and elimination of import price control and quotas provisions with regard to the key agricultural commodities.

As of today, Ukraine adopted all framework laws connected with SPS, TBT, customs valuation, and intellectual property rights, essential for WTO accession. However, Ukraine is still required to develop a considerable number of sub-legal acts to implement these framework laws and to ensure their effective enforcement. To this end, the

3 This version will reflect recently adopted legal changes.

4 http://www.me.gov.ua/control/uk/publish/article?art_id=48387&cat_id=38238.

5 Ukrainian Government declared these drafts crucial for finalising Ukraine's WTO accession process and obtaining WTO membership.

6 Besides, many other market access barriers and discriminatory practices were eliminated such as minimum prices on imports of alcoholic products, discriminatory taxes on petroleum and tobacco products, discriminatory practice with respect to usage of promissory notes for payments of VAT on imports, most discriminatory fees for rail transport (import, domestic, transit), trade related investment measures (TRIMS) in the free economic zones and technological parks, discriminatory excise and VAT rates in the automobile sector, foreign exchange surrender requirements (50%), tax exemptions previously granted to certain industries, the system of licenses and quotas applied to certain products, WTO-incompliant import/export licensing fees and SPS-related provisions.

substantial increase of the operational and administrative capacity of Customs administration is of particular importance. Besides, Ukraine has to refrain from introducing any new policies or legislation contradicting provisions of the WTO agreements and its commitments.[7]

Presently, Ukraine also continues to seek an agreement with the Working Party country members on the level of state support to agriculture, which is still an unresolved issue in the course of the negotiations. Moreover, there are some new requests of the Working Party Members addressing such issues as trade in biotechnological products, taxation in agriculture (e.g. abolishment of VAT privileges for domestic producers), certification and standards, and legislation harmonisation.

2.3 Ukraine's WTO commitments and their implementation

Many of Ukraine's accession commitments (including market access commitments, legal and rule of origin commitments) have been already implemented during the negotiation process, but still some of them will become effective only upon Ukraine's accession to the WTO or even thereafter, based on ex ante agreed transition periods.

In general, Ukraine, like any other WTO accession country, is obliged to ensure the implementation of two fundamental principles of the WTO multilateral trading system, namely most-favoured-nation (MFN) treatment and national regime in three main spheres of trade governed by the WTO – trade in goods, trade in services and intellectual property rights.[8]

2.4 Trade in goods

Market access commitments

The results of Ukraine's bilateral negotiations for market access in goods are incorporated in the Consolidated Schedule of Concessions and Commitments on Goods. According to the Ministry of Economic Affairs, as of today Ukraine has reached agreement on all tariff lines in its tariff offer, as well as on undertaking commitments to join 16 sectoral agreements.

Box 2.2 Key elements of Ukraine's tariff offer

- Conversion of specific and combined tariffs to ad valorem duties;
- Setting up maximum bound rates at 10% level for most industrial goods and at 20% level for most

[7] After the WTO accession, the Ukraine's Accession Protocol will make up a part of the national legislation, and in case Ukrainian laws stipulate provisions that contradict to the Ukraine's WTO obligations the latter will have legal supremacy over provisions of these laws (pursuant to the provision of the Constitution of Ukraine on Ukraine's international arrangements).

[8] That is, a WTO member cannot discriminate between its WTO trading partners (MFN treatment) and should treat imported and domestically produced goods equally after the foreign goods entered the domestic market (national treatment); the same concerns services, local trademarks, copyrights and patents (although the principles are applied a bit differently in each of these cases). Information on Ukraine's IPR regime can be found in subsection 5.3.7.

agricultural products; exceptions are some sensitive products like sugar (50%) and sunflower-seed oil (30%);

- Joining 16 of the 19 sectoral initiatives, namely: agricultural equipment; chemistry; civil aircraft; construction equipment; distilled spirits; furniture; information technologies[9]; medical equipment; nonferrous metals; paper; pharmaceutical; scientific equipment; steel; textile and textile clothing; toys; and wood. For most of these products, binding tariff rates will be established at a zero level, however for textile and chemicals they will be non-zero;
- Obligations on tariff binding at the end of implementation period (year 2010): Ukraine will apply the MFN tariff rates to imports from all WTO Members. The average MFN rate for industrial products will be bound at the level of 4.85%, for agricultural products – 11.16%, for all products of the nomenclature of the Harmonized System (HS) – 6.28% (most tariffs should be harmonised with these obligations upon accession, however for some products transition periods till 2010 allowed).

In accordance with its market access commitments, Ukraine has been constantly liberalising its tariff protection in practically all sectors of the domestic market.[10] In particular, changes to Ukraine's Customs Tariff adopted in 2005, have lowered the privileged (MFN) tariff rates for many industrial and agricultural products (about 70% of the HS nomenclature) in accordance with Ukraine's tariff offer, reduced the excessive tariff rate differentiation, harmonised many full tariff rates with the MFN ones, and converted specific and mixed tariffs on many products to their ad valorem tariffs. As a result, while at the end of 2004, the average import duty rate across the entire commodity nomenclature was 10.47% with the weighted average rate equalling 7.7%, upon changes the same indicators were 6.28% and 5.09% respectively (see Table 2.2).

Table 2.2 Harmonisation of import tariffs with the WTO obligations undertaken in 2005

	Applied tariffs before changes to Customs Tariff, 2004	Applied tariffs after changes to Customs Tariff in 2005	Ukraine's WTO final obligations on MFN tariff binding
	Agricultural products		
Average bound rate	19.71	13.84	11.16
Weighed average bound rate	21.10	18.19	10.07
	Industrial products		
Average bound rate	8.29	4.40	4.85
Weighed average bound rate	6.70	6.11	4.77
	All products		
Average bound rate	10.47	6.51	6.28

[9] Ukraine committed to join the Information Technology Agreement (ITA) and eliminate tariffs on most information technology products upon accession. However for some products like computers and semiconductors, a transition period till 1 January 2010 is envisaged.

[10] Protection (via tariffs and non-tariff barriers) of certain products (first of all, agricultural and food products), on the contrary, has been increasing during the accession period. For some agricultural products (e.g. meat products, sugar, etc.), tariff protection was so high (up to 100-200% if converted from specific and mixed tariffs into ad valorem tariffs) that it almost prohibited the import of these products into Ukraine under the formal import procedures. Instead, these products were imported into Ukraine mainly through the free economic zones, or from countries with which Ukraine had free trade agreements (CIS countries), or under special import schemes, or illegally via smuggling practices. Imports in all of these cases meant that products entered the domestic market with paying zero tariff rates and VAT taxes. Therefore, high tariff rates appeared to be not very effective in the protection of the domestic market from import competition. This aspect will later be incorporated in the modeling scenarios.

Weighed average bound rate	7.77	7.02	5.09

Source: Ministry of Economy of Ukraine (http://wto.inform.org.ua/attach/Stenograma.doc).

To conclude, after recent tariff reductions, the currently applied tariff regime in Ukraine is roughly in line with its WTO commitments for most sectors of the economy. Customs duties applied to industrial products, their components, parts, as well as raw materials, are already lower than Ukraine's WTO commitments for these commodities. For many agricultural and food products (meat and dairy products, food-processing, spirits and alcoholic beverages, etc.) and some finished industrial products (e.g. certain pharmaceutical goods, automobiles, agricultural machinery, information technology products, medical equipment, etc.) tariffs rates will be further reduced upon the WTO accession. The biggest source of tension during Ukraine's WTO accession negotiations concerned and concerns agriculture-related issues (see Box 2.3).

Box 2.3 Agricultural domestic support

One of the issues in the WTO accession negotiations is the level of domestic support for the agricultural and food sectors (commodity groups 1-24 of the HS, except fishery and some other products). The main problem here is the lack of agreement among negotiators on the base period for domestic support to agricultural and food products, which actually determines the level of domestic support binding obligations of the acceding country. The Ukrainian negotiators suggest 1994-1996 years as the base period, during which domestic support to agriculture in Ukraine reached its highest level of USD 1.14 bn. In other words, the Ukrainian position is that the total aggregate measure of support (AMS) is to be bound at the level that exceeds its de minimums level (5% of the value of annual total agricultural output in the country, which was USD 12.54 bn during the base period, - and in 2004 – USD 15.8 bn). If so, then Ukraine will likely be obliged to commit itself also to reduce its bound AMS level by 20% over a certain period.

The WTO Members (such as the USA, Australia, etc.) insist on later and more representative periods in terms of factual agricultural policy of Ukraine, for example 2000-2002, during which Ukraine's total AMS equalled only USD 265 mln. Ukraine argues that this sum is not sufficient to implement the Strategy for Further Development of Agriculture in Ukraine submitted to the Working Party. Besides, WP Members have comments to Ukraine on the methodology of calculating the total AMS and other support tables (ACC/4). They argue about including various tax privileges (e.g. VAT) in the total AMS in Ukraine. Ukraine has to reach a compromise with the Working Party Members on this tough issue in order to finalise its accession process. The possible compromise may come from choosing the later base period and correcting support tables in accordance with the Working Party's suggestions.
As to export subsidies in agriculture, Ukraine reported not to apply such subsidies and committed itself to abstain from applying them in the future.

Trade in services

Ukraine's schedule of specific commitments in services is among the most liberal offered by acceding countries, as well as the countries that have entered the WTO recently. A draft schedule of Ukraine's specific commitments contains sector-specific commitments in 150 out of the total of 155 subsections as identified by the WTO Services Sectoral

Classification List.[11] The session of horizontal commitments covers such areas as land ownership, subsidies and other forms of state support, and entry and temporary stay of natural persons.

Ukraine committed itself to full liberalization in the three modes of service supply: 1) cross-border supply, 2) consumption abroad, 3) commercial presence for 139 out of 155 sub-sectors. Still, some limitations on commercial presence will be present under the WTO in such sectors as notary services (eligibility only for Ukrainian citizens), agricultural land (ownership only by Ukrainian citizens), education (universities led only by Ukrainian citizens), health services, medical and dental services (reassessment of professional qualifications), postal services (licensing required for mail and packages), as well as insurance, road transport, auditing services, audio-visual sector. Limitations on foreign investment will be allowed only for news agencies (35%). As such, in order to implement its commercial present commitments, Ukraine will have to abolish other existing restrictions on foreign investment for companies distributing printed editions (30%) in a 5 year transition period.[12] Besides, branching limitations will be abolished in banking sectors upon WTO accession and in the insurance sector within five year from accession. Moreover, upon WTO accession, non-residents in the insurance sector will be allowed to re-insure certain kinds of risks (connected with overseas transportation, commercial aviation, launching of spaceships and freight), whereas within in five years upon accession, Ukrainian persons will be able to purchase insurance policies from foreign insurance suppliers to insure any kinds of risks (cross-border supply).

As to Mode 4 of service supply 'presence of natural persons', Ukraine committed only to allowing access of senior employees (who may stay in Ukraine up to five years), as well as other service providers defined in Ukraine's commitments (up to 180 days).

Summing up, Ukraine's current legal framework is now largely in line with Ukraine's WTO service commitments. Ukraine has already liberalised to a great extent its trade regime by eliminating the WTO-incompliant and discriminatory restrictions on imports, exports and FDI. The introduced legal policy changes in the framework of Ukraine's WTO accession lead to a (partial) reform of Ukraine's trade related economic policies and practices such as customs proceedings, competition policy, intellectual property rights, quality standards and safety requirements, etc., in accordance with multilaterally accepted international standards.

[11] Around 80% of service commitments are full and the other 20% are conditioned (in particular, in banking, insurance, transport, telecommunications, education, audiovisual, and professional medical and legal services).

[12] All other limitations on the share of foreign investment in statuary funds of companies have already been eliminated.

3 Annex III Existing economic, social and environmental situation and trends in the EU and Ukraine in detail

3.1 Existing economic situation and trends in the EU and Ukraine in detail

3.1.1 European Union policy: The Lisbon Agenda in perspective

In March 2000, in what has become known as the Lisbon Agenda, the EU Heads of States and Governments agreed to make the EU "the most competitive and dynamic knowledge-driven economy by 2010". The Agenda focused heavily on the role of innovation as a driving force for economic development, the importance of skills and learning in a knowledge-based economy, and the need for compatibility with social and environmental concerns and renewal. Although some progress was made, it was clear by the time of the mid-term review in 2005 that overall the EU was falling behind the ambitious targets it had set itself. Re-launching the Agenda in 2005, increased emphasis was given to two key areas: (a) delivering stronger, lasting growth, and (b) creating more and better jobs. The bedrock to meeting these challenges is the maintenance of stability-orientated macroeconomic policies and sound budgetary policies. Meanwhile, the renewed action programme gave priority to:

- Making the EU a more attractive place to invest and work:
    - Extending and deepening the internal market;
    - Improving European and national regulation;
    - Ensuring open and competitive markets inside and outside Europe;
    - Expanding and improving European infrastructure.
- Knowledge and innovation for growth:
    - Increasing and improving investment in research and development;
    - Facilitating innovation, the uptake of ICT and the sustainable use of resources;
    - Contributing to a strong EU industrial base.
- Creating more and better jobs:[13]
    - Attracting more people into employment and modernising social protection systems;
    - Improving the adaptability of workers and enterprises and the flexibility of labour markets;
    - Investing more in human capital through better education and skills.

[13] In the second part of the TSIA we will study in detail for five sectors what tangible measures may be designed to smoothen the impact of the possible FTA in the employment sector. More general information on Ukraine's labour market policy can be found in subsection 2.4.1.

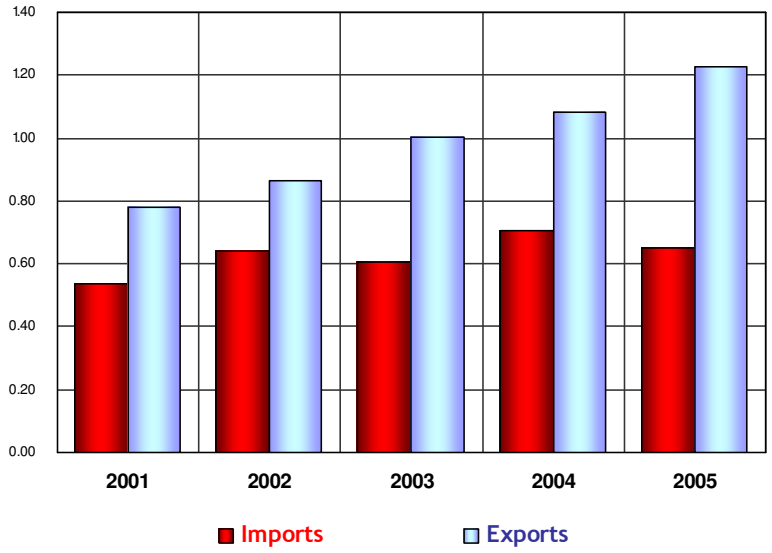
3.1.2 Evolution of EU trade with Ukraine

Size and direction of trade flows

The European Union currently represents the biggest trade partner for Ukraine with 30.2% of all trade actions, while in the past Russia used to be Ukraine's main trade partner. For the EU Ukraine is only a small trade partner with 0.9% of total EU trade going to or coming from Ukraine as Figure 3.1 shows. In 2005, Ukraine ranked 33rd in terms of EU import partners, 22nd in terms of export partners, and 29th in terms of overall trade (imports plus exports).

Over time, as Figure 3.2 shows, trade flows (in mln Euros) between the EU and Ukraine have steadily increased.

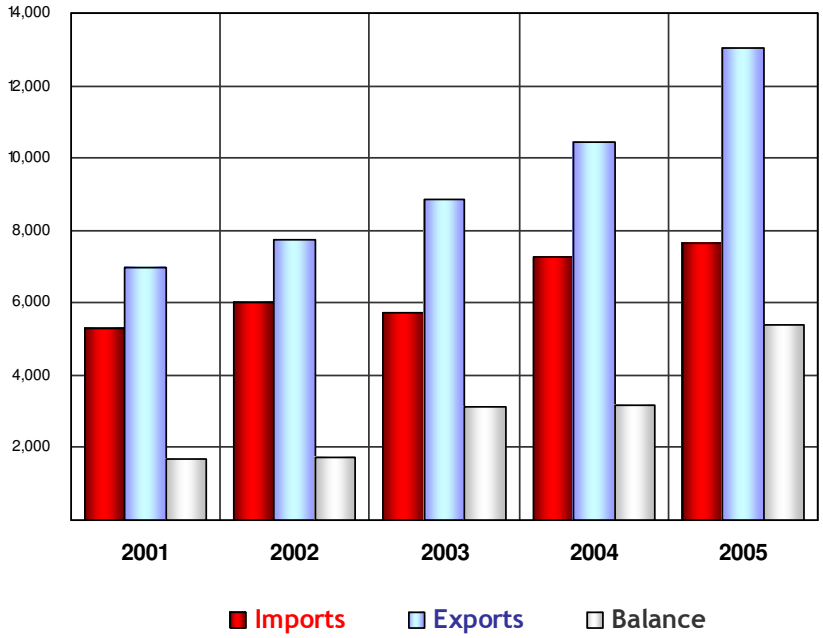
Figure 3.1 Ukraine share in total EU trade (%)



	2001	2002	2003	2004	2005
Imports	0.54	0.64	0.61	0.70	0.65
Exports	0.78	0.86	1.01	1.08	1.23

Source: EUROSTAT (Comext, Statistical regime 4), from DG Trade 15 Sept. 2006

Figure 3.2 Evolution of EU trade with Ukraine (mln Euro)



	2001	2002	2003	2004	2005	a.a.g.r.
Imports	5,276	6,025	5,715	7,270	7,668	
Change (%)		*14.2*	*-5.1*	*27.2*	*5.5*	*9.8*
Exports	6,967	7,758	8,830	10,460	13,045	
Change (%)		*11.3*	*13.8*	*18.5*	*24.7*	*17.0*
Balance	1,691	1,733	3,115	3,189	5,377	
Total Trade	12,243	13,783	14,545	17,730	20,713	
Change (%)		*12.6*	*5.5*	*21.9*	*16.8*	*14.0*

Source: EUROSTAT (Comext, Statistical regime 4), from DG Trade 15 Sept. 2006

In 2005, the EU ranked 2nd in terms of Ukraine's import partners (behind Russia), 1st in terms of export partners, and 1st in terms of overall trade (imports plus exports).
The role of Russia, although it is still the second largest trade partner for Ukraine, has gradually and substantially diminished. The most significant decline is registered for Ukraine's exports to Russia, which halved their share in total Ukraine's exports from 36 per cent in 1996 to 17 per cent in 2004. Export flows were redirected towards both the EU-25 and to the rest of the world, in particular Asia. The decrease in imports from Russia was far less significant, primarily because of its importance as a source of energy products for Ukraine.[14]

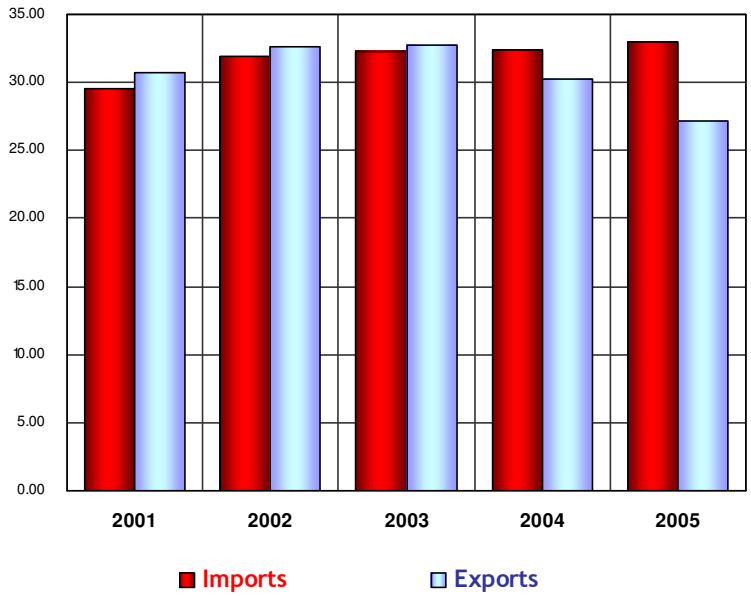
[14] Vinhas de Souza *et al* (2005).

Table 3.1 EU share in total Ukraine trade (%)

	2001	2002	2003	2004	2005
Imports	29.55	31.97	32.27	32.40	32.93
Exports	30.68	32.60	32.70	30.22	27.21

Source: IMF (Dots), from DG Trade 15 Sept. 2006

Figure 3.3 EU share in total Ukraine trade (%)



Composition of trade

Ukraine has large natural resources e.g. in different metals and natural gas. In 2005, Ukraine exported mainly iron and steel, agricultural products, energy products, chemicals, textiles and clothing and transport equipment to the EU-25. At the same time Ukraine imported mainly chemicals, transport equipment, power/non-electronically machinery, office- and telecommunications equipment and textiles and clothing from EU. Because of intra-industry trade patterns, Ukraine had actually a positive trade balance only in iron and steel, agricultural products and the energy sector in trade with the EU. Overall the trade balance of Ukraine with the EU is negative.

The structure of Ukraine's trade with the EU-25 is characterised by exports from Ukraine of raw materials and semi-processed goods, and imports by Ukraine of final products, primarily investment goods. In the Tables below, the summary of imports, exports and trade balance data according to Eurostat is given.

Table 3.2 European Imports from Ukraine

Products (Sitc Sections) by order of importance	Mio euro	%	Share of total EU imports
TOTAL	7,668	*100.0*	0.7
Manuf goods classif. chiefly by material	2,415	*31.5*	2.1
Crude materials inedible, except fuels	1,172	*15.3*	2.6
Mineral fuels, lubricants and rel. Materials	1,050	*13.7*	0.4
Machinery and transport equipment	589	*7.7*	0.2
Miscell. manuf. Articles	583	*7.6*	0.3
Chemicals and related prod., n.e.s.	497	*6.5*	0.5
Food and live animals	446	*5.8*	0.8
Animal and vegetable oils, fats and waxes	160	*2.1*	3.9
Commodit. and transactions n.e.c.	49	*0.6*	0.2
Beverages and tobacco	15	*0.2*	0.3

Source: EUROSTAT (Comext, Statistical regime 4), from DG Trade 15 Sept. 2006

Table 3.3 European Exports to Ukraine

Products (Sitc Sections) by order of importance	Mio euro	%	Share of total EU exports
TOTAL	13,045	*100.0*	1.2
Machinery and transport equipment	5,771	*44.2*	1.2
Manuf goods classif. chiefly by material	2,090	*16.0*	1.6
Chemicals and related prod., n.e.s.	1,998	*15.3*	1.2
Miscell. manuf. Articles	1,490	*11.4*	1.2
Food and live animals	507	*3.9*	1.4
Crude materials inedible, except fuels	209	*1.6*	1.1
Mineral fuels, lubricants and rel. Materials	164	*1.3*	0.4
Commodit. and transactions n.e.c.	155	*1.2*	0.5
Beverages and tobacco	110	*0.8*	0.7
Animal and vegetable oils, fats and waxes	26	*0.2*	1.1

Source: EUROSTAT (Comext, Statistical regime 4), from DG Trade 15 Sept. 2006

Table 3.4 European Trade Balance with Ukraine

Products (Sitc Sections) by order of importance	Balance Mio euro
TOTAL	5,377
Machinery and transport equipment	5,182
Chemicals and related prod., n.e.s.	1,501
Miscell. manuf. Articles	908
Commodit. and transactions n.e.c.	105
Beverages and tobacco	95
Food and live animals	61
Animal and vegetable oils, fats and waxes	-135
Manuf goods classif. chiefly by material	-324
Mineral fuels, lubricants and rel. Materials	-885
Crude materials inedible, except fuels	-963

Source: EUROSTAT (Comext, Statistical regime 4), from DG Trade 15 Sept. 2006

The composition of the Ukrainian exports remain highly concentrated with no substantial improvements in the last years: metals and derived products, chemical products, and mineral products made up about 61.7% of Ukrainian exports in 2006. Imports are dominated by mineral resources, namely gas and oil supplied from Russia. In 2006 minerals accounted for 30% of the overall commodity imports.

Trade in services

Trade in services between Ukraine and the EU was larger in total value than any other sector, as EU imported services from Ukraine worth 0.8 billion euros and exported worth 0.7 billion euros.

Ukraine's trade partners

Ukraine's other big trade partners – after the EU – are (in decreasing order, with share of total trade down to 3.5% in brackets): Russia (29.1%), Turkmenistan (4.1%), Turkey (3.8%), China (3.6%), Belarus and the USA (see also Table 3.5). The main trade partners of the EU at the moment are the USA, China, Russia, Switzerland and Japan.

Table 3.5 Ukraine's major trade partners

	Partners	Mio euro	%
1	EU	16,943	*30.2*
2	Russia	16,343	*29.1*
3	Turkmenistan	2,303	*4.1*
4	Turkey	2,118	*3.8*
5	China	2,027	*3.6*

	Partners	Mio euro	%
6	Belarus	1,472	*2.6*
7	USA	1,339	*2.4*
8	India	851	*1.5*
9	Kazakhstan	686	*1.2*
10	Korea	684	*1.2*
Source: IMF (Dots), from DG Trade 15 Sept. 2006			

FDI in Ukraine

Over the last few years the stock of FDI from the EU to Ukraine has been growing very rapidly. In 2004 FDI inflows amounted to 0.2 billion euros from the EU to Ukraine and the total stock of FDI in 2004 from the EU was 1.7 billion Euros according to Eurostat. At the beginning of 2007, the stock of FDI originating in the EU had risen to 15.9 billion USD, which equals around 11.8 billion euros. So the FDI stock has risen tenfold in three years time. Table 3.6 shows the 5 EU countries having most FDI in Ukraine. Germany is by far the largest source for FDI in Ukraine.

Table 3.6 FDI to Ukraine, Top 5 sending EU countries (in mln US$)

Country	Cumulative FDI to Ukraine at 1.1.2007 (volume in mln $)
Germany	5620,7
Cyprus	3011,7
Austria	1600,8
United Kingdom	1557,2
Netherlands	1493
EU total	15924

Source: State Statistics Committee of Ukraine, 2007

Ukraine remains one of the most open economies in the world: in 2006, export-to-GDP ratio equaled 47.2% while the import-to-GDP ratio stood at 50.1%. Openness of the economy gives it more opportunities to develop through deeper international specialisation. For many years net exports remained one of the driving forces behind economic growth in Ukraine. However, heavy reliance on foreign markets makes the economy very vulnerable to external shocks.

3.1.3 Growth, inflation and unemployment

In 2000 after a sharp decline conditioned by a transitory shock the Ukrainian economy resumed its growth. Throughout 2000-2006 the economy showed an average growth rate of 7.4% with a record high result of 12.1% in 2004. Noteworthy in 2006 the industrial output reached the level of 1990. However, the overall real GDP is still behind the pre-transition level. Inflation in Ukraine has been relatively high during the last years, but it has dropped substantially from the very high levels in the 1990's. For the European

Union, during the same time period, GDP has been growing between 0.8% and 2.6% and inflation has been equally mild, around 2% annually. Figure 3.3 summarises these findings.

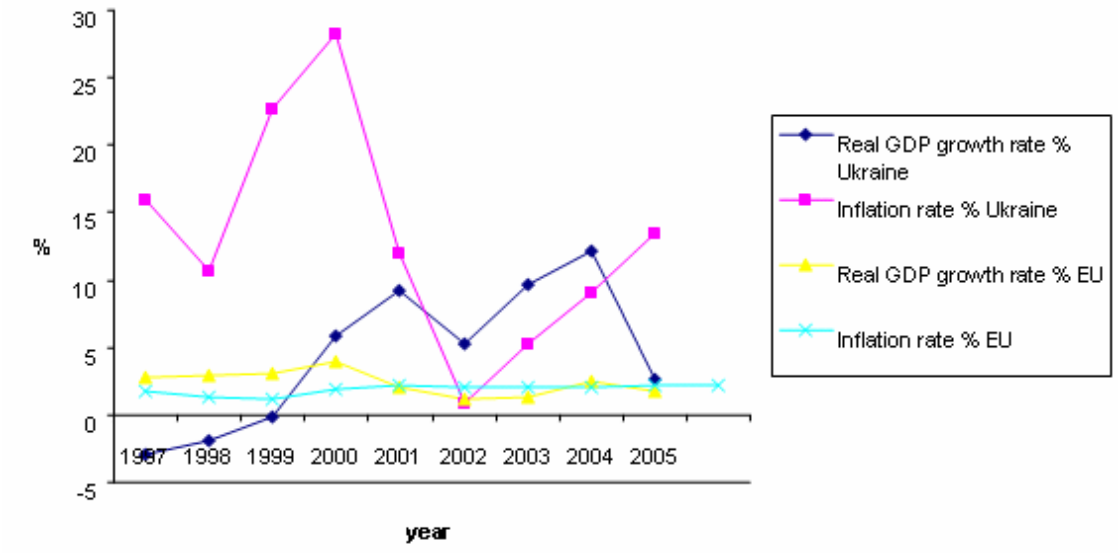
Unemployment in Ukraine has been relatively high, but declining. By 2005 it had declined to 7.2% from nearly 11.6% during the early twenty-first century. Unemployment in the EU areas has stayed around 8% during recent years as is shown in Figure 3.4. Intensive sectoral restructuring negatively affected employment prospects: as said in 2000 about 11.6% of the labour force was without a job. The situation improved substantially in the following 6 years: in 2006, 6.8% of the economically active population was unemployed, which is far below the EU average level. However, according to the World Bank, the low unemployment rate can be attributed to low labour force participation as many people quit the labour market with no hope of finding decent jobs in the future.

On the back of economic growth, population income is steadily expanding. Real wages grew at an average rate of 19.2% in 2002-2006. 43.2% of the total population income came from job earnings. In 2006 the per capita salary in Ukraine averaged at UAH 1041 (USD 206). Social payments remain the second largest source of the population income making about 39.5% of the overall income volume.

The gross capital formation has been rather steady in Ukraine and around 20% of GDP every year since 1997. That is around the same values as the EU areas' gross capital formation. Figure 3.5 shows this in detail.

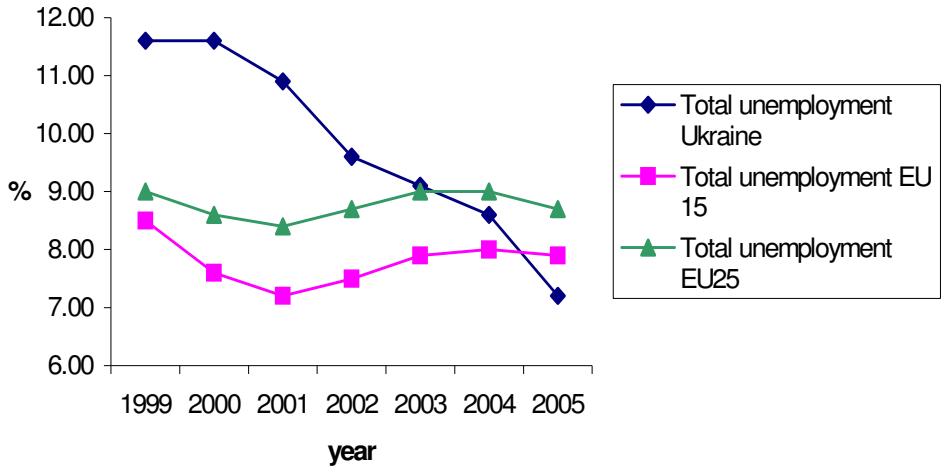
The current account in Ukraine has been in surplus since 2002 and in 2005 Ukraine had a surplus of +3.1% of GDP. The official Ukrainian currency, Hryvnia, is floating against the Euro and lately it has been depreciating against it (National Bank of Ukraine). The government debt in Ukraine was in 2005 only around 24% of GDP according to the World Bank, while in the EU-25 it was on average 63% of GDP (Eurostat).

Figure 3.3 GDP growth and inflation in Ukraine and the EU



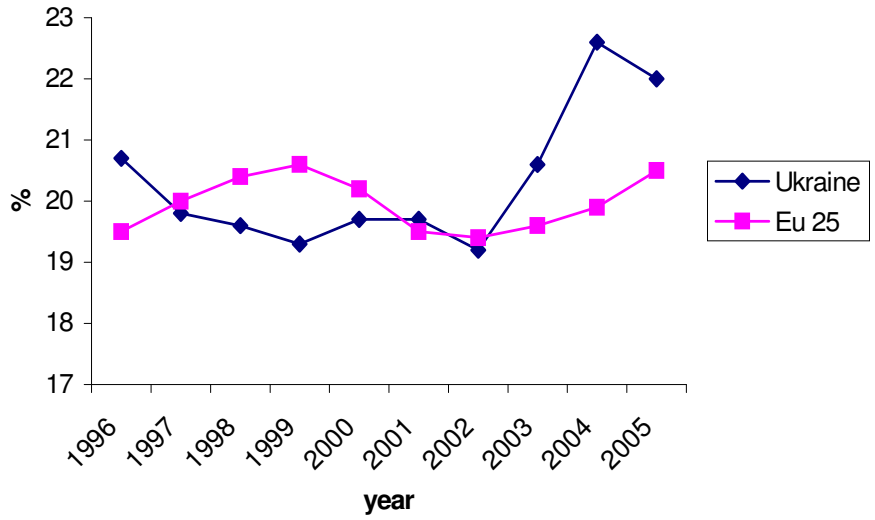
Source: Eurostat

Figure 3.4 Total unemployment in Ukraine and the EU



Source: Eurostat

Figure 3.5 Gross capital formation (% of GDP)



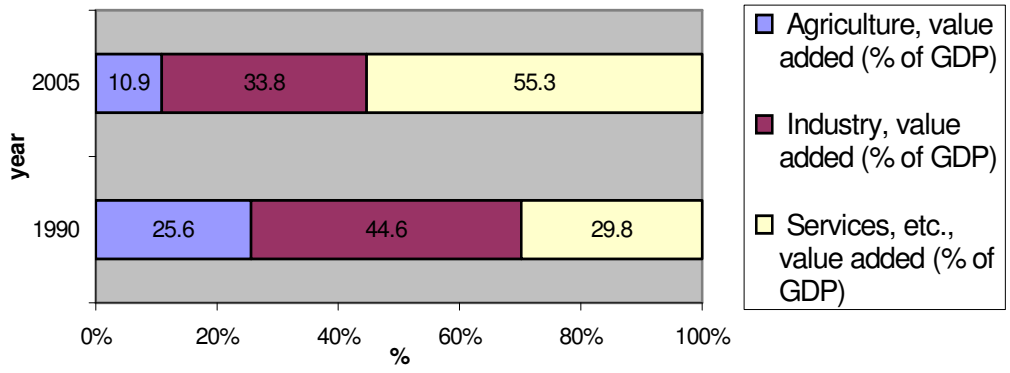
Source: Eurostat

The composition of output underwent substantial changes in the latest years: the share of services in GDP has been steadily growing. Figure 3.6, Figure 3.7 and Table 2.9 show GDP composition by sectors for Ukraine and the EU. During the last 15 years from 1990 to 2005, agriculture and manufactures have lost some of their shares of GDP to services in Ukraine. While in 1990 agriculture accounted still for 25.6% of GDP, in 2005 its share had dropped to around 11%. Services on the other hand have grown from 30% of GDP to 55% representing the biggest sector in the Ukrainian economy currently. The services sector is also the biggest employer in Ukraine. The manufacturing sector used to account for 45% of Ukrainian GDP, but in 2005 this share had been reduced to a mere 34% (Eurostat). The largest industries in Ukraine measured by gross industrial production are: food and agricultural products processing, production of coke and refined petroleum products, metallurgy and processing of metal, machine building and chemicals. In the agricultural sector Ukraine is producing mostly grains, potatoes, sugar beet, milk and eggs. In the service sector, transport and travel services were the largest industries. Out of

all the investments in 2005, the biggest share (24%) was invested in the manufacturing industry. A lot of investments were made also in the transport sector and in real estate operations (Ukrainian state statistics committee).

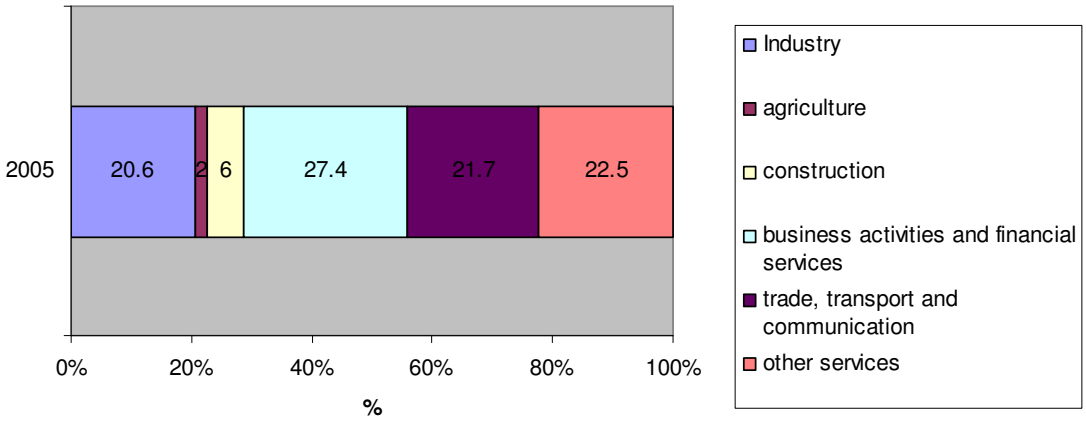
In 2005, the EU-25 area, services (including business activities and financial services, trade, transport and communication and other services) accounted for the largest share of GDP by far. Together they account for over 70% of GDP. Industry and construction were responsible for around 26% of GDP and agriculture for only 2%. In comparison to the change in the shares in Ukraine, it seems that the Ukrainian economy is rapidly moving in the EU direction: the agricultural and manufacturing shares of GDP are declining and the share of services is increasing.

Figure 3.6 GDP by sector in Ukraine



Source: Eurostat

Figure 3.7 GDP by sector in EU 25 (2005)



Source: Eurostat

Table 3.7 Sector shares in Ukrainian production (2004)

	Sector production (mln US$)	Share of sector in Ukrainian total production (%)
Agriculture, Fisheries, Forestry	16.19	10.70
Coal, Oil, Gas	3.48	2.30
Minerals NEC	2.49	1.64
Bovine cattle, sheep and goats, horse meat products	1.66	1.10
Vegetable oils and fats	0.99	0.66
Dairy products	2.33	1.54
Processed rice, Sugar	1.13	0.75
Food products nec	3.84	2.54
Beverages and tobacco	3.71	2.45
Textiles	0.51	0.34
Wearing apparel	0.66	0.44
Leather products	0.43	0.28
Wood products, Paper products, publishing	2.81	1.85
Petroleum, coal products	7.74	5.11
Chemical, rubber, plastic products	5.18	3.42
Mineral products nec	2.01	1.33
Ferrous metals, Metals NEC	13.79	9.11
Metal products	3.48	2.30
Motor vehicles and parts	1.73	1.14
Transport equipment	2.20	1.45
Electronic equipment; Machinery and Equipment	5.72	3.78
Manufactures nec	1.33	0.88
Electricity	4.04	2.67
Gas, Water	1.97	1.30
Construction	7.08	4.68
Trade	14.46	9.56
Transport nec, Water transport, Air transport	10.53	6.95
Communication	3.62	2.39
Financial services nec, Insurance	5.08	3.35
Business services nec, Renting	7.30	4.83
Recreational, entertainment, cultural and sporting activities, Social activities	1.66	1.09
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal	12.22	8.07
	151.37	**100**

Source: Social Accounting Matrix CGE – CASE Ukraine (2004)

Large-scale privatisation started in the mid-1990s and favoured restructuring through increased competition and inflow of private capital in major sectors of the Ukrainian economy. Increasing competition forced companies to modernise outdated equipment and increase investments in start-ups. Companies that managed to attract FDI lead the drive to competitiveness among domestic producers by introducing international standards of product safety and quality.

Large companies play a dominant role in the Ukrainian economy: small businesses accounted for about 12% of the overall output in 2006. The involvement of small businesses in foreign trade is even less significant: slightly more than 6% of small businesses claimed that they exported in 2005. Regarding employment creation by SMEs, there are different views. According to the IMF the SMEs in Ukraine employ around 5.4% of all employed people, but due to data problems and inconsistency, a GFA report estimates that the real number would be actually around 40-43% after employment in medium size companies and within sole proprietors is also added. (GFA, 2006)15

3.2 Existing social situation and trends in the EU and Ukraine in detail

Ukraine has been rather explicit in expressing its desire to eventually become part of the EU. Whether this is feasible or realistic is not an issue for this report, but it has meant that the country has made improvements to the overall quality of life to meet EU standards, in addition to meeting political and economic requirements.

The EU/Ukraine Action Plan includes a section on social situation, employment, and poverty reduction, which envisages (1) strengthening cooperation on social matters, ensuring a closer approximation of Ukraine to the EU standards and practices in the area of employment and social policy; (2) introducing effective employment creation and poverty reduction measures, aimed at a significant reduction in the number of people with income below the poverty line and improved social cohesion, including sustainable systems for education, health and other social services with access for all. In addition one of the priorities for action is to "encourage dialogue on employment issues and best endeavours, in accordance with the Partnership and Cooperation Agreement (PCA), to ensure that treatment of migrant workers does not discriminate on grounds of nationality."

The main social indicators described in this section for the Ukraine, and where relevant for the EU include: (1) Labour issues, and particularly decent work as defined by the ILO; (2) Poverty, including the number of people living under poverty line, GINI index, regional effects, etc.; (3) Equality, relating to gender, race, religion, in areas such as education, employment, geographic location, etc.; (4) Education, including primary, secondary and tertiary enrolment rates, literacy rates, access and quality issues, etc. and (5) Health, including life expectancy, mortality rates, access to and quality of health services, sanitation, nutrition, etc.

[15] In the Chapters related to the in-depth studies we will give a description of the market structure per sector.

Whether all these indicators will also be considered in the impact assessment depends on their current status and the extent to which they are relevant to the eventual sectors and horizontal issues selected.

3.2.1 Labour issues

The EU takes the ILO concept of Decent Work as its reference point for the social aspects of employment and unemployment. The decent work concept provides a converging focus for the strategic objectives of the ILO – to which the EU subscribes – namely rights to work, employment, social protection and social dialogue. As such it touches on issues of unemployment and underemployment, poor quality and unproductive jobs, unsafe work and insecure income, rights which are denied, gender inequality, exploitation of migrant workers, lack of representation and voice, and inadequate protection and solidarity in the face of diseases, disability and old age.[16]

According to the EU social policy, work can be characterised in terms of the multiple dimensions of *quality in work*, comprising on the one hand job characteristics and on the other hand work and the wider labour context. This notion is closely related to the Decent Work concept.

Present Ukraine labour legislation seems to address the main elements of the decent work concept.[17]

Labour legislation

The main body of laws covering Ukrainian labour regulations is the Labour Code of Ukraine. Ukrainian labour legislation is inherited from Soviet times; therefore, the emphasis is on protecting the rights of employees. An illustration is article nine of the Labour Code, which states that the provisions of the individual employment agreements which worsen the working conditions of the employees compared to those stipulated by the Ukrainian labour legislation are considered ineffective. In fact, employment protection legislation in Ukraine is significantly stricter than in other CEE countries and even stricter than in most OECD countries.

Ukrainian labour legislation provides certain guarantees to employees, including the following:

- Wages for time spent away from work for performing functions of trade union officer, appearing in court, voting and fulfilling other state or social responsibilities;
- Right to keep one's job while on a training programme;
- Wages while hospitalised;
- Severance pay in certain situations;
- Social benefits, such as: maternity leave, paid vacation and holidays;
- Minimum wage guidelines.

[16] Source: www.ilo.org/public/english/decent.htm

[17] We will in the second part of the TSIA –when we study 5 sectors in more detail- focus on the implementation and application aspects and the respective gaps of the labour legislation.

In addition, the following is provided by the labour legislation:

- Working week is not to exceed 40 hours;
- Overtime is generally prohibited, except for certain cases, in these exceptional cases time limitations are such that overtime may not exceed four hours during two consecutive days or 120 hours per year;
- Annual leave of 24 calendar days;
- Paid maternity leave for women 70 days prior and 56 days after the childbirth; women are also entitled to partially paid leave until the child reaches the age of three.

In terms of labour legislation, but also in terms of major indicators such as unemployment, labour participation and labour conditions, the Ukraine seems to perform quite well relative to some of the other transition economies and even relative to the EU average. However, Ukraine's performance 'on paper' is better than in practice, as several recent studies confirm.[18]

Since Ukraine's independence the following developments with regards to labour issues can be considered positive:

- Labour force participation and unemployment rates are not that bad and approximate the EU average;
- The proportion of women in the labour force is fairly high (48.9 per cent) and is similar to the situation in the EU;
- Between 2000 and 2004, the share of people who identified themselves with "middle class" increased from 9.2 per cent to 16 per cent;
- The share of wage and salaried employees covered by occupational injury insurance is quite high (84 per cent);
- With a collective bargaining coverage rate of 74.1 per cent, Ukraine is at the level of the EU average.

Negative developments and trends can be outlined as follows:

- Monetary increase in wages and salaries has not been able to compensate for the loss in purchasing power caused by inflationary processes;
- Over 16 per cent of low pay workers earned less than 2 USD a day, which means that in 2004 the salary of low pay workers in Ukraine was less than the established minimum wage;
- In spite of a relatively low unemployment, the number of long-term unemployed grew almost tenfold. Ukraine's falling unemployment rate is largely a function of the negative population growth pattern than of the creation of new jobs;
- In comparison with the EU, Ukraine has the lowest incidence of employer-sponsored/organized training;
- Job-related training especially for women is a major concern. Moreover, the majority of the Ukrainian employees had received no promotion in the past five years;
- In spite of the decline in strike activity, the last decade witnessed continued erosion of the social security system and a deterioration of working condition in such accident prone industries as construction and mining.

[18] Chernyshev, I. (2005) "Socio-economic security and decent work in Ukraine: A comparative view and statistical findings." Working Paper No. 76, Policy Integration Department, Statistical Development and Analysis Group, ILO, Geneva./ United Nations Development Programme (2006) "Ukraine. Poverty Alleviation." Millennium Development Goals Project. Ministry of Economy of Ukraine (http://www.undp.org.ua/).

Employment opportunities and labour market security

The Ukrainian economy grows at a high rate and, as mentioned above, unemployment is relatively low. At the same time productive job opportunities are scarce, especially in the formal sector. Many workers have a hard time finding a job, and many become discouraged and withdraw from the labour force.

As in many transition economies, the employment elasticity of growth in the Ukraine is rather low, thus despite strong GDP growth, employment growth has been disappointing. To an extent this can probably be attributed to productivity increases and the fact that in many sectors the number of people employed is already higher than needed. Another reason appears to be the limited role of SMEs in the economy. In transition economies jobs are created mainly by the private, usually small, firms. However, the size of this job-generating sector in Ukraine is significantly smaller (less than 30 percent of total employment) than in the most successful transition economies. The high costs of doing business in Ukraine deter entry of new firms. According to the World Bank Doing Business in 2006 report, Ukraine ranks among the last (with most complications for starting a business) countries in the region. For example, Ukraine and Belarus rank the last in the number of procedures to start a business (this number equals 15). Hence, there is a scarcity of jobs because there are few firms creating them.

Labour migration

There is emerging evidence on migratory flows from Ukraine to the EU countries such as Poland, Italy, Portugal, Spain, Greece and the Czech Republic. Given that a significant number of migrants engage in irregular forms of employment, it is difficult to estimate the actual numbers of male and female labour migrants from Ukraine working abroad. Official estimates of registered migrant workers in countries of origin and destination usually tend to underestimate the effect and at times differ from one another.

Out of a population of over 46 million people, Ukrainian authorities estimate that over two million Ukrainian women and men work abroad, with one million working in Russia, and the other million spread out mostly among EU countries (Poland – 300,000; Italy – 200,000; Czech Republic – 150,000; Portugal – 150,000; Spain – 100,000). The majority of these migrant workers come from rural areas of Ukraine's Western regions.

Unemployment and employment security

The labour market in Ukraine is at a relatively early stage of transition. Most labour is still employed in the public sector, which implies that the major wave of job and labour reallocation lies in the future. At the same time, despite low open unemployment, the labour market is depressed and productive job opportunities are few.

The unemployment rate, at about 7 percent, is relatively low by the standards of transition economies.[19] But the unemployment rate does not tell the whole story. The scarcity of job opportunities in Ukraine manifests itself largely in the relatively low labour force participation rate. Many workers have become discouraged by the futility of their job search and have withdrawn from the labour force. About 60 percent of the working age population are either employed or looking for a job. As a result the employment-to-

[19] Calculated using International Labor Organization methodology, year 2006.

population ratio, which is the most comprehensive indicator of the degree of utilisation of labour resources, is relatively low in Ukraine (around 60 per cent compared to the OECD average of 70 per cent).

Moreover, the official unemployment figure fails to completely account for hidden unemployment. For example, more than a third of rural residents of working age are technically unemployed, as the majority of the population working on their own small farms, do not consider themselves employed. Large numbers of working age rural residents are forced to move away from their places of residence in search of employment, including moving abroad. The number of officially registered unemployed citizens is unreliable, also for another reason: instead of registering with the state unemployment agency, many unemployed choose to leave the official labour market and move to the shadow economy.

Rights at work and social protection

Social dialogue and workplace relations also deserve a few comments. It is the case that the last decade has witnessed a positive historical change in the right of Ukrainian workers associate themselves. Today, instead of one All-Ukrainian Federation of Trade Unions with a reported 100 per cent membership, the country has a dozen of independent trade union organisations with their own federations and representation at both national and international levels. The reality of today is that in order to safeguard their level of representation and position in the process of social dialogue, the Ukrainian trade unions have to strengthen their positions. They need to demonstrate their ability to defend workers' rights in an environment characterised by growing competition coupled with the population's declining interest in their activities.

One measure of the failure of social dialogue is the recourse to strike. However, the absence of strike action could also indicate the absence of the right to strike. In a ten-year time span, the annual number of strikes diminished dramatically from 247 in 1995 to only 4 in 2004. However, this decrease in recourse to industrial action does not necessarily mean that social dialogue and workplace relations have improved proportionally in the reverse direction. For example, working conditions in Ukraine's mining industry are among the most dangerous in the world with a very high number of miners killed each year.

3.2.2 Poverty

With respect to social policy the EU/Ukraine Action Plan emphasises effective poverty reduction measures with an aim to significantly reduce the number of people with income levels below the poverty line.

Until 1999 poverty as a national problem was not recognised in Ukraine. There was no commonly accepted definition of poverty or a single methodology or strategy for poverty reduction. In 1999, after a careful selection and analysis of international experience in poverty monitoring, a relative poverty measure – 75% of median expenditures per equivalent adult – was chosen to be an official poverty line definition in Ukraine. In the Presidential Decree issued on August 15, 2001 the Ukrainian Government explicitly

recognised the problem of poverty as the inability of the household to provide for its basic needs and instated a relative poverty line definition as the basis of the first State Poverty Reduction Strategy. A methodology for measuring poverty comparable to international standards was established and poverty monitoring finally began in Ukraine.

Thus, in 2001, the proportion of the Ukrainian population defined as poor according to the international cost of living criteria for Central and Eastern European countries and the CIS (daily consumption below 4.3 USD, based on PPP) equaled 11%.[20] According to this national poverty line definition, in 2001, the proportion of population below this line constituted 27.2%. Given this high level of poverty for the economy, the Ukrainian Government has made poverty reduction one of its primary goals. Poverty reduction indeed was the first of the eight UN Millennium Development Goals to be achieved by 2015 according to the document signed by Ukraine at the UN Millennium Summit in September 2000. The first target - reduce by 50% the proportion of people with a daily consumption below 4.3 USD measured at average purchasing power parity by 2015 - has already been met; the 'poor' portion has decreased significantly, to 1.3% in 2005, down from 11% in 2001. The second target was to reduce by one third the proportion of the population living below the nationally defined level of poverty. This second target has proven much harder to achieve: According to the Ministry of Economic Affairs of Ukraine, in 2005 the 'poor' population constituted 27.1%[21], which was practically the same level as in 2001. According to a more recent study of the World Bank on poverty in Ukraine[22] (using 2005 statistics) the poverty rate has declined from 32% in 2001 to below 8% in 2005. Such substantial difference from the official figures can be explained by the choice of poverty line: the World Bank takes 151 UAH per month as poverty line, which is much lower than the national poverty measure.

In 2005, the Ukrainian Government took concrete actions aimed at poverty reduction. These were concentrated on ensuring that the state minimum wage and level of social support for vulnerable groups of society continue to increase. More specifically, the Government significantly raised social aid for many vulnerable groups: newborn children and children under the age of three, children in low-income families, unemployed, retired, disabled, victims of work-place accidents. In addition Government set the minimum wage with a view to gradual convergence with the minimum living standard, indexed to the changes in consumer prices.

As there are no recent data on poverty incidence in the Ukraine, it is hard to indicate the exact impact of these policy measures. Reports of the World Bank (2006) and the 2007 review of the European Neighbourhood Policy by the Directorate-General for Economic and Financial Affairs (DG ECFIN) both refer to the decline in poverty rates and the positive contributions of social transfers to this decline, however, poverty statistics used in these studies are all from 2005 or earlier. The DG ECFIN report indicates that considering the average rate of economic growth of 7.2% and the increase in pensions, it is likely that poverty has further declined. However, the observations made above

[20] Noteworthy, in the same year, the national relative poverty line in monetary units constituted 175 UAH per month, which is equivalent to about 5.4 USD of daily consumption, based on PPP rate (PPP rates source of data: IMF)

[21] In this same period the national relative poverty line in monetary equivalent increased twofold from 175 UAH to 365 UAH (9.3 USD of daily consumption, based on PPP).

[22] Ukraine: Poverty Update, June 20, 2007, the World Bank.

regarding the limited employment effects of GDP growth requires some caution in directly equating GDP growth to poverty reduction. Moreover, it must be noted that regional disparities and more general income inequality seem to have increased,[23] implying that poverty reduction may be unevenly spread as well.

3.2.3 Equality

The Constitution of Ukraine states that all citizens have equal constitutional rights and freedoms and prohibits discrimination based on race, gender, political, religious and other beliefs, ethnic and social origin, property status, linguistic or other characteristics.

Income distribution

A distinctly uneven income distribution is continuing to form in Ukraine, with the majority of the population concentrated in the low-income category. The gap between the rich and poor is widening.

Also regional income disparity is increasing in Ukraine. Substantial gaps between wage levels in different geographical regions of Ukraine remain pronounced. For instance, average wage level in 2006 in Donetsk oblast equals 1,204 UAH, while in Ternopil oblast it is only 731 UAH. The highest paying location remains Kyiv, averaging 1,737 UAH per month. The wage gaps are largest between the capital and provinces, especially those in the predominantly agrarian west of the country.

Sectoral income disparity is an issue in Ukraine as well. There is a significant differentiation in population income and consumption levels between different industries. Especially alarming is the fact that such professional groups as doctors, engineers, teachers, social sphere workers fall into the poorest categories. The fact that the specialists from the above-mentioned spheres belong to the low-income group can have a negative impact on the society's development potential. But the most critical situation remains in the agricultural sector, where the average wage in 2006 was UAH 553, reaching only 50 percent of the national average. However, it should be kept in mind that in the agricultural sector a significant share of labour compensation is delivered in-kind, creating a gap between accrued wage and actual labour compensation amounts and increasing the error in income level calculations for rural areas.

Gender Equality

In the process of Ukraine's development as a member of the world community and on its way towards integration with its European neighbours, gender equality is becoming an increasingly important issue in public dialogue at all levels. By now all national legislation regarding rights of men and women has been brought into accord with the international conventions ratified by Ukraine. Non-discrimination in employment and equal opportunities for men and women are guaranteed by the Ukrainian Constitution. Most international experts confirm that Ukraine has managed to adopt a gender-friendly national legislative environment, which guarantees that no one is discriminated against on the base of one's sex. Yet, constitutional norms can be implemented only under the

[23] The GINI coefficient for Ukraine increased from 0.274 in 2003 to 0.276 in 2005, which indicates a slight increase in inequality

condition that legally approved international standards of gender equality are implemented in the relevant institutions. The Millennium Development Goals targets and indicators are seen as milestones for providing gender equality and raising the profile of women in Ukrainian society. The first target was to achieve a gender ratio of at least 30:70 for either gender in legislative and executive office.

2004 gender equality data gives the following numbers: gender ratio among deputies of the Verkhovna Rada (women/men) - 5/95; gender ratio in oblast governments - 10/90; in municipal governments – 22/78; in village governments – 47/53, etc. Noteworthy is, that in 2005, for the first time in the history of independent Ukraine a woman was appointed Prime Minister.

The second target was to halve the gap in income levels between men and women. In 2002, the ratio of average wages of women as a percentage of average wages of men was 69.3% of that of men, and in 2003 – 68.6%. In 2004, this ratio decreased further to the level of 68.56%.

Summarising the performance on gender equality indicators, it is worth noting that progress in achieving most targets remains insufficient. It should be emphasised that Ukraine, which has traditionally high standards in women's education and significant achievements in developing legislation based on the principle of equal rights, has deliberately committed itself to a larger challenge than many other post-soviet countries.

3.2.4 Education

From the Soviet Union, Ukraine inherited quite an effective education system. Afterwards, it underwent fundamental changes, both positive and negative.

A sharp reduction of funding for education led to a rapid deterioration of its quality, a lowering of the general educational level of the population, and a devaluation of the social status of teachers, due to low salaries in the sector.

In recent years, Ukraine has made significant efforts to develop reform strategies and to undertake reform policies in the human development sector. The country continues to face challenges, however, and in the education sector these translate into unequal access, eroding quality and low efficiency in the use of resources.[24]

3.2.5 Health

Health of the population is now viewed as an indicator of social and cultural progress and the overall quality of life. The 2002 report on the state of the European health care system by the World Health Organization (WHO) Regional Office for Europe says that

[24] As footnoted in subsection 2.3.1 on the Lisbon Agenda, we will study in-depth five sectors, including the actual and desirable situation regarding investing in human capital through education and skills upgrading during the transition period of the possible FTA .

investments in the health care system should be considered as a contribution to the development of the national economy and to the reduction of the poverty rate.

The medico-demographic crisis peaked in Ukraine in 1995-1996, caused by an abrupt drop in living standards during the period of socio-economic changes, unfavorable environmental conditions, socio-psychological stress, and reduced health care accessibility. Although the situation has improved since then, Ukraine falls behind economically developed nations in health and life expectancy indicators.

Major Health Problems

The major problems faced by Ukrainians today and which have been getting most attention lately are maternal health and child mortality; the spread of HIV/AIDS and tuberculosis.

The Ukrainian government is very supportive of maternal and child health and ranks it high among state priorities. Although it looks like Ukraine has almost fulfilled its obligations under the Millennium Development Goals 2005 both for maternal (to reach an indicator of 19.8 deaths per 100,000 live births in 2015), and child mortality rates (9.3 per 1,000 children less than one year old and 12.3 for under fives), these indicators appear rather high compared with the European ones. In particular, in 2004 in Ukraine, the infant mortality was 9.5 per 1,000 infants and maternal mortality – 13.7 per 100,000 live births.

The HIV/AIDS epidemic in Ukraine poses a serious threat to national security. According to official statistics, as of December 1st, 2006 there were over 70,000 officially registered HIV-positive people in Ukraine, while experts estimate the real number to be approximately 377,000. At the end of 2006, the International HIV/AIDS Alliance in Ukraine reports on the implementation of the two largest HIV/AIDS programmes in Ukraine: 'Overcoming HIV/AIDS Epidemics in Ukraine' financed by the Global Fund to Fight AIDS, Tuberculosis and Malaria, and the USAID-supported project 'Scaling up the National Response to HIV/AIDS through Information and Services'. Some results have been already achieved, among which are the following: i) over 3,500 people are receiving life-saving AIDS treatment; ii) the groups most vulnerable to HIV have access to prevention and information services, including 31% of the injecting drug user population (over 102,000 individuals covered), 13% of women involved in commercial sex (over 14,000 women), and 23% of prisoners (about 26,000 people); iii) 406 medical institutions in all regions of Ukraine received medicines and other medical supplies.

Tuberculosis is no less important an issue than HIV/AIDS epidemic. Currently Ukraine is experiencing a tuberculosis epidemic. According to the official statistics the epidemic threshold has been significantly exceeded and as of beginning of 2007 there were 85 sick people with tuberculosis per 100 thousand. According to WHO representatives in Ukraine, the situation is getting more threatening: just 10 or 15 years ago tuberculosis was a disease of marginal level to people (people suffering from alcoholism, prisoners, etc.), and now everyone is at threat. Socially successful people and even children can become infected with tuberculosis. The WHO has outlined the target for each country - to detect 70% of "contagious" tuberculosis cases and have 85% of the detected patients cured. Ukraine has still a long way to go to get to these standard levels. According to

WHO statistics, approximately 50-60% of all sick people are detected in Ukraine and about 65-70% of patients get cured. Another problem for Ukraine is that there are no modern laboratories and necessary methods for diagnosis especially for diagnosing multi-drug resistant TB (MDR TB), from which about 10% of patients in Ukraine suffer. In 2006, the Foundation for Development of Ukraine of SCM Company decided to fully finance a pilot project on struggle against MDR TB in Donetskaya Oblast. Two million euros were allocated for purchasing the necessary diagnose equipment and staff training.

In spite of some progress achieved by Ukraine in the most problematic areas, the general condition of the nation's health may be characterised as unsatisfactory. In Ukraine, compared to economically developed nations, the mortality rate of the population remains too high, including early death rates (child, maternal, able-bodied).

Healthcare System Financing

The general approach to financing the health care system in Ukraine has not changed since the Soviet times when it was mandatory, based on joint taxation and provided virtually free to the public. The Constitution of Ukraine, adopted in 1996, declares that "state and community health institutions provide medical services free of charge; the existent network of such institutions may not be reduced." The citizens` right to health insurance is also guaranteed in the same Article of the Constitution. Since most health facilities in Ukraine are state and community run, despite the existence of the private health care sector, the state budget and the budgets of local and regional self-governing bodies remain the major official source of health care financing.

The proportion of the budget allocated for health care in Ukraine cannot meet the needs of the public. The shortage of public funds results in the replacement of free-of-charge health care by medical services for a fee. Personal spending on health care is rapidly becoming more common. According to official statistics, in eight years (1996–2003) the proportion of private payments rose from 18.8% to 38.5% and, including informal payments, the estimate becomes 52%. A network of private health care providers and private health facilities has emerged in Ukraine since its independence. It is hard to estimate the population's spending on the services delivered by the private healthcare sector due to a lack of relevant statistics.

Birth and death rates

The birth rate in Ukraine has been declining — from 12.6 per 1,000 in 1990 to 7.7 per 1,000 in 2001. This is due to the ageing of the population and self-regulation of the number of children by families. This, in turn, is due to socio-economic conditions. However, starting from 2002 the birth rate has been stabilising: from 8.1 in 2002 to 9.8 in 2006. Death rates in Ukraine remain high – State Statistics Committee reports a figure of 16.2 (in the total population per 1000 individuals). Death rates among the rural population are higher than among the urban population.

3.2.6 The EU Perspective

In 2000 the EU launched the Lisbon Strategy or Lisbon Agenda, which focused on economic, social, and environmental renewal and sustainability based on the concepts of

innovation, the 'learning economy' and *social and environmental renewal*. The strategy was reviewed in 2005 and updated – for the social component – with a Social Agenda for 2005-2010. This Social Agenda emphasises decent jobs and social justice as the pillars for the modernisation of the European Social Model. It is this modernised social model that the EU promotes not just within the EU, but also in its relations with other countries, especially ENP countries.

The principal areas of EU social policy, monitored through an annual social situation report, include: population; education and training; the labour market; social protection, income, poverty and social exclusion; gender equality; health and safety at work.

The social situation in the EU compares rather favourably to the Ukrainian situation, although within the EU, substantial differences can be observed. This is especially true for the EU enlarged to 27. Averages at the EU level for many indicators were affected by the enlargement, explaining some of the changes since 2003. Among the best performers are the Northern European countries, while Southern member states (notably Spain and Portugal, Greece and Italy) perform less. New member states' performance more closely matches the performance of these Southern member states. In general, EU enlargement has caused specific social pressures, through for instance migration and structural adjustments. In general, migration policies are becoming a higher priority among member states and migration management is developing into a balancing act between openness and control, including issues such as the socioeconomic inclusion of migrant populations and measures to prevent discrimination.

Without going into the details of each indicator, or differences within the EU, Table 3.10 summarises the current situation for the EU and highlights the biggest differences within the EU.

Table 3.10 Overview of social situation in the EU[25]

Indicator	Situation EU
a) Population	• Aging population and immigration as main driving forces behind EU demographic changes; in some new member states (NMS) population decline due to emigration.
b) Poverty	• Approximately 16% of total EU population is at risk of poverty and approximately 30 million people are living in long term poverty. The relative poverty rate – those living below 60 percent threshold of median national income – varies considerably across member states from 8 percent in Denmark, to 23 percent in Portugal. • Existing regional disparities are addressed through the EU structural funds.
c) Labour issues	• Unemployment rate EU-27 decreased from 9% in 2003 to 7.9% in 2006, with highest levels in Poland (13.8%) and Slovakia (13.4%) and lowest level in Denmark and the Netherlands (3.9%). • Employment rate increased from 62.2% in 2000 to 64.3% in 2006 which is still below the target of 67% set by the EU member states in 2003. Moreover, with ageing population participation rates may in fact decline again. • Migrant workers: Demographic change in EU15 to a large extent determined by immigration, causing social and cultural tensions and inclusion and discrimination issues, while in NMS large out-migration and issue of brain drain. • Productivity and quality of work are core elements of the Lisbon Agenda. Although improvements are being made, productivity increases are lagging behind the United

[25] Sources: Eurostat Yearbook 2006; and COM(2004) 137 final Scoreboard on Implementing the Social Policy Agenda

Indicator	Situation EU
	States in particular. • Employment opportunities; focus on creating balance between security and flexibility and on quality of work, education and training to remain competitive. • Minimum wages are enforced by law and apply nationwide to the majority of full time employees in each country. As is to be expected they vary widely across the EU-27. • Social dialogue: Social partners at national and EU levels discuss and negotiate labour policies. However, limited in NMS.
d) Equality	• Female employment rate was 57.1% in 2006, with the highest levels in Denmark (73.4% and the lowest in Malta (34.9%) and Poland (48.2%). This is seen as a result of effective EU and national policy to increase the participation of women in the labour market. However, the gender gap* remains 15%. • Gender equality in education. • Income inequality – the ratio of total income received by the 20% of the population with the highest income to that received by the 20% of the population with the lowest income – was 4.9 for the EU-25 in 2005, with the highest inequality in Lithuania (6.9) and the lowest in Sweden (3.3). • The dispersion of regional employment rates by NUTS 2 regions, as expressed in a coefficient of variation is 11.9 for the EU-25 and 10.9 for EU-15. The 4 highest regional variation in employment is found in Italy (16.0), while the Dutch coefficient is only 2.0. • Civil society involvement: At national levels, particularly in Northern Members States increasingly part of policy process (Government and Parliament). At EU level regular dialogue facilities in most DGs, although quality and intensity differs strongly. In NMS civil society still evolving.
e) Health	• Average life expectancy at birth was 78 years in 2006 (79 years in the old Member States and 74 years in the NMS). Life expectancy is higher for women, but the gender gap is closing. • Access to and quality of health services: In most countries there is some form of health insurance. Public health care expenditures are substantially higher in the old member states. • With ageing of the population increasing pressures on existing health care systems as well as pension funds; reforms being carried out in several member states. • Rules and regulations regarding hygiene and sanitation are strict. • Approximately 90% of population is connected to public water system and approximately 88% to sewerage system.
f) Education	• Enrolment rates are high, but educational attainment of the adult population lags behind Canada, Japan and United States. • Ambitious targets to increase tertiary education enrolment and reduce early leaving of schools.

* This is the difference between average gross hourly earnings of male paid employees and of female paid employees as a % of average gross hourly earnings of male paid employees. The population consists of all paid employees aged 16-64 that are at work 15+ hours a week.

3.3 Environmental situation and trends in the EU and Ukraine in detail

3.3.1 Economic transition, recovery and the environment

Ukraine has favourable climate conditions and geographical location and moreover is endowed with an abundance in natural resources. But for decades abundant resources were wasted by an ineffective and environmentally unfriendly economic system that still today affects the extensive model of a developing economy. Thus the share of the fuel and power sector in Ukrainian industry is twice as much as in France, Germany or Italy; the share of metallurgy is almost three times more. “Dirty” industries prevail in the

Ukrainian economy; they have more than forty percent of key assets and about one third of overall industrial output. The fuel and power sectors consume near three quarters of water in Ukrainian industry.

Since the date of the Independence Declaration (1991), the state formation and transition to a market economy have been marked by the decrease of the country's industrial potential. The economic decline was accompanied by an increase of a specific volume of a non-productive sphere in GDP: increases in social inequality. On the other hand, those processes caused a decrease of man-made burden on the environment. But as a result of capital outflow from the country and minor volumes of foreign direct investments (less than a hundred USD per capita), the general capital investments decreased, leading to deterioration of quality of machinery and production facilities, including decreasing environmental circumstances by over 50%.

Since 1999, the recovery of the Ukrainian economy has started. The total increase of GDP exceeded 22% during the last 3 years and had a positive impact on the socio-economic activities of the Ukrainian economy, including the trend of increasing of environmental protection expenditure. In 2005 Ukraine spent $882 million to protect the environment, allocating a similar share of income to environmental protection as do Central- and Eastern-European countries. However, environmental expenditure per capita remains low at less than 40 USD per year.

According to an OECD survey for 2000-2005 (OECD 2007 Trends in Environmental Finance in EECCA) like in a majority of EECCA countries, wastewater receives the highest share of environmental expenditure: 49% of the total amount, air attracts 22%, waste about 15%, soil and groundwater – 11%, biodiversity and landscape – 2%, and other – 1%. Investment represents 22% of total environmental protection expenditure that is near 2% of the Gross Fixed Capital Formation (GFCF), similar to that in Germany. The share of environment in domestic investment has almost doubled since 2000.

Multilateral environmental assistance from international financial institutions (IFIS) is an important factor because over the period 2000-2005 Ukraine received 105 million USD, and became a major EECCA recipient in 2004.

But industrial recovery since 1999 also resulted in the tendency to go back to catastrophic pollution levels of the late Soviet period and a growing burden on the environmental infrastructure. This threat is more than real as dirty industries dominate in economy's recovery and specific figures of pollution have become apparent.

3.3.2 Metallurgy and steel

The major environmental impact is connected with ferrous metallurgy and the energy sector. Ukraine still has outdated and obsolete but powerful steel making plants and related coke production and metal mining. These sectors are responsible for about 40% of air emissions. The share of ferrous metallurgy in the structure of exports accounts for about 40%, that greatly helped in 2006 to save Ukraine from the economic crisis, when due to political instability, inflation, and increases in the price of natural gas amounted to

a negative trade balance of $6.667 billion. Also in 2006, Mittal Steel paid $4.8 billion for the "KrivorozhStal" plant. Important for this report is also to note that the internal market for the industry is fairly low: Ukraine exports 80% of its steel products. The agreement with the EU of June 2007, introducing a quota system with increasing quotas over time, may further enhance the metallurgy sector.

To improve the environmental performance of the steel making industry, we have to substitute first of all 'open hearth' furnaces. More than half of the remaining outdated, energy wasting installations in the world is in Ukraine now – a very dubious honour. About 45% of Ukrainian steel is produced in open hearth furnaces, which are not operated in developed countries any more. For comparison in Russia about 20% of steel production is carried out that way and Russia plans to phase out the open hearth production method completely by 2010. Reconstruction of the industry is hindered by an unstable situation related to energy prices and strong competition at the global market place.

The Ukrainian steel making industry is supported by domestic sources of raw materials. The relatively low steel prices are explained by low costs of labour, iron ore, coke, scrap, and electricity.

3.3.3 Energy

Another activity with a large environmental impact, both for pollution and resources use, is the power sector. The current state of Ukrainian power plants in general can be described as critical. Installations put into operation in 1960 – 1970s by design and norms of the 1950s are physically and morally obsolete. The overwhelming majority of existing power plants are outdated.

Specific fuel consumption for the generation of electricity at thermal power plants increased by 17% till 373.7 g / (kWh). Coal provides the largest share, about 35%, of fuel raw material and – according to national development plans – will be even more intensively used.

Ukraine can be considered as one of the most ineffective countries for natural gas use, since it consumes more than fifteen hundred cubic meters of natural gas for $1,000 GDP. Cogeneration possibilities are usually not used, and energy efficiency is correspondingly about 34% instead of 90%.

Contrary to Russia, where electricity production was restored to the level before the slump of the 1990-s, Ukraine still has significant unused capacities that creates a big potential for export of electricity to neighbouring countries.

Poor dust control at power plants results in high emissions of participles, including heavy metals. Control equipment of SO_2 emissions is mostly absent, which is especially dangerous because of low quality fuel and very high content of sulphur in Ukrainian coal. There were numerous governmental programmes for improving the situation but their usual feature is a failure to achieve its goals. This shortfall of environmental policy may

be explained by a rather unbalanced way in which policy is developed; rather as an internal ministerial document only than with proper and active participation of main stakeholders, including the public and various NGOs. Typically a list of projects is declared without secure funding, monitoring and control and enforcement measures.

The government now has programmes to promote energy efficiency and modernisation at power plants, environmental considerations are addressed also in recently developed the Energy Strategy of Ukraine to 2030.

Cooperation with the EU may significantly help to solve acute problems of the energy sector. Both cost demanding and low-cost measures are urgently needed. The Memorandum of Understanding on co-operation in the field of energy between the EU and Ukraine, which was signed on 1 December 2005 within the context of implementation of the EU-Ukraine Action Plan, consists of road maps covering (1) nuclear safety; (2) the integration of electricity and gas markets; (3) security of energy supplies and the transit of hydrocarbons; (4) the coal sector. In 2006 both sides further recognised the importance of developing a fifth roadmap for increasing co-operation in energy efficiency. A number of large scale projects and practical recommendations were already identified by these five working groups.

3.3.4 What is happening at the moment?

Promising efforts started in 2006 with the practical implementation of Kyoto mechanisms and provisions of the IPPC directive. For June 2007 there are 8 joint implementation projects that got official letters of approval and became financially valid under the Kyoto Protocol procedures.

For 2004, Ukraine reported the emission of 413,4 million tonnes of CO_{2e}, which means that a space of about 512 million tonnes of CO_{2e} still exists within the ceiling imposed by the Kyoto Protocol. According to an estimate of the Ministry of Environmental Protection of Ukraine, during the first commitment period (2008-2012) Ukraine can sell up to approximately 1 billion tonnes of CO_{2e}, without creating any threat to its industrial development.

In 2007 the Green Investments Scheme Agency was created in Ukraine in order to use the country's significant potential for cooperation within the framework of the Kyoto Protocol, thus opening up the possibility of billions of USD of environmental assistance.

Implementation of the European concept of best available techniques for the main industrial sectors should drastically improve environmental regulation and environmental performance of the main polluters.

Other proposed measures like changes in the Tax Code of Ukraine are to stop negative environmental trends.

Large scale activities for joint implementation projects combined with proper environmental regulation based on international approaches, including technical standards and BAT (best available standards) recommendations may quickly improve investment

conditions and help develop government procurement policy. It is the only way to secure the competitiveness of Ukrainian companies with the environment in mind.

According to official data, emissions from Ukrainian stationary sources have been on the increase during the last years: air emissions exceeding 4 million tonnes, and polluted water discharges are near 3.3 billion m^3.

From the early 1990s, the most reliable source of environmental financing in Ukraine has been the system of environmental Funds. As it is shown in the OECD 2006 Performance Review of the State Environmental Protection fund of Ukraine, it has undergone significant changes, closely linked to the evolution of the public finance system in the country. Most of these changes have already brought positive results and have contributed to the improvement of the fiscal discipline and transparency of the State Fund. Its increased revenue has attracted the interest of various stakeholders in the government. But despite this increase in revenue levels, programming and expenditure planning remain weak and crucial elements of programme design are missing.

The Fund uses no clear appraisal criteria and practically does not consider environmental effects when choosing project proposals. Monitoring and evaluation of implemented projects are effectively missing. No information on results achieved by these projects is collected at the national level, which makes subsequent planning even more difficult. Given the current administrative structure of the State Fund and its staff's limited experience with good project cycle management, the Fund is not in a position to play a major role with regard to foreign sources of finance. Reforming the Fund in accordance with good international practices will require significant political support and commitment, and the EU-Ukraine dialogue may significantly contribute to it.

3.3.5 Environmental effects of outdated production methods

Imperfect extraction technologies result in big losses of minerals, thus with absence of enhanced oil recovery systems, about 50% of the oil reserves is not extracted at Ukrainian deposits. The same levels of extraction apply also to sodium chloride and potassium chloride, with 40% for coal and 25% for metals.

Improper waste management at mineral extraction and industrial production resulted in formation of landfills with 20 billion tonnes of industrial waste. These waste deposits grow annually by 170-180 million tonnes while only 20-40% of the waste is utilised. For example around 1% of the territory of the most industrialised Donetsk oblast is under landfills.

3.3.6 Ukraine's nature and environment

Ukraine is historically famous for its rich nature, agriculture, and significant world's share of black soil. Nowadays it features the highest indicators in Europe as for ploughing-up of agricultural land, use of fresh surface water resources and deforestation; up to 54% of the land is ploughed up, about 10.6 million ha or 33% of the total area, including 44% of the best steppe fields suffers from wind and water erosion.

Annual water consumption is 23-25 km^3, including up to 6.0 km^3 of underground water. About 60% of water is used in industry with formation of discharges. The water use problem is further aggravated by prevailing consumption in industrial areas with low water resources.

Only 30% of the territory of Ukraine is under vegetation, and it is not natural growth mainly. Forests cover 10.4 million hectares and clean territories cover 8% only.

Fauna resources are presented mainly by fish (up to 90%). 70% of the fish catch comes from the Black Sea and Sea of Azov. The catch of fish decreased 2.5 times over the last 20 years, and this negative tendency continues at present. In the Dnipro river the yearly catch was about 22 thousand tonnes in the 1970s, while nowadays it is around 7-8 thousand tonnes only. The same drastic slump is true for game, with three times decreasing catch over the last 30 years.

At the same time new reserved territories are being established. At present time, the Fund of Natural Reserves of Ukraine comprises 7120 territories and objects totalling more than 2.7 million hectares in area; it makes 4.5% of the whole area of Ukraine.

4 Annex IV The Model Specifications

4.1 Model structure

This model is based on the MRT - Multiregional Trade Model - by Harrison, Rutherford and Tarr (HRT) used in their evaluation of the Single Market (HRT, 1994) [26].

4.1.1 Markets and prices

The following notational conventions are adopted:
i, j – indexes of goods;
r, s – indexes of regions;
f – primary factors;
p – market price index, 1 in the benchmark;
$\overline{x}$ - benchmark value of quantity variable X.

The following market prices are included in the model:

PC_r – price index for final consumption in region r;
PG_r - price index for government provision in region r;
PA_{ir} – price index for the Armington aggregate of good i in region r, inclusive of all applicable tariffs, border costs and monopolistic markups;
PY_{ir} - supply price (marginal cost) of good i from region r, excluding fixed costs associated with the production of goods in industries subject to IRTS;
PF_{ir} - price index for factor inputs in sector i, region r;
PT - price index for transport services.

4.1.2 Summary of the equilibrium relationships

Final demand in each region arises from a representative agent, maximising a Cobb-Douglas utility function subject to a budget constraint. Income is composed of returns to primary factors and tax revenue directed to the consumer as a lump sum.

Within each region, final and intermediate demands are composed of the same Armington aggregate of domestic and imported varieties. The composite supply is a nested CES

[26] Their code was obtained from Anders Hoffmann with the permission of Thomas Rutherford and our modelling exercise uses large parts of this code. This model in turn is based on the code employed in their evaluation of the Uruguay Round in HRT (1995, 1996, 1997], which is available for public access on Harrison's Web site.

function, where consumers first allocate their expenditures among domestic and imported varieties and in the second level the consumers choose among imported varieties. In the imperfect competition case firm varieties enter at the bottom of the CES function.

There is no distinction between goods produced for domestic market and for exports. Goods are produced with the use of intermediate inputs and primary factors. Primary factors are mobile across sectors, but not across regions. We assume a CES function over primary factors and a Leontief production function for intermediate inputs and factors of production composite. Exports are not differentiated by the country of destination.

All distortions are represented as ad valorem price-wedges. They consists of factor and intermediate input taxes in production, output tax, import tariffs, export subsidies, taxes on government and private consumption.

4.2 Equations

4.2.1 Markets

- Regional output;

(1) $$Y_{ir} = \sum_{s} X_{irs}$$

where Y_{ir} is output of good i in region r, X_{irs} is export of good i from region r to s and if r=s, X_{irs} represents domestic sales.

- Regional demand;

(2) $$A_{ir} = C_{ir} + \sum_{j} a_{ijr} Y_{jr} + T_{ir}$$

where A_{ir} is total supply (production plus imports), C_{ir} is total final consumption, a_{ijr} is intermediate demand coefficient and T_{ir} is demand for good i in transport costs.

- Value added;

(3) $$V_{ir} = a^{V}_{ir} Y_{ir} + f_{ir} N_{ir}$$

where V_{ir} is total sector i value added, a^{V}_{ir} is value added demand coefficient, f_{ir} is the fixed cost per firm and N_{ir} is the number of firms in IRTS sectors.

- Primary factor markets;

(4) $$\overline{F}_{fr} = \sum_{i} a^{F}_{fir} V_{ir}$$

where $\overline{F}_{fr}$ is the endowment of factor f in region r and a^{F}_{fir} is the price-responsive demand coefficient for factor f in sector i.

- Armington supply;

(5)

$$A_{ir} = \overline{A}_{ir}\left(\alpha_{ir}^{D}\left(\frac{X_{irs}}{\overline{X}_{irs}}\right)^{\rho_{DM}} + \left(1-\alpha_{ir}^{D}\right)\left\{\sum_{r\neq s}\theta_{irs}^{M}\left(\frac{X_{irs}}{\overline{X}_{irs}}\right)^{\rho_{M}}\right\}^{\rho_{DM}/\rho_{M}}\right)^{1/\rho_{DM}}$$

where $\overline{A}_{ir}$ is the benchmark supply, α_{ir}^{D} is the value share of domestic supply, $\overline{X}_{irs}$ is benchmark exports of good i from region r to s, θ_{irs}^{M} is the benchmark value share of region r exports in region s imports and ρ_{DM} and ρ_{M} are determined by Armington elasticity's of substitution σ_{DM} and σ_{M}: $\rho = \frac{\sigma}{\sigma-1}$.

- Value added supply;

(6)

$$V_{ir} = \overline{V}_{ir}\left\{\sum_{f}\alpha_{fir}^{F}\left(\frac{a_{fir}^{F}}{\overline{a}_{fir}^{F}}\right)^{\rho_{ir}^{F}}\right\}^{1/\rho_{ir}^{F}}$$

where $\overline{V}_{ir}$ is benchmark value-added, α_{fir}^{F} is the benchmark value share of factor f, $\overline{a}_{fir}^{F}$ is the benchmark input coefficient and ρ^{F}_{ir} is determined by the elasticity of substitution.

- Border/transport costs;

(7)

$$T_{ir} = \begin{cases}\sum_{js}\beta_{jrs}X_{jrs} & i = i_{\tau} \\ 0 & i \neq i_{\tau}\end{cases}$$

where τ is the index of single commodity used for transport services and β_{jrs} is the transportation cost coefficient.

- Welfare index;

(8)

$$W_{r} = \prod_{i}\left(\frac{C_{ir}}{\overline{C}_{ir}}\right)^{\alpha_{ir}}$$

where $\overline{C}_{ir}$ is benchmark final demand for good i in region r.

4.2.2 Profit conditions

- Value added;

(9) $$PV_{ir} = \frac{1+t^F_{ir}}{\overline{PV}_{ir}} \left(\sum_f \alpha^F_{fir} PF_{fr}^{1-\sigma^F_{ir}} \right)^{\frac{1}{1-\sigma^F_{ir}}}$$

where f^F_{ir} is the ad valorem factor tax rate, $\overline{PV}_{ir}$ is the benchmark (tax-inclusive) price.

- Marginal cost;

(10) $$PY_{ir} = a^V_{ir} PV_{ir} + \sum_j a_{jir} PA_{jr}$$

- Armington composite supply price;

(11) $$PA_{ir} = \left\{ \alpha^D_{ir} \left(\frac{PD_{ir}}{\overline{PD}_{ir}} \right)^{1-\sigma_{DM}} + (1-\alpha^D_{ir}) \left(\frac{PM_{ir}}{\overline{PM}_{ir}} \right)^{1-\sigma_{DM}} \right\}^{\frac{1}{1-\sigma_{DM}}}$$

where $\overline{PA}_{ir} = 1$

(12) $$PD_{ir} = (1+\mu_{irs}) PY_{ir}$$

and

(13) $$PM_{ir} = \left\{ \sum_{r \neq s} \theta^M_{irs} \left[(1+\mu_{irs})(1+\hat{t}_{irs})(PY_{is} + \beta_{irs} PT_s) \right]^{1-\sigma_M} \right\}^{\frac{1}{1-\sigma_M}}$$

and

(14) $$PT_{ir} = PA_{i_\tau r}$$

where μ_{irs} is the mark-up on marginal cost on sales of good i from a firm in region r in region s,
$\hat{t}_{irs}$ is the ad valorem tax rate which incorporates import tariffs and export subsidies, $\overline{PD}_{ir}$ is the benchmark supply price for goods from domestic producers, $\overline{PM}_{ir}$ is the benchmark supply price for imports.

- Regional income;

Regional income is a sum of factor income, indirect taxes, taxes on intermediate demand, factor tax revenue, public tax revenue, consumption tax revenue, export tax revenue and tariff revenue net of investment demand, public sector demand and net capital outflows:

(15)

$$M_r = \sum_f PF_{fr} F_{fr} + \sum_i t_{ir}^Y PY_{ir} Y_{ir} + \sum_{ij} t_{ijr}^{ID} PY_{ir} Y_{jr} a_{ijr} + \sum_{fi} t_{fir}^F PF_{fr} V_{fir} + \sum_i t_{ir}^G PG_{ir} G_{ir} +$$

$$+ \sum_i t_{ir}^C PC_{if} C_{ir} + \sum_{is} t_{irs}^X PY_{ir} X_{irs} + \sum_{is} t_{irs}^M (PY_{is} X_{isr} (1 + t_{isr}^X) + p^T T_{isr}) - \sum_i p_{ir}^D I_{ir} -$$

$$\sum_i PG_{ir} (1 + t_{ir}^G) G_{ir} - p_n^C CAPFLOW_r$$

- Final demand;

Public sector output consists of Cobb-Douglas aggregation of market commodities:

(16) $$G_r = \Gamma_r \prod_i G_{ir}^{\theta_{ir}^G}$$

A representative agent determines demand in each region. He is endowed with primary factors, tax revenue and exogenous capital flows from other regions. He allocates his income to investment (exogenous), public demand (held constant in real terms) and private demand. Private demand is determined by the maximisation of Cobb-Douglas utility function:

(17) $$U_r = \sum_i \theta_{ir}^C \log(C_{ir})$$

Aggregate final demand is then determined by regional expenditures and the unit price of aggregate commodities gross of tax:

(18) $$C_{ir} = \frac{\alpha_{ir}^C E_r}{p_{ir}^C (1 + t_{ir}^C)}$$

where E_r is regional expenditure, which equals income (M_r) net of investment and public expenditures.

- Bilateral trade flows;

There are two tax margins (import and export tax) and transport costs in the model. Transport costs are proportional to trade. Transport costs are defined by a Cobb-Douglas aggregate of international transport inputs supplied by different countries:

(19) $$\sum_{irs} T_{irs} = \psi_T \prod_{i,r} TD_{ir}^{\theta_{ir}^T}$$

Bilateral trade flows are determined by cost-minimising choice given the *fob* export price of commodity from region r (PY_{ir}), the export tax rate (t_{ir}^X), and the import tariff rate (t_{ir}^M), where the export tax applies on the *fob* price net of transport margins, while the import tariff applies on a *cif* price.

- Free entry zero-profit condition for monopolistic firms.

$$N_{ir} = \frac{\sum_{s}\left[\mu_{irs}(1+\hat{t}_{irs})(PY_{ir}+\beta_{irs}PT_{r})X_{ir}\right]}{PV_{ir}f_{ir}} \quad (20)$$

4.3 Monopolistic competition

- Goods are distinguished by firm, by region and area of origin (domestic or imported);
- Demands arise from a nested CES function with a supply from firms in a single region at the lowest level of the CES aggregate. At the next level, the firms compete with supplies from other regions from the same area and at the top level consumers choose between goods from different areas. Demand for final composite arises from a Cobb-Douglas utility function;
- Producers compete in quantities based on a Cournot model with fixed conjectural variations. Markups over marginal costs are based on the profit maximisation. There is free entry, so profits in equilibrium are zero. Markup covers the fixed costs, which are fixed at the firm level and as the markup revenue in a region changes, so does the number of firms;
- The model does not incorporate gains from variety, only the rationalisation gains. A reduction in tariffs leads to loss of the market share by domestic firms. Domestic producers reduce the markup on marginal costs, some domestic firms exit, the remaining firms slide down their average cost curves and output per firm increases.

4.3.1 Algebraic relations

The equilibrium conditions for each market where there are IRTS are estimated separately. The following notation is adopted:

X – Aggregate demand

Y_k – Supply from are k

S_r – Supply from region r

q_{fr} – Supply from firm f in region r

P – Price index for aggregate demand

P_k- Price index for supply from area k

w_r – Price index for supply from region r

π_{fr} – Sales price for supply from firm f in region r.

CES aggregators are used to create the composite goods:

(21) $$X = \left[\sum_k \alpha_k^{1/\sigma} Y_k^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}}$$

(22) $$Y_k = \left[\sum_{r \in r_k = k} \beta_{rk}^{1/\eta} S_r^{\frac{\eta-1}{\eta}} \right]^{\frac{\eta}{\eta-1}}$$

(23) $$S_r = \left[\sum_f q_{fr}^{\frac{\varepsilon-1}{\varepsilon}} \right]$$

The associated price indices:

(24) $$P = \left(\sum_k \alpha_k p_k^{1-\sigma} \right)^{\frac{1}{1-\sigma}}$$

(25) $$p_k = \left(\sum_{r \in r_k = k} \beta_{rk} w_r^{1-\eta} \right)^{\frac{1}{1-\eta}}$$

(26) $$w_k = \left(\sum_f \pi_{fr}^{1-\varepsilon} \right)^{\frac{1}{1-\varepsilon}}$$

and associated demand functions:

(27) $$Y_k = \alpha_k \left(\frac{P}{p_k} \right)^{\sigma} X$$

(28) $$S_r = \beta_{rk} \left(\frac{p_k}{w_r} \right)^{\eta} Y_k \quad \text{for } k = k_r$$

(29) $$q_{fr} = \left(\frac{w_r}{\pi_{fr}} \right)^{\varepsilon} S_r$$

4.3.2 Behaviour of firms

The profit of firm f in region r selling into a given market is as follows:

(30) $$\Pi_{fr}(q) = \pi_{fr} q - C_{fr}(q)$$

where C is total cost. First order conditions for profit maximisation may be written as follows:

(31) $$c_{fr} = \pi_{fr}(1 - m_{fr})$$

in which c_{fr} is the marginal cost of supply and m_{fr} is a markup over marginal cost (on gross basis):

(32) $$m_{fr} = -\frac{1}{e_{fr}} = -\frac{\partial \pi_{fr} q_{fr}}{\partial q_{fr} \pi_{fr}}$$

where e_{fr} is the perceived elasticity of demand. The expression for the elasticity of demand arises from the nested CES structure of demand and depends on the assumed reaction of other producers.

4.3.3 The perceived elasticity of demand

Derivation of the perceived elasticity of demand begins with the inverse demand function:

(33) $$\pi_{fr} = \left(\frac{S_r}{q_{fr}}\right)^{\frac{1}{\varepsilon}} w_r$$

Then compute the derivative:

(34) $$\frac{\partial \pi_{fr}}{\partial q_{fr}} = -\frac{1}{\varepsilon}\frac{\pi_{fr}}{q_{fr}} + \frac{1}{\varepsilon}\frac{\pi_{fr}}{S_r}\frac{\partial S_r}{\partial q_{fr}} + \frac{\pi_{fr}}{w_r}\frac{\partial w_r}{\partial q_{fr}}$$

Here, HRT develop further derivations with the simplifying assumption of unitary conjectural variations (Cournot conjectures). The non-unitary conjectures are introduced to reconcile the estimates of the economies of scale in production with the estimates of elasticity's of substitution in demand. Under Cournot conjectures:

(35) $$\frac{\partial S_r}{\partial q_{fr}} = \left(\frac{S_r}{q_{fr}}\right)^{\frac{1}{\varepsilon}}$$

and the term $\frac{\partial w_r}{\partial q_{fr}}$ is computed using the chain rule the second time:

(36) $$\frac{\partial w_r}{\partial q_{fr}} = \frac{\partial w_r}{\partial S_r}\frac{\partial S_r}{\partial q_{fr}}$$

Substituting (34) and (35) into (33) we get:

(37) $$\frac{\partial \pi_{fr} q_{fr}}{\partial q_{fr} \pi_{fr}} = -\frac{1}{\varepsilon} + \frac{1}{\varepsilon}\frac{q_{fr}}{S_r}\left(\frac{S_r}{q_{fr}}\right)^{\frac{1}{\varepsilon}} + \frac{q_{fr}}{w_r}\left(\frac{S_r}{q_{fr}}\right)^{\frac{1}{\varepsilon}}\frac{\partial w_r}{\partial S_r}$$

Then using (32):

(37) $$\left(\frac{S_r}{q_{fr}}\right)^{\frac{1}{\varepsilon}} = \frac{\pi_{fr}}{w_r}$$

make the substitution to obtain:

(38) $$\frac{1}{e_{fr}} = -\frac{1}{\varepsilon} + \frac{1}{\varepsilon}\frac{\pi_{fr} q_{fr}}{w_r S_r} + \frac{\partial w_r}{\partial S_r}\frac{S_r}{w_r}\frac{\pi_{fr} q_{fr}}{w_r S_r}$$

Applying the same steps at the next level we get an analogous expression:

(39) $$\frac{\partial w_r S_r}{\partial S_r w_r} = -\frac{1}{\eta} + \frac{1}{\eta}\frac{w_r S_r}{p_k Y_k} + \frac{\partial p_k}{\partial Y_k}\frac{Y_k}{p_k}\frac{w_r S_r}{p_k Y_k}$$

Applying the same operations again at the highest level of the CES, given that the demand elasticity for the aggregate X is unity, we get:

(40) $$\frac{\partial p_k Y_k}{\partial Y_k p_k} = -\frac{1}{\sigma} + \frac{1}{\sigma}\frac{p_k Y_k}{PX} + \frac{p_k Y_k}{PX}$$

When equations (38)-(40) are assembled, we obtain an expression for the optimal Cournot markup as follows:

(41) $$m_{fr} = \frac{1}{\varepsilon} + \left(\frac{1}{\eta} - \frac{1}{\varepsilon}\right)\frac{1}{N_{fr}} + \left(\frac{1}{\sigma} - \frac{1}{\eta}\right)\frac{\theta^{Y}_{fk}}{N_{fr}} + \left(1 - \frac{1}{\sigma}\right)\frac{\theta^{X}_{k}\theta^{Y}_{rk}}{N_{fr}}$$

where the share of supply from region *r* in the supply from area *k* is denoted as:

(42) $$\theta^{Y}_{rk} = \frac{w_r S_r}{p_k Y_k} \qquad \text{for } k = k_r$$

and the supply from area *k* in total supply of a given good is denoted as:

(43) $$\theta^{X}_{k} = \frac{p_k Y_k}{PX}$$

In our model we assumed that products of different firms are imperfect substitutes in demand. The elasticity of demand depends on the country of origin. There are three

elasticity's of substitution associated with the nested CES structure of demand discussed earlier:

σ_{DD} – elasticity of substitution between varieties supplied by domestic firms
σ_{MM} – elasticity of substitution between products of any two foreign suppliers
σ_{DM} – elasticity of substitution between domestic and imported varieties.

We assume that domestically produced goods are more easily substitutable among themselves than products from different countries and that σ_{DD} is 15. In addition imported goods are assumed to be better substitutes to each other than domestic and foreign goods. The elasticity of substitution between imported goods is assumed to be equal 10, while domestic and foreign goods enter the demand function with the elasticity of substitution of 5. These are priors used by HRT (1994).
Further let θ_{rs} denote the market share of region r firms in region s. Then we can apply equation (C41) to represent the optimal markup applied in the domestic market and in the foreign markets:

(44)
$$\tilde{m}_{rs} = \begin{cases} \frac{1}{\sigma_{DD}} + \left(\frac{1}{\sigma_{DM}} - \frac{1}{\sigma_{DD}}\right)\frac{1}{N_r} + \left(1 - \frac{1}{\sigma_{DM}}\right)\frac{\theta_{rr}}{N_r} & r = s \\ \frac{1}{\sigma_{MM}} + \left(\frac{1}{\sigma_{DM}} - \frac{1}{\sigma_{MM}}\right)\frac{\theta_{rs}}{N_r\theta_s^M} + \left(1 - \frac{1}{\sigma_{DM}}\right)\frac{\theta_{rs}}{N_r} & r \neq s \end{cases}$$

These are the optimal markups expressed as a function of elasticity's of substitution, market shares, θ^M_r the market share of imports in region r and N_r the number of firms producing in the region r.

4.3.4 Estimation of the equilibrium conditions in ITRS sectors

This paper adopts a simplification by estimating the equilibrium conditions in IRTS industries for each commodity in separate models. Demands and supplies for all regions are included into these calculations, but factor markets, intersectoral linkages and income effects are ignored. In each iteration of the IRTS models, regional demand functions are calibrated to the most recently estimated equilibrium conditions of the general model including all GE interactions. Given constant marginal cost, sales prices are determined by the markup equations.

The single commodity models are estimated as follows. The markup pricing equation (44) is specified given the benchmark elasticity's of substitution, the number of firms and an adjustment parameter, the conjectural variation. First, the values of elasticity's of substitution at all nests of the CES function, as well as the number of firms and therefore their market shares are specified. Further, the value of production at consumer prices at the benchmark combined with the estimates of the cost disadvantage ratio taken from the literature (see next section), determine the value of fixed costs, i.e. $FC_{ir} = CDR_{ir}YC_{ir}$. Given the assumption of zero profits, the markup over marginal cost generates the revenue equal exactly to the fixed costs. This condition appears as a constraint in a non-linear least squares calculation.

The objective in the estimation is to calibrate the conjectural variations, which are as close as possible to one. This value is consistent with pure Cournot-Nash behaviour of players. Therefore a sequence of least-squares problems is solved for each commodity subject to IRTS. These problems look for implicit numbers of firms (N_r) which results in calibrated conjectural variations (CV_{rs}) which are as close as possible to 1. This looks as follows:

$$(46) \qquad \min_{CV^i_{rs},N_{ir}} \sum_{rs} (CV^i_{rs} - 1)^2$$

subject to:

$$FC_{ir} = \sum_{rs} X^i_{rs} M^G (CV^i_{rs}, N_{ir}, \sigma, \theta)$$

$$(47) \qquad 0 \le N_{ir} \le 100$$

$$CV^i_{rs} \ge 0$$

where M^G is a markup equation, i.e. equation (44), and X^i_{rs} represents sales of i from region r in region s.

Therefore, the conjectural variations act as parameters, which allow reconciliation of the benchmark data with the estimates of the elasticity's of substitution and CDR taken from the literature. In the majority of sectors calibrated conjectural variations are less than 1 indicating a more competitive behaviour than predicted by the Cournot model.

For sectors, where the assumption of free entry and zero profits in the benchmark, given values of the elasticity of substitution, is consistent with pure Cournot-Nash type behaviour, a second calculation is performed. It looks for the number of firms as small as possible subject to the consistency of conjectures with the Cournot behaviour.

$$(48) \qquad \min_{r} N_{ir}$$

subject to:

$$FC_{ir} = \sum_{rs} X^i_{rs} M^G (CV^i_{rs}, N_{ir}, \sigma, \theta)$$

$$(49) \qquad 0 \le N_{ir} \le 100$$

$$CV^i_{rs} = 1$$

4.3.5 Calibrating the Cost Disadvantage Ratio

The calibration of the cost disadvantage ratio (CDR) in IRTS sectors is based on the assumption of constant marginal cost. The total cost function is specified as follows:

$$(50) \qquad c = f + mq$$

where f is fixed cost, m is constant marginal cost and q denotes the output level. Average cost function looks as follows:

(51) $$ac = \frac{f}{q} + m$$

Assuming zero profits, the benchmark data provides the information on the industry total costs (C) and output (Q). If there are n representative firms in the initial equilibrium (1), then $nc_1=N$ and $nq_1=Q$. Since

(52) $$\frac{c_1}{q_1} = \frac{nc_1}{nq_1} = \frac{C_1}{Q_1}$$

given the initial data we know already one point on the firm's average cost curve i.e.:

(53) $$\frac{c}{q_1} = \frac{f}{q_1} + m$$

Given the assumption about a specific form of the average cost curve, we only need a second point in order to calibrate it. This is done with the use of information from the engineering estimates on changes in average cost accompanying changes in output. If output declines to αq_1 then average costs increase to $\beta\left(\frac{c_1}{q_1}\right)$ where $0<\alpha<1$, $\beta>1$ is required for the marginal cost to be nonnegative. Given the values of α and β we know the second point on the industry average cost curve:

(54) $$\beta\frac{c}{q_1} = \frac{f}{\alpha q_1} + m$$

By multiplying the nominators and denominators of the last two equations we obtain equations on the total output and costs of industry, on which the data is available. The equations look as follows:

(55) $$\frac{C}{Q_1} = \frac{F}{Q_1} + m \text{ and}$$

(56) $$\beta\frac{C}{Q_1} = \frac{F}{\alpha Q_1} + m .$$

where F is the fixed cost. Further, we solve the above equations for the fixed and marginal costs:

(57) $$F = C_1(\beta - 1)\frac{\alpha}{\alpha - 1} \text{ and}$$

(58) $$m = \left(\frac{C_1}{Q_1}\right)\left(\frac{\beta\alpha - 1}{\alpha - 1}\right).$$

Since the cost disadvantage ratio is defined as f/c, which by symmetry equals F/C, we know that at the initial equilibrium:

(59) $$CDR = \frac{(\beta - 1)\alpha}{1 - \alpha}.$$

We obtain the values of α and β from Pratten (1988). Since there are no estimates of the economies of scale for all 3-digit sectors according to NACE classification or the available estimates are not representative, we used a rage of estimated parameters for each GTAP sector. Based on those parameters we constructed three values of the CDRs i.e. low and high using the lowest and highest values of the estimated parameters and middle one. The only exception was the food sector, where the economies of scale differ a lot by products, so we used the average production values to aggregate the CDRs for more finely defined sectors. The allocation of Pratten's NACE sectors to GTAP sectors, as well as the final CDRs are presented in Table 1 below.

Following others such as Gasiorek, Smith and Venables (1992) or HRT (1994), I am assuming that in the benchmark equilibrium firms operate at the minimum efficient scale (MES). Firms should have difficulties competing, if they were operating at less than MES. Given the function form used in this study, at the MES further expansion of output reduces average cost of production. If initially output is lower than the MES, then the CDRs will be underestimated since the slope of the average cost curve increases in absolute value for decreases in output.

In all scenarios we assume low values for the economies of scale. We intend to use high and medium CDRs in the sensitivity analysis.

Table 4.1 Data on CDR values

	Share of MES (α)	Percentage Cost Increase at Output Level (β)	Implied CDR			Source of Data
			Low	Medium	High	
Column	**1**	**2**	**3**	**4**	**5**	**6**
Agriculture	0	0	0	0	0	
Raw materials	0	0	0	0	0	
Food, Beverages, Tobacco			7.7	11.1	14.5	
Meat	0.67	5				412
Dairy	0.67	2				413
Other food	0.67	4 to 9				414, 416, 420, 422
Tobacco	0.33	2.2 to 5				429
Textiles	0.5	2 to 10	2	6	10	43
Clothing	0	0	0	0	0	
Leather	0.33	1.5	0.7	0.7	0.7	451
Wood	0	0	0.0	0.0	0.0	
Paper	0.5	8 to 13	8.0	10.5	13.0	471, 472
Petroleum	0.33	4	2.0	2.0	2.0	14
Chemicals	0.33	4 to 19	2.0	5.7	9.4	25
Non-metallic Minerals	0.33	10 to 26	4.9	8.9	12.8	241-247

	Share of MES (α)	Percentage Cost Increase at Output Level (β)	Implied CDR			Source of Data
			Low	Medium	High	
Column	**1**	**2**	**3**	**4**	**5**	**6**
Iron, steel	0.33	10 to 11	4.9	5.2	5.4	22
Other metals	0.33	11 to 11	4.9	5.2	5.4	224
Metal prod.	0.33	10	4.9	4.9	4.9	221
Motor vehicles	0.5	11	11.0	11.0	11.0	35
Other transport	0.5	8 to 20	8.0	14.0	20.0	361
Electronics	0.33	5 to 15	2.5	4.9	7.4	23, 344, 345
Machinery n.e.c.	0.5	3 to 10	3.0	6.5	10.0	321, 322, 326
Manufacturing n.e.c.	0.5	3 to 5	3	4	5	HRT
Utilities	0	0	0	0	0	
Trade	0	0	0	0	0	
Transport	0.5	2	2	2	2	HRT
Financial services	0.5	5	5	5	5	HRT

Notes:

Column 1: Parameter α in the CDR calibration equation.

Column 2: Data corresponds to (β-1)*100 where β is from the CDR calibration equation.

Column 3-5: CDR estimated according to equation 58.

Column 6: Numbers indicated in this column correspond to NACE sectors from Table 5.1 in Pratten (1988). The assumptions on CDRs in services follow assumptions of HRT (1994).

5 Annex V WTO trade data calculations

Here we shortly present the data mining that preceded the CGE analysis.

- Calculated 2004 (benchmark) weighted average tariffs. Calculations were based on 10-digit nominal tariffs from the Law on Customs Tariffs and 10-digit HS trade statistics disaggregated by trading partners. Later 10-digit statistics were aggregated to a 6-digit level and transformed into GTAP 2-digit breakdown (concordance table was used);

- Based on information from the Ministry of Economy the EU-27 and RoW import tariff rates were adjusted to obtain post-WTO values. ME prepared a table of 2002 weighted average and the post-WTO binded tariffs for 2-digit HS lines (unfortunately, the table is not publicly available). The first step was to find the reduction coefficient for each 2-digit HS group, i.e to estimate by how much the binded average weighted tariff is smaller than the actual 2002 weighted average tariff. Thus, we obtained 97 coefficients for all the 2-digit HS groups (some of them were set to be equal to 1 if post-WTO binded tariff is bigger than the current value). The 2004 weighted average tariffs calculated by CASE Ukraine were multiplied by these coefficients respectively. The new HS tariffs were later again transformed into GTAP lines;

- Since the ME data are for 2002 and the trade structure changed somewhat in 2004, we recognized that such coefficient were not absolutely correct. So we made a step by step analysis of GTAP tariffs to make sure that the obtained values are to our best knowledge consistent with the Ukraine's schedule of commitments. Based on fragmentary information on Ukraine 's schedule from different sources we corrected some obtained GTAP tariffs to get reasonable post-WTO values.

The last thing was to rescale the obtained coefficients. The actual level of tariff protection in Ukraine is somewhat lower than it should be given the structure of the tariffs. According to our estimates in 2004 the budget got only 59% of the import duty revenues that should have been paid. We assumed that the tariff protection level will be increasing gradually (the situation that is currently observed: import duty revenues are growing faster than the nominal imports). We assumed that the post-WTO tariffs protection level will be 75%. The GTAP tariffs were multiplied by the scale coefficient of 0.75.

6 Annex VI Tables overview Modelling results

Table 6.1 Summary of macroeconomic changes

Variable	Ukraine	Russia	EU-27	ROW
Scenario: WTO Accession				
Welfare (% change)	0.654	0.018	0.006	0.006
Income (return factors and taxes) (bn US$)	0.058	0.364	8.526	24.847
Skilled Wage (% change)	0.814	-0.004	0.001	-0.001
Unskilled Wage (% change)	0.839	-0.038	-0.001	-0.001
Scenario 1: Extended FTA (short run) – including WTO				
Welfare (% change)	2.261	0.030	0.007	-0.001
Income (return factors and taxes) (bn US$)	0.060	0.364	8.526	24.846
Skilled Wage (% change)	2.496	0.049	0.009	-0.001
Unskilled Wage (% change)	3.066	-0.028	0.009	-0.002
Scenario 1: Extended FTA (long run) – including WTO				
Welfare (% change)	5.285	0.071	0.011	0.003
Income (return factors and taxes) (bn US$)	0.061	0.364	8.527	24.847
Skilled Wage (% change)	4.355	0.059	0.009	-0.003
Unskilled Wage (% change)	4.970	-0.029	0.008	-0.003
Scenario 2: Limited FTA (short run) – including WTO				
Welfare (% change)	1.216	0.004	0.007	0.002
Income (return factors and taxes) (bn US$)	0.059	0.364	8.526	24.846
Skilled Wage (% change)	1.547	-0.003	0.006	-0.001
Unskilled Wage (% change)	1.789	-0.053	0.006	-0.001
Scenario 2: Limited FTA (long run) – including WTO				
Welfare (% change)	3.295	0.032	0.009	0.004
Income (return factors and taxes) (bn US$)	0.060	0.374	8.527	24.847
Skilled Wage (% change)	2.817	0.002	0.006	-0.002
Unskilled Wage (% change)	3.093	-0.054	0.005	-0.002

* All values are in billion US$ unless specified to be in %

Table 6.2 Price changes per sector (% change)

Table: Changes in Prices																				
	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Agriculture, Fisheries, Forestry	-0.7	0.2	0.2	0.2	-0.2	0.1			0.2	0.3	0.2	0.2	-0.4	0.1	0.1	0.1	-0.1	0.2	0.2	0.2
Coal, Oil, Gas	0.3	0.2	0.2	0.2	0.4	0.1	0.1		0.7	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.5	0.2	0.2	0.2
Minerals NEC	0.3	0.3	0.3	0.2	-0.5	0.1	0.1		-0.5	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2
Bovine cattle, sheep and goats, horse meat products	0.3	0.2	0.2	0.2	-0.1	0.1			0.1	0.3	0.2	0.2	0.4	0.1	0.1	0.1	0.5	0.2	0.2	0.2
Vegetable oils and fats	-0.5	0.2	0.2	0.2	-0.8	0.1			-0.8	0.3	0.2	0.2	-0.4	0.1	0.1	0.1	-0.4	0.2	0.2	0.2
Dairy products	-0.6	0.2	0.2	0.2	-1.5	0.1			-1.4	0.3	0.2	0.2	-0.7	0.1	0.1	0.1	-0.6	0.2	0.2	0.2
Processed rice, Sugar	-1.9	0.2	0.2	0.2	-3.8	0.1			-3.7	0.3	0.2	0.2	-2.1	0.1	0.1	0.1	-2	0.2	0.2	0.2
Food products nec	-0.5	0.2	0.2	0.2	-1.3	0.1			-1.2	0.3	0.2	0.2	-0.5	0.1	0.1	0.1	-0.5	0.2	0.2	0.2
Beverages and tobacco	-1.5	0.2	0.2	0.2	-2.4	0.1			-2.3	0.3	0.2	0.2	-1.6	0.1	0.1	0.1	-1.6	0.2	0.2	0.2
Textiles	-0.2	0.2	0.2	0.2	-3.2	0.1			-3.1	0.2	0.2	0.2	-1.2	0.1	0.1	0.1	-1.2	0.2	0.2	0.2
Wearing apparel	0.1	0.2	0.2	0.2	-3.8		0.1		-3.7	0.2		0.2	-2.9	0.1		0.1	-2.8	0.2	0.1	0.2
Leather products	-3	0.2	0.2	0.2	-6.7	0.1			-6.7	0.2	0.2	0.2	-5.8	0.1	0.1	0.1	-5.8	0.2	0.2	0.2
Wood products, Paper products, publishing	-1.6	0.2	0.2	0.2	-3.3	0.1			-3.3	0.2	0.2	0.2	-2.1	0.1	0.1	0.1	-2	0.2	0.2	0.2
Petroleum, coal products	0.4	0.2	0.2	0.2	0.2	0.1			0.3	0.3	0.2	0.2	0.4	0.1	0.1	0.1	0.5	0.2	0.2	0.2
Chemical, rubber, plastic products	-0.4	0.2	0.2	0.2	-1.7	0.1			-1.6	0.3	0.2	0.2	-1.2	0.1	0.1	0.1	-1.1	0.2	0.2	0.2
Mineral products nec	0.1	0.2	0.2	0.2	-1.6	0.1			-1.4	0.3	0.2	0.2	-0.9	0.1	0.1	0.1	-0.8	0.2	0.2	0.2
Ferrous metals, Metals nec	0.1	0.2	0.2	0.2	-1.1	0.1			-1	0.3	0.2	0.2	-0.2	0.1	0.1	0.1	-0.1	0.2	0.2	0.2
Metal products	-0.1	0.2	0.2	0.2	-2.1	0.1			-2	0.3	0.2	0.2	-0.9	0.1	0.1	0.1	-0.8	0.2	0.2	0.2
Motor vehicles and parts	-0.1	0.2	0.2	0.3	-2				-1.9	0.2	0.2	0.2	-1.4	0.1	0.1	0.1	-1.3	0.2	0.2	0.2
Transport equipment	-10.6	0.1	0.2	0.2	-10.9				-10.8	0.1	0.2	0.2	-10.9		0.1	0.1	-10.8	0.1	0.2	0.2

Table: Changes in Prices																				
	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Electronic equipment; Machinery equipment	-0.7	0.2	0.2	0.2	-2				-1.9	0.2	0.2	0.2	-1.7	0.1	0.1	0.1	-1.6	0.2	0.2	0.2
Manufactures nec	-0.6	0.2	0.2	0.2	-2	0.1			-1.8	0.3	0.2	0.2	-1.7	0.1	0.1	0.1	-1.6	0.2	0.2	0.2
Electricity	0.7	0.2	0.2	0.2	1.5	0.1			1.6	0.3	0.2	0.2	1	0.1	0.1	0.1	-1.1	0.2	0.2	0.2
Gas, Water	0.5	0.2	0.2	0.2	1.2	0.1			1.7	0.3	0.2	0.2	0.8	0.1	0.1	0.1	-1.2	0.2	0.2	0.2
Construction	0.4	0.2	0.2	0.2	0.6	0.1			0.6	0.3	0.2	0.2	0.5	0.1	0.1	0.1	-0.5	0.2	0.2	0.2
Trade	0.8	0.2	0.2	0.2	1.5	0.1			0.6	0.3	0.2	0.2	1.2	0.1	0.1	0.1	-0.5	0.2	0.2	0.2
Transport nec, Water & Air transport	2.5	0.2	0.2	0.2	1.5	0.1	0.1		1.1	0.3	0.2	0.2	2.2	0.1	0.1	0.1	-1.9	0.2	0.2	0.2
Communication	0.8	0.2	0.2	0.2	1.9	0.1			0.8	0.3	0.2	0.2	1.3	0.1	0.1	0.1	-0.5	0.2	0.2	0.2
Financial services nec, Insurance		0.2	0.2	0.2	-2.4	0.1			-2.7	0.3	0.2	0.2	-0.7	0.1	0.1	0.1	-1	0.2	0.2	0.2
Business services nec, Renting	0.7	0.2	0.2	0.2	1.6	0.1			1	0.3	0.2	0.2	1.1	0.1	0.1	0.1	-0.7	0.2	0.2	0.2
Recreational, entertainment, cultural and sporting activities, Social activities	0.8	0.2	0.2	0.2	2	0.1			1.8	0.3	0.2	0.2	1.3	0.1	0.1	0.1	-1.2	0.2	0.2	0.2
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal	0.6	0.2	0.2	0.2	1.8	0.1			2.3	0.3	0.2	0.2	1.1	0.1	0.1	0.1	1.5	0.2	0.2	0.2
Aggregate investment	-0.9	0.2	0.2	0.2	-1.3	0.1			-1.2	0.3	0.2	0.2	-1.2	0.1	0.1	0.1	-1.2	0.2	0.2	0.2

Table 6.3 Percentage changes in output per sector (% change)

Table: Changes in production																				
	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Agriculture, Fisheries, Forestry	-3.3	-0.1			-2.2	-0.2			-0.5	-0.2		0.1	-2.5	-0.1	-0.1		-1.4	-0.1		0.1
Coal, Oil, Gas	-1.6	0.1			-3.7	0.1		0.1	-3.2	0.2		0.1	-2.7	0.2			-2.4	0.2		0.1
Minerals NEC	-2.2	0.3	0.1		-5.8	0.8	0.1	0.1	-3.6	0.7	0.1	0.1	-3.7	0.4	0.1	0.1	-2.2	0.3	0.1	0.1
Bovine cattle, sheep and goats, horse meat products	7.4	0.1			9.6				-12	-0.1			8.3				10			
Vegetable oils and fats	3.6				9.1	-0.2	-0.1		-11.8	-0.2	-0.1		5.6				7.5			
Dairy products	1.7	-0.6			2.5	-1.6	0.1		5.1	-1.6	0.1		2.1	-0.8			4	-0.7	0.1	
Processed rice, Sugar	-3.3	-0.1			-8	-0.3	0.4		-5.8	-0.3	0.4		-4.1	-0.1			-2.4	-0.1		
Food products nec	1.6				5.4	-0.2			8.1	-0.2			2.7				-4.6			
Beverages and tobacco	-2.4	-1.7	0.1	0.1	-2.6	-2.2	0.1		-0.2	-2.2	0.2		-2.4	-1.7	0.1		-0.7	-1.7	0.1	0.1
Textiles	2	0.3			43.7			-0.1	50.4			-0.1	23.4	0.1			27.3			
Wearing apparel	22.6	0.2	-0.1		185.1	-1.2	-0.2	-0.3	197.9	-1.1	-0.2	-0.3	87.5	-0.9	-0.1	-0.1	93.4	-0.9		-0.1
Leather products	-0.5	-0.2		0.1	23.9	-0.3	0.2		29.6	-0.3	0.3		11.1	-0.3	0.2		14.6	-0.3	-0.1	
Wood products, Paper products, publishing	-0.2	-0.5	0.1		2.6	-0.8			5.4	-0.9	0.1		1.2	-0.5			3.1	-0.6	0.2	
Petroleum, coal products	0.9				4.5		-0.1		6.7		-0.1		3.1		-0.1		4.6		0.1	
Chemical, rubber, plastic products	0.2	-0.2			8.6	0.5			10.5	0.5			4.5	-0.2			5.8	-0.3	-0.1	
Mineral products nec	1.2	0.1			4	-0.1			5.6	-0.1			1	-0.1			2.2	-0.1		
Ferrous metals, Metals nec	-0.6	0.2	0.1		2	0.1			3.3	-0.1			-0.2	0.2			0.7	0.1		
Metal products	1.3	0.1			7.1	-0.3			8.2	-0.3			3.3	-0.1			4.1	-0.1	0.1	
Motor vehicles and parts	8.2				12.9	0.2			16.1	0.2			9.7	-0.1			11.8	-0.1		
Transport equipment	-11.9	3	0.1		-8.6	2.8	0.1		-6.6	3.2	0.1		-10.4	2.8	0.1		-9	-3.1		

Table: Changes in production																				
	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Electronic equipment; Machinery equipment	7.1	-0.3			17.5	0.6			20.2	0.6			11.5	-0.5			13.3	-0.5	0.1	
Manufactures nec	1.9				7.7	-0.3			9.3	-0.4			2.9	-0.1			4.1	-0.2		
Electricity	-0.1				0.9				3.1				0.1	-0.1			1.7	-0.1		
Gas, Water	0.3				1.2				3.7				0.6				2.3	-0.1		
Construction	1.4				3.2				6.2	0.1			2.2				4.3			
Trade	0.1	0.1			1.3	0.1			4.9	0.1			0.4	0.1			2.9	0.1		
Transport nec, Water & Air transport	3.2	-0.3			-4.6	-0.2	0.1		-0.3	-0.3			-0.2	-0.2			2.7	-0.2		
Communication	-0.7	0.1			-2.3	0.1			1.9	0.1			-1.5	0.1			1.4	0.1		
Financial services nec, Insurance	-3.7	0.5			-18.3	2.3	0.1		-15.1	2.2	0.1		-9	1.1			-6.7	1.1		
Business services nec, Renting	-0.1	0.1			-1				2.7	-0.1			-0.6	0.1			1.9	0.1		
Recreational, entertainment, cultural and sporting activities, Social activities	-0.1	0.1			0.1				3.2				-0.1				2			
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal					0.1				2.4				-0.1				1.5			
Aggregate investment	1.6				3.6				6.6	0.1			2.5				4.5			

Table 6.4 Changes in absolute value of output per sector (mln US$)

Table: Changes in output value		WTO Accession	Scenario 1 - short run				Scenario 1 - long run			
	Production (mln US$)		Change in output (%)	Res %	FTA effect incl WTO (mln US$)	FTA effect on top of WTO (mln US$)	Change in output (%)	Res %	FTA effect incl WTO (mln US$)	FTA effect on top of WTO (mln US$)
Agriculture, Fisheries, Forestry	16.19	-3.3	-2.2	1.1	-0.356	0.178	-0.5	2.8	-0.081	0.453
Coal, Oil, Gas	3.48	-1.6	-3.7	-2.1	-0.129	-0.073	-3.2	-1.6	-0.111	-0.056
Minerals NEC	2.49	-2.2	-5.8	-3.6	-0.144	-0.090	-3.6	-1.4	-0.090	-0.035
Bovine cattle, sheep and goats, horse meat products	1.66	7.4	9.6	2.2	0.160	0.037	-12	-19.4	-0.199	-0.322
Vegetable oils and fats	0.99	3.6	9.1	5.5	0.090	0.055	-11.8	-15.4	-0.117	-0.153
Dairy products	2.33	1.7	2.5	0.8	0.058	0.019	5.1	3.4	0.119	0.079
Processed rice, Sugar	1.13	-3.3	-8	-4.7	-0.090	-0.053	-5.8	-2.5	-0.065	-0.028
Food products nec	3.84	1.6	5.4	3.8	0.207	0.146	8.1	6.5	0.311	0.250
Beverages and tobacco	3.71	-2.4	-2.6	-0.2	-0.097	-0.007	-0.2	2.2	-0.007	0.082
Textiles	0.51	2	43.7	41.7	0.224	0.213	50.4	48.4	0.258	0.248
Wearing apparel	0.66	22.6	185.1	162.5	1.221	1.072	197.9	175.3	1.306	1.157
Leather products	0.43	-0.5	23.9	24.4	0.103	0.105	29.6	30.1	0.127	0.129
Wood products, Paper products, publishing	2.81	-0.2	2.6	2.8	0.073	0.079	5.4	5.6	0.152	0.157
Petroleum, coal products	7.74	0.9	4.5	3.6	0.348	0.279	6.7	5.8	0.519	0.449
Chemical, rubber, plastic products	5.18	0.2	8.6	8.4	0.445	0.435	10.5	10.3	0.544	0.533
Mineral products nec	2.01	1.2	4	2.8	0.080	0.056	5.6	4.4	0.112	0.088
Ferrous metals, Metals NEC	13.79	-0.6	2	2.6	0.276	0.359	3.3	3.9	0.455	0.538

Table: Changes in output value		WTO Accession	Scenario 1 - short run				Scenario 1 - long run			
	Production (mln US$)		Change in output (%)	Res %	FTA effect incl WTO (mln US$)	FTA effect on top of WTO (mln US$)	Change in output (%)	Res %	FTA effect incl WTO (mln US$)	FTA effect on top of WTO (mln US$)
Metal products	3.48	1.3	7.1	5.8	0.247	0.202	8.2	6.9	0.286	0.240
Motor vehicles and parts	1.73	8.2	12.9	4.7	0.223	0.081	16.1	7.9	0.278	0.136
Transport equipment	2.20	-11.9	-8.6	3.3	-0.189	0.073	-6.6	5.3	-0.145	0.117
Electronic equipment; Machinery and Equipment	5.72	7.1	17.5	10.4	1.000	0.594	20.2	13.1	1.155	0.749
Manufactures nec	1.33	1.9	7.7	5.8	0.103	0.077	9.3	7.4	0.124	0.099
Electricity	4.04	-0.1	0.9	1	0.036	0.040	3.1	3.2	0.125	0.129
Gas, Water	1.97	0.3	1.2	0.9	0.024	0.018	3.7	3.4	0.073	0.067
Construction	7.08	1.4	3.2	1.8	0.227	0.127	6.2	4.8	0.439	0.340
Trade	14.46	0.1	1.3	1.2	0.188	0.174	4.9	4.8	0.709	0.694
Transport nec, Water transport, Air transport	10.53	3.2	-4.6	-7.8	-0.484	-0.821	-0.3	-3.5	-0.032	-0.368
Communication	3.62	-0.7	-2.3	-1.6	-0.083	-0.058	1.9	2.6	0.069	0.094
Financial services nec, Insurance	5.08	-3.7	-18.3	-14.6	-0.929	-0.741	-15.1	-11.4	-0.767	-0.579
Business services nec, Renting	7.30	-0.1	-1	-0.9	-0.073	-0.066	2.7	2.8	0.197	0.205
Recreational, entertainment, cultural and sporting activities, Social activities	1.66	-0.1	0.1	0.2	0.002	0.003	3.2	3.3	0.053	0.055
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal	12.22		0.1	0.1	0.012	0.012	2.4	2.4	0.293	0.293

Table 6.5 Changes in value of exports per sector (% change)

Table: Changes in values of exports																				
	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Agriculture, Fisheries, Forestry	10	-1		1	21	-2		1	20	-2	1	2	14	-1		1	13	-1		1
Coal, Oil, Gas	-6	1			-11	1			-12	1	1	1	-9	1			-9	1		
Minerals NEC	-4			1	-7	3		1	-5	3		2	-6	1	1	1	-4	1	1	1
Bovine cattle, sheep and goats, horse meat products	21	1	1	-2	33	-1	1	-2	34	-1	1	-2	25		1	-2	26		1	-2
Vegetable oils and fats	17	-1			41	-2		-1	43	-2		-1	25	-1		-1	26	-1		-1
Dairy products	9	-12	1	-1	20	-33	2	-4	21	-32	2	-4	12	-17	1	-2	13	-16	1	-2
Processed rice, Sugar	8	-18	-1	4	9	-23	11	1	10	-23	11	2	7	-18	1	3	7	-18	1	4
Food products nec	7				28	-1	1	-1	29	-1	1		13				13			
Beverages and tobacco	6	-21	1	3	12	-29	2	1	13	-29	2	1	7	-23	1	2	8	-23	1	3
Textiles		1			53	1	1		59	2	1		2	1			30	1	1	
Wearing apparel	35	1			273	-4	2	-3	288	-4	3	-3	136	-4	1	-2	143	-3	2	-2
Leather products	5	-6			34	-5	1		39	-4	1		21	-8	1		25	-8	1	
Wood products, Paper products, publishing	13	-2		1	31	-2			34	-2	1		19	-2			21	-2	1	
Petroleum, coal products	3		1		20			-2	22			-2	12			-1	13			-1
Chemical, rubber, plastic products	2	-1			14	1			16	1			9	-1			10	-1		
Mineral products nec	9				53	-4	1	-1	53	-4	1	-1	28	-4	1	-1	28	-4	1	
Ferrous metals, Metals nec			1		3		1	-1	4		1				1		1		1	
Metal products	2				11	-2	1	-1	12	-2	1	-1	6	-1			6	-1	1	
Motor vehicles and parts	9				18	7			20	8			13	-3			15	-2		
Transport equipment	7	3			11	2			13	3			9	2			10	3		

Table: Changes in values of exports																				
	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Electronic equipment; Machinery equipment	11	-1			27	2			30	2			19	-2			20	-2		
Manufactures nec	14				47	-2			47	-2			30	-1			30	-1		
Electricity	-3				-12	-1			-11	-1			-8				-7			
Gas, Water						-1				-1							-2	2		
Construction	-1	1			-5	1			-4	2			-3	1			-3	3		
Trade	-5	2			-12	5			-3	3			-9	4			-6	-1		
Transport nec, Water & Air transport	-5	-2			-14	1			-9			1	-10	-1			-4	1		
Communication	-5	1			-17			1	-7				-11	1			-4	17	1	1
Financial services nec, Insurance	-4	8			-10	33	1	1	-5	33	1	1	-8	17		1	-4	1		
Business services nec, Renting	-4	1			-14				-7				-9	1			-8			
Recreational, entertainment, cultural and sporting activities, Social activities	-5	1			-16				-13	-1			-10				-11	1		
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal	-3	1			-14				-17				-9	1						

Table 6.6 Changes in value of imports per sector (% change)

Table: Changes in Values of Imports	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Agriculture, Fisheries, Forestry	26		1		42		2		45		2		31		1		33		2	
Coal, Oil, Gas	12		6		48				75		4		29		2		48		5	
Minerals NEC	1		1		11				12		1		4				4		1	
Bovine cattle, sheep and goats, horse meat products	-7	10	1		1	23	1		2	51	1		-5	-1	1		-4	17	1	
Vegetable oils and fats	2	3	1		7	5	2		8	11	2		4		1		5	4	2	
Dairy products	3	2		2	15	3	1		16	4	1	1	6	1		1	7	2		2
Processed rice, Sugar	10	5	1	1	36	8	2		38	28	2	1	14	-3	2		15	11	2	1
Food products nec	3				13		1		14	1	1		5				6		1	
Beverages and tobacco	13	3		1	23	3			25	4			16	1			17	2		1
Textiles	4	1			46				51	1	1		21				24		1	
Wearing apparel	5	1	1		61	1	1		68	2	2		30		1		35	1	1	
Leather products	8	1			46	2			51	4	1		25				28	1	1	
Wood products, Paper products, publishing	8				17				21	1			11				13			
Petroleum, coal products			1		5		3		6		3		1		2		2		2	
Chemical, rubber, plastic products	1				7				10	1			4				6			
Mineral products nec	6				35				40	1			23				26			
Ferrous metals, Metals nec	1				2				2		1		1				1		1	
Metal products					3	1	1		4	1	1		2		1		2		1	
Motor vehicles and parts		3		1	4	5			8	7			2	3			5	4		1
Transport equipment	9	1			12	1			15	1			10	1			12	1		

Table: Changes in Values of Imports																				
	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Electronic equipment; Machinery equipment	2	2			6	2			10	3			4	1			6	2		
Manufactures nec	7				22				25	1			18				20			
Electricity						1				1										
Gas, Water			1			3				5	1							1	1	
Construction	7				17	1			24	2			12				17	1		
Trade	3	1			8	4			6	12			5	-2			4	3		
Transport nec, Water & Air transport	-12				4	-1			5				-6	-1			-6			
Communication	7				26				23	1			15				13			
Financial services nec, Insurance	N	1			N	3			N	4			N	1			N	2		
Business services nec, Renting	6				19	1			18	2			12				11	1		
Recreational, entertainment, cultural and sporting activities, Social activities	68				239	1			276	3			143				169	1		
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal	6				24	1			38	1			14				23			

Table 6.7 Changes in employment of high-skilled and low-skilled persons per sector (% change)

Table: Changes in Employment (%)																					
	Sk/Un	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
		UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Agriculture, Fisheries, Forestry	SK	-3.13	-0.06	-0.04	0.05	-2.22	-0.21	-0.05	0.05	-0.55	-0.22	-0.03	0.06	-2.59	-0.08	-0.06	0.04	-1.42	-0.08	-0.05	0.05
Coal, Oil, Gas	SK	-1.63	0.12	0.00	0.01	-3.77	0.14	-0.02	0.07	-3.37	0.21	0.00	0.11	-2.74	0.17	-0.04	0.03	-2.42	0.22	-0.02	0.05
Minerals NEC	SK	-2.25	0.29	0.09	0.04	-5.89	0.82	0.09	0.09	-3.74	0.66	0.07	0.10	-3.76	0.43	0.12	0.05	-2.22	0.32	0.10	0.05
Bovine cattle, sheep and goats, horse meat products	SK	7.50	0.05	-0.01	-0.02	9.84	-0.05	0.01	-0.03	12.50	-0.06	0.01	-0.03	8.46	0.05	-0.01	-0.03	10.27	0.04	-0.01	-0.03
Vegetable oils and fats	SK	3.67	0.01	-0.01	0.02	9.29	-0.16	-0.09	-0.03	12.32	-0.18	-0.07	0.00	5.70	0.00	-0.05	-0.01	7.70	-0.01	-0.03	0.01
Dairy products	SK	1.75	-0.60	0.04	0.01	2.57	-1.63	0.12	-0.02	5.34	-1.59	0.14	-0.01	2.17	-0.79	0.05	-0.01	4.07	-0.75	0.06	0.00
Processed rice, Sugar	SK	-3.29	-0.07	-0.03	0.05	-8.23	-0.31	0.41	0.01	-6.02	-0.32	0.44	0.03	-4.16	-0.12	0.01	0.03	-2.52	-0.12	0.03	0.05
Food products nec	SK	1.64	-0.01	0.02	0.02	5.56	-0.19	0.00	-0.01	8.42	-0.20	0.02	0.01	2.78	-0.03	-0.01	0.01	4.69	-0.03	0.01	0.02
Beverages and tobacco	SK	-2.43	-1.68	0.06	0.06	-2.70	-2.23	0.15	0.02	-0.21	-2.23	0.17	0.04	-2.46	-1.72	0.06	0.04	-0.74	-1.71	0.08	0.05
Textiles	SK	2.01	0.26	0.02	0.01	44.79	0.00	0.02	-0.10	52.64	-0.04	0.04	-0.10	23.72	0.08	0.01	-0.05	28.11	0.05	0.02	-0.04
Wearing apparel	SK	22.74	0.24	-0.05	-0.03	189.69	-1.17	-0.23	-0.27	206.48	-1.12	-0.24	-0.28	88.81	-0.91	-0.08	-0.14	96.01	-0.87	-0.08	-0.14
Leather products	SK	-0.50	-0.18	-0.04	0.06	24.47	-0.27	0.29	-0.01	30.94	-0.28	0.31	-0.01	11.30	-0.33	0.16	0.00	15.06	-0.34	0.17	0.00
Wood products, Paper products, publishing	SK	-0.21	0.48	0.06	0.02	2.70	-0.81	0.03	-0.01	5.69	-0.86	0.05	0.02	1.20	-0.53	0.03	0.01	3.23	-0.56	0.05	0.02
Petroleum, coal products	SK	0.93	-0.01	-0.03	0.01	4.65	0.01	-0.14	0.00	7.03	0.01	-0.15	0.00	3.10	-0.04	-0.09	0.00	4.72	-0.03	-0.09	0.00
Chemical, rubber, plastic products	SK	0.17	-0.20	0.03	0.01	8.79	0.54	-0.02	-0.02	10.96	0.53	0.00	-0.01	4.55	-0.23	0.02	-0.01	5.95	-0.25	0.03	0.00
Mineral products nec	SK	1.24	0.08	0.02	0.01	4.07	-0.12	0.01	-0.02	5.83	-0.10	0.03	0.01	1.04	-0.08	0.03	-0.01	2.29	-0.06	0.04	0.00
Ferrous metals, Metals NEC	SK	-0.64	0.19	0.08	0.03	2.04	0.06	0.00	-0.03	3.41	-0.05	0.03	-0.01	-0.20	0.20	0.04	0.01	0.72	0.12	0.06	0.02
Metal products	SK	1.34	0.07	0.02	0.02	7.30	-0.30	-0.02	-0.02	8.57	-0.34	0.00	-0.01	3.38	-0.11	0.00	0.00	4.20	-0.14	0.02	0.01
Motor vehicles and parts	SK	8.27	-0.02	0.03	0.03	13.27	0.16	0.00	-0.01	16.70	0.22	0.03	0.02	9.89	-0.14	0.03	0.00	12.15	-0.11	0.05	0.02

Table: Changes in Employment (%)																				
	Sk/Un	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
		UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Transport equipment	SK	-12.05	3.01	0.09	0.02	-8.82	2.83	0.07	0.01	-6.85	3.21	0.10	0.03	-10.57	2.85	0.07	0.01	-9.28	3.11	0.09	0.02
Electronic equipment; Machinery and Equipment	SK	7.17	-0.30	0.01	0.00	17.96	0.58	-0.04	-0.02	21.06	0.62	-0.02	-0.01	11.72	-0.55	-0.01	-0.01	13.69	-0.54	0.00	-0.01
Manufactures nec	SK	1.91	-0.01	0.02	0.00	7.85	-0.33	-0.01	-0.01	9.75	-0.36	0.00	0.00	2.91	-0.14	0.01	-0.01	4.17	-0.16	0.02	0.00
Electricity	SK	-0.06	-0.03	0.01	0.01	0.89	0.02	0.00	0.00	3.22	-0.01	0.00	0.00	0.12	-0.06	0.00	0.00	1.71	-0.08	0.01	0.01
Gas, Water	SK	0.30	-0.03	0.00	0.00	1.25	0.05	0.00	0.00	3.89	0.02	0.00	0.01	0.57	-0.03	0.00	0.00	2.35	-0.05	0.00	0.00
Construction	SK	0.46	0.03	0.00	0.00	3.32	0.05	0.01	0.00	6.48	0.08	0.01	0.00	2.25	0.02	0.00	0.00	4.37	0.05	0.00	0.00
Trade	SK	0.15	0.07	0.00	0.00	1.31	0.06	0.00	0.00	5.16	0.06	0.00	0.00	0.44	0.07	0.00	0.00	3.03	0.07	0.00	0.00
Transport nec, Water transport, Air transport	SK	3.24	-0.30	-0.02	0.00	-4.69	-0.20	-0.06	0.03	-0.35	-0.32	0.05	0.03	-0.24	-0.16	0.01	0.01	2.81	-0.24	0.01	0.01
Communication	SK	-0.69	0.09	0.01	0.00	-2.34	0.09	0.01	0.01	1.96	0.06	0.01	0.01	-1.49	0.12	0.01	0.01	1.46	0.09	0.00	0.01
Financial services nec, Insurance	SK	-3.77	0.51	0.02	0.01	-18.76	2.27	0.06	0.02	-15.78	2.25	0.06	0.02	-9.17	0.15	0.03	0.01	-6.93	1.13	0.03	0.01
Business services nec, Renting	SK	-0.14	0.09	0.00	0.00	-1.02	-0.01	0.00	0.01	2.85	-0.08	0.00	0.01	-0.64	0.11	0.00	0.00	2.00	0.06	0.00	0.00
Recreational, entertainment, cultural and sporting activities, Social activities	SK	-0.07	0.06	0.01	0.00	0.10	-0.01	0.00	0.00	3.31	-0.01	0.00	0.00	-0.14	0.05	0.00	0.00	2.04	0.05	0.00	0.00
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal	SK	-0.05	0.03	0.00	0.00	0.07	0.01	0.00	0.00	2.51	0.03	0.00	0.00	-0.14	0.02	0.00	0.00	1.53	0.04	0.00	0.00
Agriculture, Fisheries, Forestry	UNSK	-3.31	-0.06	-0.04	0.05	-2.23	-0.21	-0.05	0.05	-0.55	-0.22	-0.03	0.06	-2.59	-0.08	-0.06	0.04	-1.42	-0.09	-0.05	0.05
Coal, Oil, Gas	UNSK	-1.64	0.12	0.00	0.01	-3.79	0.14	-0.02	0.07	-3.39	0.21	0.00	0.11	-2.75	0.17	-0.04	0.03	-2.42	0.22	-0.02	0.05
Minerals NEC	UNSK	-2.26	0.29	0.09	0.04	-5.93	0.82	0.09	0.09	-3.76	0.66	0.07	0.10	-3.77	0.43	0.12	0.05	-2.23	0.32	0.10	0.05
Bovine cattle, sheep and goats, horse meat products	UNSK	-7.50	0.05	-0.01	-0.02	9.89	-0.05	0.01	-0.03	12.58	-0.06	0.01	-0.03	8.48	0.05	-0.01	-0.03	10.29	0.04	-0.01	-0.03

Table: Changes in Employment (%)																					
	Sk/Un	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
		UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Vegetable oils and fats	UNSK	-3.68	0.01	-0.01	0.02	9.35	-0.16	-0.09	-0.03	12.40	-0.18	-0.07	0.00	5.71	0.00	-0.05	-0.01	7.72	-0.01	-0.03	0.01
Dairy products	UNSK	-1.75	-0.60	0.04	0.01	2.58	-1.63	-0.12	-0.02	5.37	-1.59	0.14	-0.01	2.17	-0.79	0.05	-0.01	4.08	-0.75	0.06	0.00
Processed rice, Sugar	UNSK	-3.29	-0.07	-0.03	0.05	-8.27	-0.31	0.41	-0.01	-6.06	-0.32	0.44	0.03	-4.17	-0.12	0.01	0.03	-2.52	-0.12	0.03	0.05
Food products nec	UNSK	-1.64	-0.01	0.02	0.02	5.60	-0.19	0.00	-0.01	8.47	-0.19	0.02	0.01	2.78	-0.03	-0.01	0.01	4.70	-0.03	0.01	0.02
Beverages and tobacco	UNSK	-2.43	-1.68	0.06	0.06	-2.72	-2.23	0.15	-0.02	-0.21	-2.23	0.17	0.04	-2.47	-1.72	0.06	0.04	-0.74	-1.71	0.08	0.05
Textiles	UNSK	2.01	0.26	0.02	0.01	41.04	0.00	0.02	-0.10	52.95	-0.04	0.04	-0.10	23.78	0.07	0.01	-0.05	28.18	0.05	0.02	-0.04
Wearing apparel	UNSK	22.75	0.24	-0.05	-0.03	190.74	-1.17	0.23	-0.27	207.69	-1.12	-0.24	-0.28	89.02	-0.91	-0.07	-0.14	96.27	-0.87	-0.08	-0.14
Leather products	UNSK	-0.50	-0.18	-0.04	0.06	24.61	-0.27	0.29	-0.01	31.12	-0.28	0.31	-0.01	11.32	-0.33	0.16	0.00	15.10	-0.34	0.17	0.00
Wood products, Paper products, publishing	UNSK	-0.21	-0.48	0.06	0.02	2.72	-0.91	0.03	-0.01	5.72	-0.86	0.05	0.02	1.20	-0.53	0.03	0.01	3.23	-0.56	0.05	0.02
Petroleum, coal products	UNSK	0.93	-0.01	-0.03	0.01	4.68	0.01	-0.14	0.00	7.07	0.01	-0.15	0.00	3.11	-0.04	-0.09	0.00	4.73	-0.03	-0.09	0.00
Chemical, rubber, plastic products	UNSK	0.17	-0.20	0.03	0.01	8.84	0.54	-0.02	-0.02	11.03	-0.53	0.00	-0.01	4.56	-0.23	0.02	-0.01	5.97	-0.25	0.03	0.00
Mineral products nec	UNSK	1.24	0.08	0.02	0.01	4.09	-0.12	0.01	-0.02	5.86	-0.10	0.03	-0.01	1.04	-0.08	0.03	-0.01	2.30	-0.06	0.04	0.00
Ferrous metals, Metals NEC	UNSK	-0.64	0.19	0.08	0.03	2.05	0.06	0.00	-0.03	3.43	-0.05	0.03	-0.01	-0.20	0.20	0.04	0.01	0.72	0.12	0.06	0.02
Metal products	UNSK	1.34	0.07	0.02	0.02	7.34	-0.30	-0.02	-0.02	8.62	-0.34	0.00	-0.01	3.39	-0.11	0.00	0.00	4.21	-0.14	0.02	0.01
Motor vehicles and parts	UNSK	8.27	-0.02	0.03	0.03	13.34	0.16	0.00	-0.01	16.80	0.22	0.03	0.02	9.91	-0.14	0.03	0.00	12.18	-0.11	0.05	0.02
Transport equipment	UNSK	-12.05	3.01	0.08	0.02	-8.87	2.83	0.07	0.01	-6.89	3.20	0.10	0.03	-10.59	2.85	0.07	0.01	-9.30	3.11	0.09	0.02
Electronic equipment; Machinery and Equipment	UNSK	7.17	-0.30	0.01	0.00	18.06	0.58	-0.04	-0.02	21.19	0.62	-0.02	-0.01	11.74	-0.55	-0.01	-0.01	13.73	-0.54	0.00	-0.01
Manufactures nec	UNSK	1.91	-0.01	0.02	0.00	7.90	-0.33	-0.01	-0.01	9.81	-0.36	0.00	0.00	2.92	-0.14	0.01	-0.01	4.18	-0.16	0.02	0.00
Electricity	UNSK	-0.06	-0.03	0.01	0.01	0.89	0.02	0.00	0.00	3.24	-0.01	0.00	0.00	0.12	-0.06	0.00	0.00	1.71	-0.08	0.01	0.01
Gas, Water	UNSK	0.30	-0.03	0.00	0.00	1.26	0.05	0.00	0.00	3.91	0.02	0.00	0.01	0.57	-0.03	0.00	0.00	2.36	-0.05	0.00	0.00

Table: Changes in Employment (%)																					
	Sk/Un	WTO Accession				Scenario 1 - short run				Scenario 1 - long run				Scenario 2 - short run				Scenario 2 - long run			
		UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW	UKR	RUS	EU27	ROW
Construction	UNSK	1.46	0.03	0.00	0.00	3.34	0.05	-0.01	0.00	6.51	0.08	0.01	0.00	2.26	0.02	0.00	0.00	4.38	0.05	0.00	0.00
Trade	UNSK	0.15	0.07	0.00	0.00	1.32	0.06	0.00	0.00	5.19	0.06	0.00	0.00	0.44	0.07	0.00	0.00	3.04	0.07	0.00	0.00
Transport nec, Water transport, Air transport	UNSK	3.24	-0.30	-0.02	0.00	-4.72	-0.20	0.06	0.03	-0.35	-0.15	0.05	0.03	-0.24	-0.16	0.01	0.01	2.82	-0.24	0.01	0.01
Communication	UNSK	-0.69	0.09	0.01	0.00	-2.36	0.09	0.01	0.01	1.97	0.06	0.01	0.01	-1.49	0.12	0.01	0.01	1.46	0.09	0.00	0.01
Financial services nec, Insurance	UNSK	-3.78	0.51	0.02	0.01	-18.87	2.27	0.06	0.02	-15.88	2.25	0.06	0.02	-9.19	1.15	0.03	0.01	-6.95	1.13	0.03	0.01
Business services nec, Renting	UNSK	-0.14	0.09	0.00	0.00	-1.02	-0.01	0.00	0.01	2.87	-0.08	0.00	0.01	-0.64	0.11	0.00	0.00	2.00	0.06	0.00	0.00
Recreational, entertainment, cultural and sporting activities, Social activities	UNSK	-0.07	0.06	0.01	0.00	0.10	-0.01	0.00	0.00	3.33	-0.01	0.00	0.00	-0.14	0.05	0.00	0.00	2.04	0.05	0.00	0.00
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal	UNSK	-0.05	0.03	0.00	0.00	0.07	0.01	0.00	0.00	2.53	0.03	0.00	0.00	-0.14	0.02	0.00	0.00	1.53	0.04	0.00	0.00

Table 6.8 Changes in absolute numbers of employment of high-skilled and low-skilled persons per sector

Table: Employment effects (persons)			WTO Accession		Scenario 1: Extended FTA short run				Scenario 1: Extended FTA long run			
	Skilled / Unskilled	People working in sector	UKR	Change Empl (%)	UKR	Res%	FTA effect incl WTO (nr people)	FTA effect on top of WTO (nr people)	UKR	Res%	FTA effect incl WTO (nr people)	FTA effect on top of WTO (nr people)
Agriculture, Fisheries, Forestry	SK	135921.75	-3.13	-4255.71	-2.22	0.91	-3017	1238	-0.55	2.59	-741	3515
Coal, Oil, Gas	SK	36217.70	-1.63	-591.80	-3.77	-2.14	-1366	-774	-3.37	-1.73	-1219	-627
Minerals NEC	SK	12720.56	-2.25	-286.72	-5.89	-3.64	-750	-463	-3.74	-1.48	-475	-189
Bovine cattle, sheep and goats, horse meat products	SK	8227.77	7.50	616.92	9.84	2.34	809	192	12.50	5.00	1029	412
Vegetable oils and fats	SK	4912.31	3.67	180.48	9.29	5.62	457	276	12.32	8.65	605	425
Dairy products	SK	11522.94	1.75	202.00	2.57	0.81	296	94	5.34	3.59	616	414
Processed rice, Sugar	SK	5588.93	-3.29	-184.10	-8.23	-4.93	-460	-276	-6.02	-2.73	-336	-152
Food products nec	SK	19026.73	1.64	312.04	5.56	3.92	1059	747	8.42	6.78	1602	1290
Beverages and tobacco	SK	20654.37	-2.43	-502.11	-2.70	-0.27	-558	-56	-0.21	2.22	-43	459
Textiles	SK	3257.20	2.01	65.53	44.79	42.78	1459	1393	52.64	50.63	1715	1649
Wearing apparel	SK	4199.62	22.74	955.16	189.69	166.94	7966	7011	206.48	183.73	8671	7716
Leather products	SK	2731.48	-0.50	-13.60	24.47	24.97	669	682	30.94	31.44	845	859
Wood products, Paper products, publishing	SK	21511.61	-0.21	-46.03	2.70	2.92	582	628	5.69	5.90	1223	1269
Petroleum, coal products	SK	16640.89	0.93	155.26	4.65	3.72	774	619	7.03	6.10	1170	1015
Chemical, rubber, plastic products	SK	32280.82	0.17	54.55	8.79	8.62	2837	2783	10.96	10.79	3539	3484
Mineral products nec	SK	21020.07	1.24	260.65	4.07	2.83	856	595	5.83	4.59	1225	965
Ferrous metals, Metals NEC	SK	84786.29	-0.64	-545.18	2.04	2.68	1728	2273	3.41	4.05	2890	3435
Metal products	SK	21422.27	1.34	285.99	7.30	5.96	1563	1277	8.57	7.24	1836	1550

Table: Employment effects (persons)			WTO Accession		Scenario 1: Extended FTA short run				Scenario 1: Extended FTA long run			
	Skilled / Unskilled	People working in sector	UKR	Change Empl (%)	UKR	Res%	FTA effect incl WTO (nr people)	FTA effect on top of WTO (nr people)	UKR	Res%	FTA effect incl WTO (nr people)	FTA effect on top of WTO (nr people)
Motor vehicles and parts	SK	13880.71	8.27	1147.80	13.27	5.00	1842	694	16.70	8.44	2319	1171
Transport equipment	SK	17693.84	-12.05	-2131.40	-8.82	3.22	-1561	570	-6.85	5.19	-1213	919
Electronic equipment; Machinery and Equipment	SK	45928.03	7.17	3293.50	17.96	10.79	8249	4955	21.06	13.89	9674	6381
Manufactures nec	SK	9580.58	1.91	182.99	7.85	5.94	752	569	9.75	7.84	934	751
Electricity	SK	62801.17	-0.06	-39.56	0.89	0.95	556	595	3.22	3.28	2022	2062
Gas, Water	SK	26487.29	0.30	78.40	1.25	0.96	332	254	3.89	3.59	1029	951
Construction	SK	46731.27	0.46	214.03	3.32	2.86	1552	1338	6.48	6.02	3026	2812
Trade	SK	98362.87	0.15	147.54	1.31	1.16	1289	1141	5.16	5.01	5072	4924
Transport nec, Water transport, Air transport	SK	83288.07	3.24	2695.20	-4.69	-7.93	-3905	-6601	-0.35	-3.59	-292	-2988
Communication	SK	22261.67	-0.69	-153.16	-2.34	-1.66	-522	-369	1.96	2.65	436	589
Financial services nec, Insurance	SK	142589.71	-3.77	-5381.34	-18.76	-14.99	-26750	-21368	-15.78	-12.01	-22504	-17122
Business services nec, Renting	SK	139831.54	-0.14	-192.97	-1.02	-0.88	-1419	-1226	2.85	2.99	3991	4184
Recreational, entertainment, cultural and sporting activities, Social activities	SK	17724.69	-0.07	-11.52	0.10	0.16	17	28	3.31	3.38	587	599
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal	SK	539470.23	-0.05	-264.34	0.07	0.12	372	637	2.51	2.56	13551	13816
Agriculture, Fisheries, Forestry	UNSK	4934904.59	-3.31	-163543	-2.23	1.08	-110147	53396	-0.55	2.77	-27043	136499
Coal, Oil, Gas	UNSK	1233498.97	-1.64	-20167.71	-3.79	-2.16	-46774	-26607	-3.39	-1.75	-41766	-21599
Minerals NEC	UNSK	433235.73	-2.26	-9769.47	-5.93	-3.67	-25678	-15908	-3.76	-1.51	-16290	-6520
Bovine cattle, sheep and goats, horse meat products	UNSK	161206.06	-7.50	-12090.45	9.89	17.39	15947	28037	12.58	20.08	20273	32364

Table: Employment effects (persons)			WTO Accession		Scenario 1: Extended FTA short run				Scenario 1: Extended FTA long run			
	Skilled / Unskilled	People working in sector	UKR	Change Empl (%)	UKR	Res%	FTA effect incl WTO (nr people)	FTA effect on top of WTO (nr people)	UKR	Res%	FTA effect incl WTO (nr people)	FTA effect on top of WTO (nr people)
Vegetable oils and fats	UNSK	96246.38	-3.68	-3537.05	9.35	13.02	8994	12531	12.40	16.07	11930	15467
Dairy products	UNSK	225768.02	-1.75	-3959.97	2.58	4.34	5827	9787	5.37	7.13	12133	16093
Processed rice, Sugar	UNSK	109503.46	-3.29	-3607.04	-8.27	-4.98	-9060	-5453	-6.06	-2.76	-6630	-3023
Food products nec	UNSK	372789.01	-1.64	-6113.74	5.60	7.24	20858	26971	8.47	10.11	31583	37696
Beverages and tobacco	UNSK	345058.56	-2.43	-8388.37	-2.72	-0.29	-9375	-987	-0.21	2.22	-721	7667
Textiles	UNSK	54415.83	2.01	1094.85	41.04	39.02	22330	21235	52.95	50.94	28814	27719
Wearing apparel	UNSK	70160.17	22.75	15961.44	190.74	167.99	133826	117864	207.69	184.94	145717	129756
Leather products	UNSK	45633.05	-0.50	-227.25	24.61	25.11	11230	11458	31.12	31.62	14201	14429
Wood products, Paper products, publishing	UNSK	359379.98	-0.21	-769.07	2.72	2.93	9772	10541	5.72	5.93	20557	21326
Petroleum, coal products	UNSK	278008.11	0.93	2593.82	4.68	3.75	13008	10414	7.07	6.14	19666	17072
Chemical, rubber, plastic products	UNSK	539293.94	0.17	911.41	8.84	8.67	47663	46751	11.03	10.86	59468	58557
Mineral products nec	UNSK	351168.14	1.24	4358.00	4.09	2.85	14377	10019	5.86	4.62	20592	16235
Ferrous metals, Metals NEC	UNSK	1416467.35	-0.64	-9122.05	2.05	2.69	29023	38145	3.43	4.07	48557	57679
Metal products	UNSK	357887.34	1.34	4777.80	7.34	6.00	26265	21488	8.62	7.29	30861	26083
Motor vehicles and parts	UNSK	231895.68	8.27	19180.09	13.34	5.07	30935	11755	16.80	8.53	38965	19785
Transport equipment	UNSK	295599.01	-12.05	-35616.72	-8.87	3.18	-26229	9388	-6.89	5.16	-20379	15238
Electronic equipment; Machinery and Equipment	UNSK	767288.54	7.17	55037.61	18.06	10.89	138565	83527	21.19	14.02	162573	107535
Manufactures nec	UNSK	160056.23	1.91	3057.07	7.90	5.99	12638	9581	9.81	7.90	15698	12641
Electricity	UNSK	848224.45	-0.06	-534.38	0.89	0.95	7541	8075	3.24	3.30	27491	28025
Gas, Water	UNSK	357750.72	0.30	1058.94	1.26	0.97	4511	3452	3.91	3.61	13984	12926

Table: Employment effects (persons)			WTO Accession		Scenario 1: Extended FTA short run				Scenario 1: Extended FTA long run			
	Skilled / Unskilled	People working in sector	UKR	Change Empl (%)	UKR	Res%	FTA effect incl WTO (nr people)	FTA effect on top of WTO (nr people)	UKR	Res%	FTA effect incl WTO (nr people)	FTA effect on top of WTO (nr people)
Construction	UNSK	1552564.76	1.46	22636.39	3.34	1.88	51856	29219	6.51	5.06	101134	78498
Trade	UNSK	1989799.92	0.15	2984.70	1.32	1.17	26206	23221	5.19	5.04	103211	100226
Transport nec, Water transport, Air transport	UNSK	2236310.50	3.24	72389.37	-4.72	-7.95	-105442	-177831	-0.35	-3.59	-7894	-80284
Communication	UNSK	597732.80	-0.69	-4117.18	-2.36	-1.67	-14089	-9971	1.97	2.66	11781	15898
Financial services nec, Insurance	UNSK	602058.12	-3.78	-22727.69	-18.87	-15.09	-113578	-90851	-15.88	-12.10	-95577	-72849
Business services nec, Renting	UNSK	1004171.17	-0.14	-1385.76	-1.02	-0.88	-10253	-8867	2.87	3.01	28830	30216
Recreational, entertainment, cultural and sporting activities, Social activities	UNSK	446665.53	-0.07	-290.33	0.10	0.16	424	715	3.33	3.40	14887	15178
Public administration, Education, Heatlh, Sewage, cleaning of streets and refuse disposal	UNSK	3447197.53	-0.05	-1689.13	0.07	0.12	2413	4102	2.53	2.58	87111	88800

7 Annex VII ISIC Classification used in GTAP and CGE Modelling (ISIC rev 3.1)

- A - Agriculture, hunting and forestry
- 01 - Agriculture, hunting and related service activities
- 02 - Forestry, logging and related service activities
- B - Fishing
- 05 - Fishing, aquaculture and service activities incidental to fishing
- C - Mining and quarrying
- 10 - Mining of coal and lignite; extraction of peat
- 11 - Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction, excluding surveying
- 12 - Mining of uranium and thorium ores
- 13 - Mining of metal ores
- 14 - Other mining and quarrying
- D - Manufacturing
- 15 - Manufacture of food products and beverages
- 16 - Manufacture of tobacco products
- 17 - Manufacture of textiles
- 18 - Manufacture of wearing apparel; dressing and dyeing of fur
- 19 - Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
- 20 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- 21 - Manufacture of paper and paper products
- 22 - Publishing, printing and reproduction of recorded media
- 23 - Manufacture of coke, refined petroleum products and nuclear fuel
- 24 - Manufacture of chemicals and chemical products
- 25 - Manufacture of rubber and plastics products
- 26 - Manufacture of other non-metallic mineral products
- 27 - Manufacture of basic metals
- 28 - Manufacture of fabricated metal products, except machinery and equipment
- 29 - Manufacture of machinery and equipment n.e.c.
- 30 - Manufacture of office, accounting and computing machinery
- 31 - Manufacture of electrical machinery and apparatus n.e.c.
- 32 - Manufacture of radio, television and communication equipment and apparatus
- 33 - Manufacture of medical, precision and optical instruments, watches and clocks
- 34 - Manufacture of motor vehicles, trailers and semi-trailers

- 35 - Manufacture of other transport equipment
- 36 - Manufacture of furniture; manufacturing n.e.c.
- 37 - Recycling
- E - Electricity, gas and water supply
- 40 - Electricity, gas, steam and hot water supply
- 41 - Collection, purification and distribution of water
- F - Construction
- 45 - Construction
- G - Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
- 50 - Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel
- 51 - Wholesale trade and commission trade, except of motor vehicles and motorcycles
- 52 - Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods
- H - Hotels and restaurants
- 55 - Hotels and restaurants
- I - Transport, storage and communications
- 60 - Land transport; transport via pipelines
- 61 - Water transport
- 62 - Air transport
- 63 - Supporting and auxiliary transport activities; activities of travel agencies
- 64 - Post and telecommunications
- J - Financial intermediation
- 65 - Financial intermediation, except insurance and pension funding
- 66 - Insurance and pension funding, except compulsory social security
- 67 - Activities auxiliary to financial intermediation
- K - Real estate, renting and business activities
- 70 - Real estate activities
- 71 - Renting of machinery and equipment without operator and of personal and household goods
- 72 - Computer and related activities
- 73 - Research and development
- 74 - Other business activities
- L - Public administration and defence; compulsory social security
- 75 - Public administration and defence; compulsory social security
- M - Education
- 80 - Education
- N - Health and social work
- 85 - Health and social work
- O - Other community, social and personal service activities
- 90 - Sewage and refuse disposal, sanitation and similar activities
- 91 - Activities of membership organizations n.e.c.
- 92 - Recreational, cultural and sporting activities
- 93 - Other service activities

- P - Activities of private households as employers and undifferentiated production activities of private households
- 95 - Activities of private households as employers of domestic staff
- 96 - Undifferentiated goods-producing activities of private households for own use
- 97 - Undifferentiated service-producing activities of private households for own use
- Q - Extraterritorial organizations and bodies
- 99 - Extraterritorial organizations and bodies

8 Annex VIII FDI gravity model explanations

A widely accepted conceptual framework for analyzing the motives for foreign direct investment (FDI) is an OLI or eclectic paradigm due to John Dunning. According to this approach, FDI takes place when three sets of determining factors exist simultaneously (Dunning, 1993): the presence of ownership-specific advantages of property rights and intangible assets in multinational enterprise (MNE); the presence of internalization incentive advantages, and the presence of locational advantages in a host country.

While the first and second are firm-specific determinants of FDI, the third is location-specific and has a crucial influence on a host country's inflows of FDI. If only the first condition is met, firms will rely on exports, licensing or the sale of patents to service a foreign market. In the presence of internalization incentives, e.g. protection from supply disruptions and price hikes, lack of suitable licensee, and economies of common governance FDI becomes the preferred mode of servicing foreign markets, but only if location-specific advantages are present. Within the trinity of conditions for FDI to occur, locational determinants are the only ones that host governments can influence directly (UNCTAD, 1998).

The locational determinants of foreign direct investment (FDI) is an extensively researched area of international business. While scholars have yet to reach a consensus on the significant FDI determinants, a few key variables have been identified. Large market size, strong market growth, abundant natural resources along with cultural and distance proximity are attractive for FDI inflows (Aharoni 1966, Bass, McGregor and Walters 1977, Grosse, Trevino 1996, Basu, Srinivasan 2002, Benassy-Quere, Fontagne, Lahreche-Revil 2003, Blumentritt and Nigh 2002). Another widely cited FDI determinant - labour cost – have not universally been found to be significant. While Markusen, Zhang (1997), using general equilibrium simulation, showed that wage level is important for small, scarce-labour country, Loree and Guisinger (1995), who studied US investment in 48 countries, found wage rates to be insignificant.

Obviously, market size and labour costs are not the only important FDI determinants; country political and economic risk and/or friendliness of overall business environment are of great concern to foreign investors as well (Basu, Srinivasan, 2002). A number of surveys, conducted among investors (Aharoni (1966), Foster, Alkan (2003), Bass, McGregor and Walters, (1977)), have indicated that sound and stable macroeconomic policy, a positive attitude to foreign investors and supportive institutional environment are important for investment location decisions. In particular, Blumentritt and Nigh (2002), revealed that favourable regulatory practices would facilitate an integration of a subsidiary company into the host country environment.

Another important factor for FDI flows is the level of regional economic cooperation in a particular location. In general it is found to have a positive impact on FDI for several reasons. First, it expands the size of the local market, and therefore makes the region more attractive to FDI. Second, regionalism can promote political stability and permit countries to coordinate their policies Asiedu (2006). Giovanni (2004) also finds the significance of RTAs for cross-border M&A flows. Jaumotte (2004) concluded that market size of regional trade agreement (RTA) has positive impact on the FDI inflow, but countries within the same RTA do not benefit to the same extent as those ones from different RTAs. Countries with relatively higher education and financial stability tend to attract a larger share of the FDI at the expense of other RTA members. This conclusion supports the above mentioned findings on the importance of the institutional environment and macroeconomic stability for foreign direct investment.

A related issue is the impact of a country's engagement in international trade on FDI. The OLI framework suggests that, as trade becomes concentrated in goods produced by firms using knowledge-intensive assets, FDI will gradually substitute trade. On the other hand, if a country is a recipient of largely efficiency-seeking FDI, then it would stimulate flows of imports of intermediate products and exports of final (or more completed products). Therefore, a country's engagement in international trade may have either substitutary or complementary impact on FDI. As a result, exports/imports variables are rarely employed in FDI models. In those cases when they were included, they have been reported to not have a significant impact on FDI (Bevan and Estrin, 2000). Consequently, we decided not to include trade variables in our analysis.

Yet, instead we do employ an indicator of the openness of the economy in our model. It has traditionally been measured as a ratio of exports plus imports to GDP. Kravis and Lipsey (1982) and Culem (1988) report it to have a significant positive effect on FDI. The degree of a country's openness can affect FDI in multiple ways (some of them are similar to the trade effects). Lower import barriers discourage tariff-jumping FDI but may stimulate vertical FDI by facilitating the imports of inputs and machinery. Lower export barriers tend to stimulate vertical FDI by facilitating the re-export of processed goods, and other (non-tariff-jumping) horizontal FDI by expanding the effective market size and leading to an improved business climate and expectations of better long-term economic growth. So, although it is based on trade data, it is less influenced by imports vs. exports (substitution vs. complementarily) logic and on top to the trade activity in a country, it also reflects the country's general business climate. Although the endogeneity problem – whether openness of the economy causes more FDI or more FDI result in higher engagement in international trade – is in place in this case; we cannot think of a good instrument which could have helped us to resolve this issue, hence we assume that causality runs the former way.

The scholars employed various methods - ranging from straightforward surveying of foreign investors to robust econometric modelling - to explore FDI determinants. Following recent developments in the field, we are employing a gravity model in this analysis (Brainard 1997, Brenton 1998, Benassy-Quere, Fontagne, Lahreche-Revil, 2003 Benassy-Quere, Coupet, Mayer 2005).

The gravity model, which was developed by Linnemann (1966), is widely used in the analysis of bilateral trade. It was applied to the field of FDI analysis by Brainard (1997). He succeeded in matching the company based logic of OLI with general equilibrium trade models. According to OLI, multinational enterprises' choices in serving foreign markets are determined by the trade-off between incremental fixed costs of investing and the costs of exporting. While many of these costs are determined by the traditional factors which were discussed above - economies of scale, relative input costs, intangible assets - the success of the gravity model in explaining bilateral trade flows points strongly to the inclusion of distance variables in FDI equations.

Distance acts as a proxy for transportation costs, or economic barriers to trade. Another aspect of the distance is cultural proximity, which implies cultural and language community. The closer the countries, the more common cultural aspects are available, the easier to conduct business. The proximity is usually measured as a distance between the capital city of the host country and investing country, or a distance between a host country capital and Brussels. Most studies found positive negative correlation between distance and FDI (Bevan and Estrin (2000), Smarzhynska and Wei (2000, 2002), Resmini (2000), Johnson (2006)). However, Campos and Kinoshita found positive relation for distance from Brussels for CIS countries, which may indicate that the geographical proximity to the Western markets also play an important role in attracting FDI. Interestingly, Tondel (2001) revealed a positive correlation between geographical position and progress in transition. He noted that the most advanced countries in terms of transition are most often geographically closer to Western Europe.

In our study we estimate the following model (it is specified in logarithms):

$$lnFDI_{ij} = \beta_0 + \beta_1\, ln\_dist + \beta_2\, ln\_gdp_i + \beta_3\, ln\_gdp_j + \beta_4\, ln\_debt_j + \beta_5\, ln\_TO_j + \beta_6\, ln\, BEI_j + \beta_7\, ln\, gdp\_capita_j + \beta_8\, WTO_j$$

where:
$lnFDI_{ij}$ - a natural logarithm of FDI flows from country i to country j,
ln_dist - a natural logarithm of the distance between the capitals of country i and country j,
ln_gdp_i - a natural logarithm of the GDP of countries i and j respectively,
ln_debt_j - a natural logarithm of the external debt of country j as a percentage of GNI of country j,
ln_TO_j - a natural logarithm of the ratio of sum of exports and imports of country j to GNI of country j,
ln_BEI_j - a natural logarithm of the EIU business environment index of country j,
$ln\ gdp\_capita_j$ - a natural logarithm of GDP per capita in country j,
WTO_j - dummy, equals 1 if a country j (a recipient country) is a member of WTO.

As a measure of market size, and consequently economic attractiveness of the location, we use GDP of home and recipient countries. We also employ GDP per capita as another measure of market attractiveness, i.e. purchasing power in the host country.

The EIU business environment index is employed to assess the level of the friendliness of business environment in the host countries. The Economist Intelligence Unit (EIU) business environment rating is one of the 'perceptual' indices that aims to reflect risk perception of investors. In particular, the rating is constructed on the basis of a business rankings model that assesses the quality or attractiveness of the business environment in 60 countries using an analytical framework. The model includes both quantitative and qualitative indicators. The quantitative data are drawn from national and international statistical sources for the period, while qualitative scores are based on business surveys and other data sources adjusted by the EIU. The model is designed to reflect main criteria used by companies to formulate their global business strategies, and is based not only on historical conditions but also on expectations about prevailing conditions in the next five years. EIU business environment rating is a weighted average of the EIU assessment of market opportunities in a country, macroeconomic environment, political environment, infrastructure, policy towards private enterprise, labour market, tax regime, financing, foreign trade and exchange regime, and policy environment for foreign investment. The data are available for the years 1995-2008 (determining a starting year for our sample). The index is measured on 0 to 10 scale with 1 being assigned to the most stable countries; accordingly, a positive sign for the coefficient is expected.

We also control for the level of indebtedness of the host economy, measured as a ratio of the country's external debt to GNI, which is another explanatory/control variable employed in this study. Furthermore, we are analysing an impact of WTO accession on FDI inflows through the inclusion of a dummy variable. We were not able to gather data on unit labour costs for a number of countries in the sample, so unfortunately, we did not include a labour cost measure in our model.

The sample under consideration includes 31 OECD countries as source countries and 12 developing/transition countries as FDI destinations (Brazil, Russia, India, China, Turkey, Kazakhstan, Bulgaria, Ukraine, Czech Republic, Slovakia, Hungary, and Poland). The sample covers years 1995-2003 that yields 1294 observations in a panel under examination.

We use random effects model to estimate our model. The Haussman specification test does not reject random effects speciation at the 5% significance level. Furthermore, the use of fixed effects is problematic, since one of the most important variables in the gravity model (distance between countries) does not change across time, so its impact can't be estimated using the fixed effects methods (because of collinearity problem).

Table A1 reports the model's estimates. In line with the previous research we report significant effects of distance, GDP, GDP per capita, business environment, trade openness and indebtedness of the host economy. The distance has a significantly negative effect on FDI flows and, hence, supports the basic logic of the gravity model. Other traditional gravity model factors – GDP and GDP per capita – have significant positive effects on FDI inflows that confirms a hypothesis of the importance of host country's market size for FDI.

In the earlier versions of the model, we have also considered the common language and common border variables, however they have appeared to be highly insignificant. Hence,

we decided to exclude them as this model is also to be used for forecasting purposes (in this case it is better to have a model which consists of statistically significant variables mostly).

The EIU business environment index has also been found to have a significantly positive effect in our sample. It indicates that countries with more stable business environment are significantly more attractive for foreign investors than less stable countries. The WTO dummy came out insignificant in our analysis – probably WTO membership itself does not affect FDI flows strongly.

The impact of the trade openness and level of indebtedness is significant and is in line with the conventional economic logic. The more open an economy is to foreign trade, the higher perception of the level of market freedom investors have, and, hence, the investment is more likely to happen. On the other hand, the level of the external debt has a negative impact on FDI flows.

9 Annex IX In-depth analysis Agriculture

In this Annex, the descriptions of each sub-sector and details of the impact analyses for the agricultural sector and its sub-sectors are presented – in addition to the core information provided in the report.

9.1 Specific descriptions and issues by sub-sector

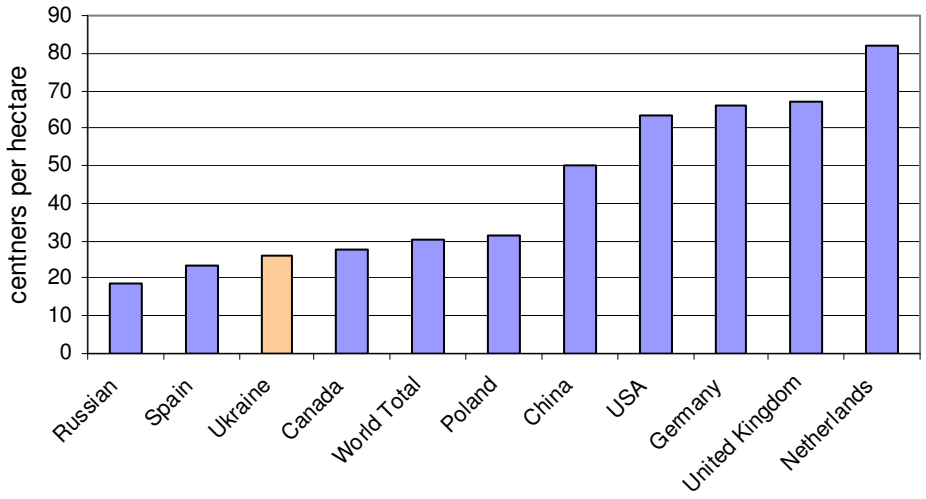
9.1.1 Grains and cereals

Grains account for a quarter of gross agricultural production (on average) and occupy more than 50 percent of the sown area. Wheat (49.2 percent), barley (23.6 percent) and maize for grain (18.9 percent) comprise more than 90 percent of grain production (2005). Grain harvesting is among the most profitable activities in agri-production in Ukraine.[27] The value of grain crops was extremely volatile during last fifteen years and was defined by cropping area and weather conditions. Since 1990 the volume of harvested grains reduced by 25.5 percent (till 2005). Still the collected harvest amounts to 1.6 percent (2005) of world crops (38.0 million tons) and Ukraine is the sixth largest world producer of grains.[28]

Notwithstanding this sixth place worldwide, **crop yields are relatively low** and did not exceed 30 centres[29] per hectare (1995-2005), which is below the world average (see Figure 9.1). There is thus significant space for productivity improvements in the sector. Moreover – in line with Ukrainian interests – harmonisation towards the EU and quality guarantees in practice can enhance Ukrainian production and exports even more.

[27] For 2000-2005 average level of profitability exceeded 30 percent.
[28] After China, USA, Russia, France, Canada and Germany
[29] 1 centner equals to 100 kilograms

Figure 9.1 Grain yields, 2005



Sources: State Statistics Committee of Ukraine

Collected grains are mainly directed at local markets. Approximately 50 percent (on average) of available crops are consumed at the agriculture enterprises as fodders or sawing grains. In 2005 32.8 percent of total output was exported (up from 2.3 percent in 1995 and 29.4 in 2002). Only 20-25 percent on average is used for local consumption needs.

The major part of grains is produced by agricultural enterprises (more than 75 percent of output in 2005) while the role of households is rather limited. Farmgate prices for grain products are almost 50 percent lower than at the international markets. In 2005 the average domestic price for grain crops was about USD 85 per ton.

The grain market is regulated by the government. The key players on the market are independent traders, local administrations, Derzhreserv (state institution responsible for stabilisation fund of grains) and "Khlib Ukrainy" (state company responsible for "collateral purchase" of grains). The local administrations, Derzhreserv and "Khlib Ukrainy" are expected to secure food safety of the country. Local authorities and Derzhreserv create reserve funds of grains at local and state level, respectively. Interventions from Derzhreserv are used for stabilisation of grain prices while "Khlib Ukrainy" is the main channel for securing stable prices and intervention on the grain markets.[30]

The main concern within the context of WTO accession for grains is the voluntary intervention of the Ukrainian authorities in the exporting process. In order to ensure a domestic grain balance, the Authorities often introduces bans on grain exports. Specifically, the export of grains was restricted by export quota during the last two years (2006-2007).

[30] The "collateral purchase" mechanism is exploited for stabilization needs. The scheme creates possibility for producers to receive payment for grains (state prices) as soon as crops are delivered on elevators. If the grains later could be marketed for higher prices, farmers are free to get the "collateral" with paying back the money. The "collateral" prices are perceived by farmers as minimum secure level of grain price.

Domestic cereals production is not sensitive to import tariffs. Ukraine most likely will not have objections to tariff concessions. At the same time the EU is expected to insist on application of tariff rate quotas towards Ukrainian grains. A shortage clause for possible export restrictions also will be put on the agenda (see the Box on Grain export crises below). Ukraine will need it for regulation of domestic grain supply in case of poor harvests. SPS certification of domestic products is already being approximated to EU legislation and no major discussions are expected in this area. Nonetheless, in the main report we will elaborate further on this issue.

Box 9.1 Grain export crises

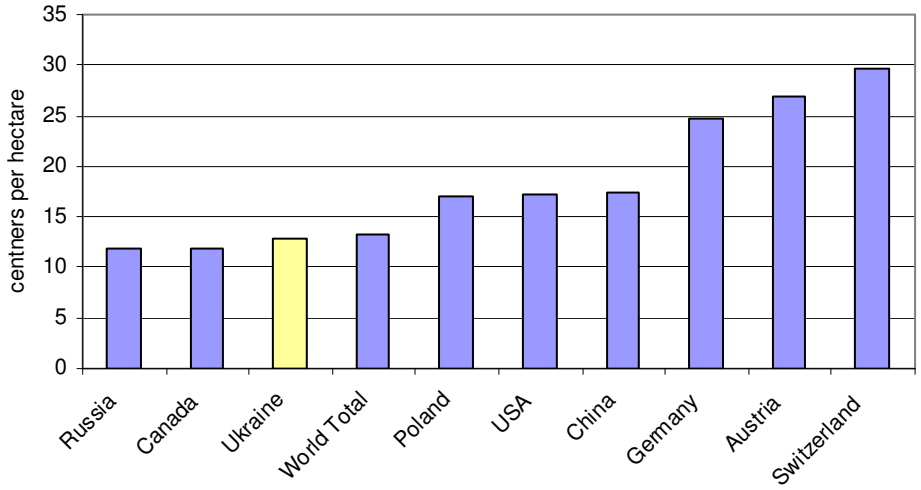
Poor harvests of grains very often stimulated the Ukrainian authorities to introduce export quotas. For the last two years the government has been restricting cereals trading. The major concerns were related to food safety of the country and internal price growth of flour food. Although restrictive measures were actively exploited, interviewed sector experts claim the instrument is very inefficient. First of all, final consumers do not benefit of grain price controls since in reality flour foodstuff producers increase prices anyway. Moreover, flour products do not take up a significant share in the consumer basket. Also quotas are not considered to be fully justified with respect of food safety. The quotation volume is overestimated while even in case of bad harvests, the supply of grains is sufficient to allow for significant exports and satisfaction of domestic needs (IER, 2006). At the same time, quotation creates considerable potential for corruption due to the non-transparent mechanism of quota distributions.

9.1.2 Oil seeds and sunflower-seed oil

Oil seeds do not take any significant share in the structure of agriculture gross output although oil seed planting involves approximately 17 percent of the sown area. Sunflowers comprise about 80 percent of oilseeds. Despite a low output share, oil seeds' farming (sunflowers) is the most profitable activity in domestic agriculture: between 2000-2005 sunflowers were generating more than 50 percent of profits on average. Due to the high profitability, oilseed was the only crop that increased in output since 1990 (by 83 percent until 2005). Even so, the **yield of domestic oil harvesting is below the world level** (see Figure 9.2) and amounts to 12.9 centres per hectare (2005).

Approximately 40 percent (2005) of output is exported and Ukraine is the second largest exporter of oil seeds (sunflowers) in the world after Argentina. Low farmgate prices for the product (about half of the world average) are the main reason for the significant export volumes. Agro-enterprises produce almost 80 percent of domestic oil seeds.

Figure 9.2 Sunflower yield, 2005



Sources: State Statistics Committee of Ukraine

Seed exporting was historically much more profitable than using the seeds for domestic oil production. Therefore in 1999 the Ukrainian authorities introduced a 17 percent export tariff in order to prevent excessive outflow of resources. That measure created a favourable environment for sub-sector development.

Ukrainian sunflower oil processing plants produce about 1.3-1.5 million tons of oil per year. More than 50 percent of produced oil is exported. The market is highly concentrated, with approximately three quarters of total output being produced by a few large players. The major players on the market are Cargill, Bunge and several Ukrainian companies like "KMT" group and Kernel group.

After WTO accession, import tariffs for oil seeds will not exceed the current level of 15 percent (reduced in 2005). Rates for oil seeds are subject to reduction till 2010 due to application of MFN tariff rates (11.16 percent for agriculture). Sunflower-seed oil is an exception from the general rule of 20 percent maximum bound rate. Ukraine will keep 30 percent import tariffs for this product even after WTO accession. The export tariff for oil seeds also will be reduced to 10 percent within six years upon accession. This is an issue for negotiations in the FTA.

Ukrainian authorities will try to keep export tariffs in place for sunflower oil seeds in order to protect domestic oil processing plants. At the same time import tariffs for sunflower oil will be subject to tariff concessions. Oil seeds and sunflower oil are already certified according to the EU SPS standards so no major regulatory changes in this field are expected.

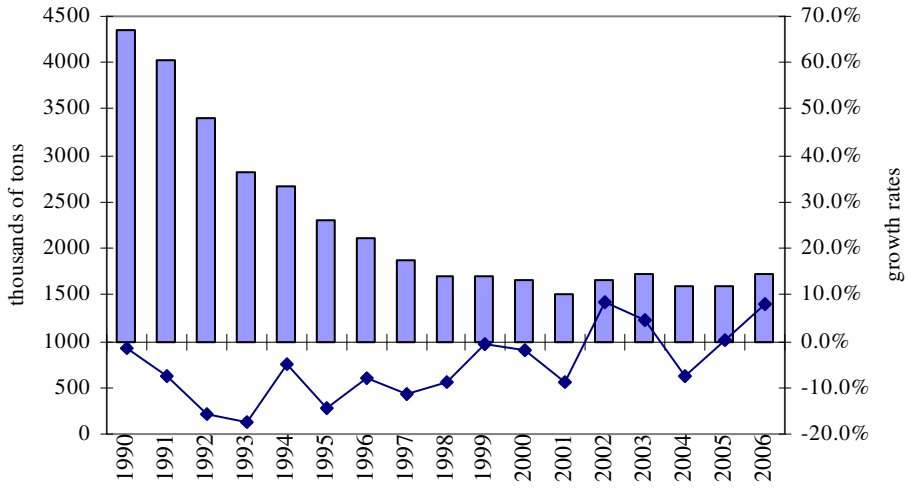
9.1.3 Meat and edible meat offal

Livestock and poultry breeding are part of one of the key sub-sectors accounting for 17.2 percent (2005) of gross agriculture production. In 2005 meat and meat products output consisted of poultry (52 percent), beef (27.8 percent) and pork (14 percent). The share of

poultry production grew only recently. More than 80 percent (2005) of all meat products is provided by domestic producers.

The meat production sub-sector went through a considerable decline (see Figure 9.3) during the 1990s mainly due to a strong slump in domestic incomes. Only recently did the sector show signs of recovery, with the poultry breeding sector as one of the key driving forces behind the sub-sector's upturn. However, according to official statistics overall meat production still operates at a loss (-25.0 percent on beef and veal, -32.1 percent on mutton and goat in 2005). Only pork and poultry production managed to reach positive financial results during recent years.[31]

Figure 9.3 Meat production, 1990-2006



Sources: State Statistics Committee of Ukraine

Meat processing also slumped in line with demand during the 1990s. In 2006 only 50 percent of plants were still operating (64 out of 123). Meat processing recovered strongly with increases in household income from 2000 onwards: between 2000-2006 meat processing showed two-digit growth figures.

Approximately seven percent of the total meat production is exported, with beef as the main item of Ukrainian meat exports (more than 70 percent of all sub-sector exports).The CIS countries are the main markets for Ukrainian meat. **Exports to EU are complicated due to the low quality and standard of domestic products** while competition in the EU markets is strong. Imports of meat increased during recent years mainly due to improvement of household incomes and resumption of American chicken imports (prohibited until the end of 2003). The actual quantity of meat imports might be even higher than the official data show, because unknown quantities of raw meat seem to

[31] Pork production showed +14.9% of profits only in 2005 which is the first positive financial results since 1990. Poultry production started making profits in 2003.

bypass Ukrainian customs. This would mean that the Ukrainian self-sufficiency and the competitiveness of the Ukrainian meat industry may be worse than thought.[32]

The sector receives substantial government support: according to OECD estimates the percentage of Producer Support Estimate (PSE) to poultry amounted to 43 percent and 11 percent for beef in 2003. Tax exemptions (VAT and 0 percent of profit tax) compose the main source of state support.[33] The major concern with meat production in the context of WTO accession is the still **sizeable government support to the sub-sector**. But even if the volume of support is agreed under the WTO, the major support to the sector comes from tax exemptions, which are not considered in the calculations for aggregate measure of support (AMS).

For meat production the major issue will be related to SPS standards compliance, and implementation and enforcement by skilled and trained people from approved animal laboratories. This is expected to be a long run issue involving substantial investments. The FTA can also lead to mutual reduction of import tariffs for meat products.

9.1.4 Sugars and sugar confectionary

Even thought the production of sugar beets is not a very important sub-sector in terms of gross output, Ukraine produces 6.4 percent (2005) of world sugar beets. Due to **low yields** (about half of world average level,) the sub-sector profitability fluctuates around zero. Sugar production suffered a decline during the transition period and the sector is highly concentrated with approximately 80 percent of beets being produced by agro-enterprises. Exports of sugar beets are negligible (5 percent of output) although the farmgate price for the products is among the lowest in the world.

Almost all harvested sugar beets (90 percent in 2005) are processed in domestic sugar-mills. However, the majority of sugar-mills have outdated equipment, which is the main reason for high production costs and, subsequently, low levels of competitiveness in international markets. Ukrainian sugar is among the most expensive in the world.[34]
The total number of sugar mills equals 192 while only 119 enterprises were producing sugar in 2006. If production in Ukraine is modernised, it will need only 60-80 sugar mills for processing the domestically harvested sugar beets (BIZPRO, 2006).

The domestic sugar market is supplied by many firms. One company has more than 10 percent market share (Ukrainian Food Company, 13.4 percent in 2006), two companies

[32] http://www.ukrdzi.com/usa/uapotential/341.htm

[33] Special regime of agriculture taxation includes four types of tax exemptions: (i) VAT charged on sales of agriculture products stays on special accounts to be used for the acquisition of materials and technical resources for production purposes; (ii) VAT charged on sales of meat and dairy products by processing plants is returned to primary producers (no payments to budget); (iii) VAT charged on sales of meat and dairy product by farmers stays in the farm accounts to be used for livestock support; (iv) sale of milk and meat product is taxed at a zero VAT rate thus farmers has right to claim VAT credit.

[34] As of mid of July 2007 the internal sugar price was 475 USD per ton, which is 50% higher than prices at London commodity exchange (316 USD per ton, July 19, 2007).

possess 5-10 percent of the market (Ukrros, 8.6 percent; Astra-Kyiv, 6.2 percent) but the remaining 70 percent of the market is in the hands of small companies.

In the confectionary sub-sector, sugar plays a key role for sugar confectionary production. The sub-sector consumes about 0.3 million tonnes of sugar every year and the cost of this input accounts for almost two thirds of production costs. The development of the sub-sector is extremely volatile due to its strong dependency on the sugar market. Frequent sugar crises have lead to a drastic reduction in sugar confectionary output. Sugar confectionary production is relatively concentrated, with two larges companies producing almost 40 percent of the market. Approximately 25 percent of the total sugar confectionary output is exported, while imports are negligible. Profitability of the sector is modest (8-12 percent, BIZPRO, 2006) due to high sugar prices.

Under WTO accession, Ukraine will move from the current combined tariff rate[35] towards tariff rate quotas (TRQs), which were agreed at the level of 260 thousand tons for raw sugar with a two percent tariff rate from the year of WTO accession. For exceeding volumes of sugar the current 50 percent import tariff will be preserved. The WTO TRQ will be a significant reduction of protection compared to the currently applied combined tariffs. Quota will be fairly and transparently distributed among trading partners ensuring full compliance with WTO regulations on import licensing procedures. The relatively high level of protection is seen by the Ukrainian authorities as needed due to the social importance of the sugar sub-sector. In case of deeper liberalisation some sugar mills most likely will cease all production thus increasing the unemployment rate.

Within the FTA, the extent to which the sugar markets are liberalised remains to be seen due to the highly sensitive nature of this market for both sides at the negotiation table.

9.1.5 Edible fruits and nuts, citrus fruits, water melons

Fruits and berries comprise 4.1 percent of gross agriculture output (2005) and occupy about 1 percent of the cropping area. Apples, pears, plums and cherries account for more than 70 percent of the sub-sector's output. Yield of the products is among highest in the world and producers' prices are among the lowest. Cropping of fruits is therefore a profitable activity. Households are responsible for 88.2 percent (2005) of fruits and berries production. More than 75 percent of fruits and berries are produced domestically while 31.9 percent is imported (2005).

Exports are significant (11.3 percent, 2005) and have increased steadily over the past ten years. Edible fruit and berries are among the most **competitive sub-sectors** within the agricultural sector, because of one of the highest yields in the world. Domestic fruit prices are among the lowest in the world, even though some European products (e.g. Polish apples) are still much cheaper.

[35] Sugar (from sugar beet) – 50% but not less than 0.3 EUR per 1 kg; lactose, fructose etc. – 0.3EUR per 1 kg; treacle – 0.8 EUR per 1 kg; sugar confectionaries – 1EUR per 1 kg.

Import tariffs for fruits (group 08 HS) were already reduced to an average of 10.4% in ad valorem terms (2005) which is close to the target level of 10.07% under WTO accession obligations. Ukraine possibly will try to introduce some protective measures for fruits (specifically for apples). Most likely either a TRQ or a partial tariff concession will be requested by the Ukrainian side. Domestic SPS certificates for fresh fruits are recognised by EU food safety authorities.

In addition to the fruits, citrus fruits, water melons exports and imports, we note that a large share of fruits takes place indirectly through exports of juices. The juice sector is a rapidly growing sub sector for Ukraine.

9.1.6 Beverages, spirits and vinegar

Production of beverages is an important sub-sector of the Ukrainian food industry amounting to about 20 percent of total food processing output. In recent years the sector grew in line with the recovery of private consumption (beer production grew by 22.7 percent in 2006 and cognac by 15.3 percent). Alcoholic beverages production consists of distilled alcoholic beverages[36] (50 percent), beers (25 percent), and wines (10 percent). The sector is highly concentrated with the 10 largest companies producing approximately 80 percent of all alcoholic products. Ukrainian alcohol (especially, distilled beverages) is competitive on price relative to imported products. Statistics show that 99 percent of the domestic market is served by domestic producers, despite weak protective measures. More than 25 percent of Ukrainian alcoholic beverage products are exported (data for vodka, 2005), with Russia as the main destination of exports (more than 80 percent of total exports).

The Ukrainian authorities regulate the production and distribution of alcoholic products by licensing. Ethyl spirit can only be produced by state enterprises while cognac can be produced by private companies as well, albeit under licensing agreements (a production license has to be requested).

Under the WTO, import tariffs for beverages will be reduced to 11.6 percent by 2010. Current levels of tariffs translated into ad valorem terms equal 24.0 percent (2006)[37]. Reduction of tariffs will affect the segment of expensive brand beverages, which are not produced domestically. Moreover, significantly more competition is expected in the markets of wine and beer. At the same time the segment of public products (like vodka) will be hardly affected since Ukrainian beverages are very cheap and qualitatively competitive.

The most pressing issue in this sub-sector in relation to WTO accession is related to protection of certain products under specific designation of origin (geographical indications). Upon WTO accession domestically produced “cognac” and “champagne” should be renamed to “brandy” and “sparkling wine.” Provisionally, those changes should

36 Vodka, whisky, cognac etc.

37 Import tariff is 2-3EUR per litre for wines, champagne and other light alcohols, 7.5EUR per litre (of 100% spirit) for spirit, vodka, whisky cognac and other strong alcoholic beverages.

not affect the output of the products since domestic "cognac" and "champagne" belong to the low price segment and are produced mainly for domestic consumption.

The FTA is not likely to impact producers of distilled alcoholic beverages since the EU import tariffs are already zero. At the same time wine and beer expansion from the EU is anticipated because the FTA will involve reductions in wine and beer tariffs. European products are qualitatively very competitive. A reduction of tariffs will lead to increases in domestic consumption of the products.

9.2 Potential impact of an FTA

9.2.1 CGE modelling results

The assumptions underlying the CGE model for the two scenarios selected are summarised in Table 9.1 below.

Table 9.1 Scenario Overview Agriculture

Sub-sector	WTO scenario	Scenario 1 Extended FTA	Scenario 2 Limited FTA
Agri-food sector general			
Agriculture, fisheries, forestry	▪ 65% tariff reduction from base case ▪ Standardisation costs reduced by 30%	▪ 95% tariff reduction from base case ▪ Reduction border costs by 50% ▪ Standardisation costs reduced by 50%	▪ 75% tariff reduction from base case ▪ Reduction border costs by 10% ▪ Standardisation costs reduced by 40%
Agri-food sub-sector specific			
Cereals, grains and oil seeds	▪ 65% tariff reduction from base case	▪ 95% tariff reduction from base case	▪ 75% tariff reduction from base case
Meat and edible meat offal	▪ 0% tariff reduction from base case	▪ 95% tariff reduction from base case	▪ 30% tariff reduction from base case
Sugars and sugar confectionary	▪ 2% tariff reduction from base case	▪ 95% tariff reduction from base case	▪ 31% tariff reduction from base case
Animal or vegetable fats & oils and their cleavage products; prepared edible fats; animal or vegetable waxes	▪ 66% tariff reduction from base case	▪ 95% tariff reduction from base case	▪ 76% tariff reduction from base case
Edible fruits and nuts, citrus fruits, water melons	▪ 28% tariff reduction from base case	▪ 95% tariff reduction from base case	▪ 50% tariff reduction from base case
Beverages, spirits and vinegar	▪ 47% tariff reduction from base case	▪ 100% tariff reduction from base case	▪ 63% tariff reduction from base case

Table 9.2 provides an overview of the CGE model outcomes of the Global Analysis, modelling the two scenarios for an FTA (extended and limited) between the EU and Ukraine for both the short and the long run. The model outcomes reflect additional effects on top of WTO accession for Ukraine.

As becomes clear from the table, all sub-sectors with the exception of sugar & sugar confectionary and beverage, spirits & vinegar, are expected to benefit directly from an FTA, in terms of production, unskilled labour and trade. This is especially true for the sub-sectors "meat and edible meat offal", "animal or vegetable fats & oils, their cleavage products; prepared edible fats; animal or vegetable waxes" and "edible fruits and nuts, citrus fruits, water melons." The effects from an extended FTA are more pronounced, and in the case of sub-sector "edible fruits and nuts, citrus fruits, water melons" show positive rather than negative effects compared to the more limited FTA in the long run.

As the model assumes technical barriers and border costs are reduced immediately, and EU tariffs to drop symmetrically with Ukrainian tariffs, it is likely that the short run effects will be less substantial than the model predicts. In reality such changes will take time, especially considering the current situation in many of the sub-sectors. The FTA is expected to further encourage a restructuring process that is already underway in many of these sub-sectors and in the short run may cause some disruptions (unemployment, firm closures, etc.). However, in the longer run the FTA is expected to result in a more competitive agricultural sector overall.

EU-27

The CGE model predicts very limited (often negligible) effects at sector level in the EU-27. The only sub-sector in which some effects may be expected is the sugar and sugar confectionary sub-sector. Here the model predicts an increase of 0.4 percent in output in the case of an extended FTA (short and the long run). The small effects in general don't tell the whole story for all sub-sectors within each group and different regions in the EU.

Table 9.2 Model outcomes (% change) Ukraine

Sub-sector	Extended FTA (short run)						Extended FTA (long run)						Limited FTA (short run)						Limited FTA (long run)					
	Price	Prod	Empl.		Imp/ Exp	Imp / Exp with EU	Price	Prod	Empl.		Imp / Exp	Imp / Exp with EU	Price	Prod	Empl.		Imp / Exp	Imp / Exp with EU	Price	Prod	Empl.		Imp/ Exp	Imp/Exp with EU
			Usk	sk					usk	sk					usk	sk					Usk	sk		
1) Agriculture, fisheries, forestry	0.5	1.1	1.08	0.91	16.0/10.0	11/54	0.9	2.8	2.76	2.58	19.0/10.0	13/ 51	0.3	0.8	0.72	0.54	5.0/3.0	3/ 23	0.6	1.9	1.89	1.71	7.0/3.0	4/ 21
2) Cereals, grains and oil seeds	0.5	1.1	1.08	0.91	16.0/10.0	11/ 54	0.9	2.8	2.76	2.58	19.0/10.0	13/ 51	0.3	0.8	0.72	0.54	5.0/3.0	3/ 23	0.6	1.9	1.89	1.71	7.0/3.0	4/ 21
3) Meat and edible meat offal	-0.4	2.2	17.39	2.34	8.0/13.0	11/ 19	-0.2	4.6	20.08	5.00	9.0/13.0	13/19	-0.2	0.9	15.98	0.96	2.0/5.0	3/7	0.2	2.6	17.79	2.77	3.0/5.0	4/8
4) Sugars and sugar confectionary	-1.9	-4.7	-4.98	- 4.94	26.0/2.0	280/ 21	-3.7	-5.8	-6.06	- 6.02	38.0/10.0	287/ 22	-0.2	-0.8	-0.88	- 0.87	4.0/- 1.0	39/8	-2.0	-2.4	-2.52	- 2.52	15.0/7.0	40/ 9
5) Animal or vegetable fats & oils, their cleavage products; prepared edible fats; animal or	-0.3	5.5	13.03	5.62	5.0/26.0	-2/ 56	-0.3	8.2	16.08	8.56	6.0/26.0	-1/58	0.1	2.0	9.39	2.03	2.0/9.0	1/22	0.1	3.9	11.4	4.03	3.0/9.0	2/23

Sub-sector	Extended FTA (short run)						Extended FTA (long run)						Limited FTA (short run)						Limited FTA (long run)					
	Price	Prod	Empl.		Imp/ Exp	Imp / Exp with EU	Price	Prod	Empl.		Imp / Exp	Imp / Exp with EU	Price	Prod	Empl.		Imp / Exp	Imp / Exp with EU	Price	Prod	Empl.		Imp/ Exp	Imp/Exp with EU
			Usk	sk					usk	sk					usk	sk					Usk	sk		
vegetable waxes																								
6) Edible fruits and nuts, citrus fruits, water melons	-0.8	3.8	7.24	3.92	10.0/22.0	96/ 202	-0.7	6.5	10.11	6.78	11.0/22.0	103/ 205	0.0	1.1	4.51	4.51	2.0/6.0	27 /70	0.0	-6.2	6.34	3.05	3.0/6.0	30/ 72
7) Beverages, spirits and vinegar	-0.9	-0.2	-0.29	-0.29	10.0/7.0	253/ 96	-0.8	2.2	2.22	2.22	12.0/7.0	265/ 98	-0.1	0.0	-0.04	-0.03	3.0/2.0	68/ 45	-0.1	1.7	1.69	1.69	4.0/2.0	73/ 46

9.2.2 Economic impacts

Liberalisation of trade with the EU turns out to be beneficial for Ukrainian agriculture after a while. The modelling results support this conclusion providing growth of production and trade volumes at the sector. According to CGE modelling results new exporting perspectives in the short-run should stimulate output growth by an additional +0.8 percent in case of a limited FTA and +1.1 percent for an extended FTA agreement. In the long run the positive effect on output is expected to be even stronger (+2.7 percent for extended FTA). The model estimates exports and imports to go up by 10 percent and 16 percent, respectively, in trade with all countries. In the trade with the EU, however, exports from Ukraine will grow by 54 percent to the EU compared to the WTO accession situation and imports from the EU will go up by 11 percent - this shows that the FTA will have a positive effect on the Ukrainian agricultural trade balance.

Trade between the EU and Ukraine will grow significantly and Ukraine's exports will direct themselves more towards the EU and less to other regions in the world.[38] Food imports from outside the EU countries are expected to grow more than imports from the EU. Prices are expected to go up to 0.5 percent (extended FTA) due to "spill-over effects" of price levels. Exporting possibilities – if realised – for domestic producers can stimulate internal price adjustments. If quality standards are met, improvement of agro-food product assortments can be among the major benefits of liberalisation (meat and dairy, beverages, sugar confectionaries) together with the overall positive effect an extended FTA would create for the whole sector. The necessity of regulatory approximation to EU food safety requirements may stimulate significantly public and private investments albeit the costs are significant. Moreover, we find that liberalisation of trade will spur the restructuring of enterprises as stronger competition will speed up the replacement of inefficient producers. Investment inflows are expected to increase since the FTA has an indirect and positive impact on investment decisions, can positively affect the business climate while no immediate increase in growth of capital formation is anticipated.

Compliance with the EU food safety acquis (related to animal products) will be essential for Ukraine to reap the full-fledged benefits from the extended FTA within the Enhanced Agreement. In most agricultural sectors, the major positive effects on trade, growth and employment are expected after SPS standards are harmonised with EU standards and after SPS is successfully implemented and enforced (for a specific analysis of SPS, we refer to the main report). There is a special veterinary agreement envisaged as part of the FTA, but an agreement will be challenging as the SPS process is a difficult and long one, addressing the state of administrative capacity, level of trained personnel and up-to-date systems. The effects of successful regulatory approximation, implementation and monitoring are much larger than the impacts of tariff reductions and in the former there is still much more scope for improvement. The WTO SPS agreement will partially eliminate non-tariff barriers for imports through harmonisation of internal SPS regulations. At the same time domestically applied safety standards should be markedly improved in order for them to be recognised by the EU. Improvement of standards requires both public and private investments. Harmonisation of legislation and finance modernisation of veterinary

[38] Which is the process of trade creation between the EU and Ukraine and the process of trade diversion between Ukraine and the rest of the world.

laboratories should be certified by European authorities. Private enterprises from their side will have to invest into certification of their products. For the majority of domestic agro-food enterprises certification will request prior modernisation of production capacities.

The impact of the FTA on the selected sub-sectors are expected to be positive in general for Ukraine (except for sugar and beverages). Some of the sub-sectors will undergo immediate positive effect (e.g. cereals, sunflower oil and fruits) while other sub-sectors need time and investments to become more competitive at the EU market (e.g. meat products, dairy products and fats).

Output in cereals is expected to increase shortly after the FTA creation. Certification of Ukrainian grains is already internationally recognised. Still there may be two impediments for free trade in the field of cereals: (i) provisional quotation of exports by Ukrainian authorities and (ii) a tariff rate quota from the EU side. According to the modelling results cereals output will accelerate by +1.1 percent in case of the extended FTA (short-run) based on the assumption of symmetric tariff reductions between the EU and Ukraine. This could not happen in case one-sided reductions are applied. CGE simulations also predict price growth by an additional 0.5 percent in the short-run and 0.9 percent in the long-run (extended FTA), which is in line with the assessment of agricultural experts in Ukraine. We expect improvements in the Ukrainian trade balance since domestic cereals are much cheaper than the European cereals. The FTA also is expected to lead to more investments in grain production. Trade liberalisation may further create additional earnings due to higher prices and export expansion. Therefore, grain producers have room to invest in production efficiency for further profit enlargements. Demand for cereals may also grow in the EU thanks to the expected increase in biomass and bio ethanol demand (DG Agriculture, 2007).

Production of oil seeds should benefit from trade liberalisation. We do not expect any restrictions on exports from the EU side. However, Ukrainian authorities most likely will try to control oil seeds trading with exports tariffs to support domestic sunflower oil producers. The value of the export tariff will depend on the negotiation process. Even if further reductions of tariffs are approved, oil producers are expected to have enough resources for coping with stronger competition from abroad.

Sunflower-seed oil production will not undergo significant changes although positive consequences are expected. Import tariffs on sunflower oil are already low. Sunflower oil processing plants are highly competitive and the EU is interested in importing Ukrainian sunflower oil. European companies import the product for bio-fuel production. The model results show a +5.5 percent change in output upon concluding the extended FTA (short-run). At the same time prices are expected to go down by 0.4 percent after reduction of import tariffs. The sunflower seed oil trade balance will improve due to fast growth of exports to the EU (+56 percent in the extended FTA). The exports to other countries are expected to decrease relatively though as the overall increase in exports is only 26 percent.

The FTA is expected to have a positive impact on the meat producers. According to the model estimates the sub-sector should expand production by an additional 2.2 percent

points in case of an extended FTA. However, the sector will need significant investments in SPS standards and quality of the products to be marketed in Europe. Domestic prices for meat products are expected to go up due to exporting possibilities for Ukrainian producers. Investments will be stimulated by the necessity to comply with the EU food safety requirements. Moreover, investments can be attracted through restructuring of the sub-sector due to increased competition. Poultry breeding is likely to benefit from the FTA if Ukrainian chicken exports are allowed into the EU. Ukrainian poultry is highly competitive compared to that of the EU chickens and an increase of Ukrainian market share on the European market is projected. Additionally, the majority of poultry producers use modern production technologies and will not need to invest a lot to be certified for exporting. Pig-breeding can also benefit from the FTA. However, the majority of farms are outdated in this sub-sector and significant investments are necessary to become competitive on the European market. The short-run impact for cattle breeding is ambiguous. On the one hand Ukrainian beef is competitive, on the other domestic production does not satisfy even internal demand while 3-5 years are necessary for cattle stock recovery. In the long run the sector is expected to expand production and may build up a strong position on the EU market. It should be noted though, that meat imports from the EU are also likely to go up, but the increase is smaller than the rise in Ukraine's exports. Cheap labour and large production possibilities can also attract more European companies to produce meat products in Ukraine as soon as the SPS standards are met.

The effects on the sugar market depend on the depth of the FTA agreement. According to our model – in which major liberalisation is carried through, the Ukrainian sugar industry will face some setbacks. Sugar exports from the EU are expected to grow by 280 percent in an extended FTA scenario. We calculate that the production in Ukraine will decrease by 2.5 percent points on top of the WTO scenario in the long run, mostly because prices will go down. The latter has a positive effect for consumers as they can buy sugar and sugar products at lower prices. Exports of sugar to the EU may increase slightly as well. Production and exports of sugar confectionaries could increase after the FTA creation. The confectionary market is diversified and trade liberalisation should be mutually beneficial for both parties. Increase in product varieties is expected because of the FTA. However, if the FTA is not so ambitious about liberalising the sugar industry, these effects will not occur or only to a very limited extent.

Fruit production is expected to be subdued because of cheap imported products. Current production of fruits as households' by-products will not be much affected by liberalisation and the subsequent inflow of much cheaper imported fruits. However, Ukrainian horticulture enterprises may not be able to compete efficiently on the market. In the long-run foreign investments could support recovery of the sub-sector, however, the time horizon for this perspective is very long given the long periods it takes to cultivate orchards. The CGE model forecasts a growth of 3.8 percent with an extended FTA in the short run in the fruit production sector in Ukraine and over 6 percent in the long run. The demand for fruits is also expected to go up with rising incomes of households and increasing large retail markets, which boost the demand for fresh good quality products. Exports to the EU are expected to grow by over 200 percent in the short and long run. However, the intra-industry trade with the EU seems to increase as imports from the EU will also grow. During the last years the production of fruits and vegetables

has been growing in Ukraine and especially productivity and orchards cultivation by professional farmers has increased, keeping 'organic agriculture' techniques in mind.[39]

The fruit and vegetable processing industry has been traditionally strong in Ukraine. Since it meets the SPS standards required to export the products to the EU, Ukraine has a strong potential in this sector as well. Cheap labour, many existing companies and large supplies of fresh fruits and vegetables creates an optimal atmosphere for both industries, fresh fruit production and fruit processing. The connection between the two industries can further enhance the growth in both sectors. As part of the FTA, the adoption of new certificates, further improvements in production quality and possible establishment of laboratories will however create costs for the producers and the Ukrainian government in the short run. During this time increased competition in the sector can threaten domestic firms and sector growth. In the long run, the creation of an extended FTA seems to be very beneficial for the sector.

Beverages will be affected slightly negatively for Ukraine. The major negative effect is expected for wine and beers since European products are more qualitatively competitive. At the same time Ukrainian distilled alcoholic beverages are not expected to expand on the EU market since import tariffs for these products are already zero. Thus the FTA is not expected to have a strong direct impact on producers of distilled alcoholic beverages. However, an increasing inflow of European wines and beers on the Ukrainian domestic market is anticipated, as European products are very competitive and a reduction in tariffs will lead to an increase in domestic consumption of these products because of lower prices. The Ukrainian vodka production on the other hand is expected to increase slightly. Vodka producers have been investing in new technologies, equipment and advertising their products for a long time. The large, rather cheap production of cereals in Ukraine is also benefiting this sector. The growing demand for wine could benefit the Ukrainian wine industry, but the investments required to reach the European quality standards are a lot higher than for vodka production. The Ukrainian climate is well-suited for wine grape production, which could attract European wine producers to invest in Ukraine after concluding the FTA.[40]

The EU-Ukraine action plan encourages the enhancement of food safety standards and facilitation of trade with modernisation keeping in mind sanitary and phytosanitary (SPS) aspects. A veterinary and phytosanitary agreement between the EU and Ukraine and creation of better food quality methods are also on the list of the action plan. These improvements could enhance exports of food products from Ukraine to the EU even further and hence increase the production when included into the FTA.

Impacts EU

The expected effects of an FTA are too small to substantially impact the agricultural sector in the EU. In other words, changes in production structures in the EU larger than 0.05 percent are not expected. It must be noted, however, that the FTA impacts may not

[39] http://www.lol.org.ua/eng/showart.php?id=35466

[40] http://www.ukrdzi.com/usa/uapotential/349.htm

be evenly spread inside the EU with more effects in the post-2004 'new' EU member states and/or regional effects due to concentration of specific industries.

There are some effects that need to be addressed:

- The sugar sub-sector is expected to grow as a consequence of the FTA. Sugar production is relatively concentrated in a number of Member States, of which some are highly inefficient producers. The positive effects will therefore likely accrue to a selected number of Member States, such as Poland. Here some more pronounced impact could therefore occur;
- The reform of fruit and vegetables production in the EU, which is about to start in 2008, can also affect the estimated results of the FTA. Exports from the EU to Ukraine are estimated to grow (though less than Ukrainian exports) and in case the reform is effective in increasing the production efficiency in the EU, trade might increase yet more. Nonetheless, it may be hard to reduce the current high production costs in the EU in order to remain competitive;
- The effects on EU agriculture also depend on the extent to which Ukrainian producers are able to follow the regulatory approximation process to bring production standards in general and food quality & safety standards in particular in line with EU standards, and the extent to which the Ukrainian authorities are able to implement and enforce these measures. This transition process will take considerable amounts of time and financial resources which allows for slow adaptations;
- Removal of tariffs in EU meat production (e.g. pig meat) is likely to have negative effects for EU meat production but only if this is in line with standard improvements that lead to removal of NTBs;
- For EU beer and wine producers, the FTA envisages significant positive impacts because the large Ukrainian consumer market becomes available and competition from Ukrainian producers is (initially) low due to lower production standards;
- Increased cereals production – with Ukraine being one of the top world producers – as a consequence of the FTA, may lead to an impact on world cereal markets. Lower world market prices may then lead to lower prices in the EU;
- For EU consumers the effect of an extended FTA with Ukraine that includes the mentioned agricultural provisions is a drop in consumer prices for basic commodities like fruits, vegetables, and oils if price effects are carried on to consumers.

Even though the direct effects of the FTA are very small for EU agriculture, there are some other factors, which can affect the trade relations and production in the EU and Ukraine. For example, the ICPS report (2007) considers that the overall positive effect of an FTA can enhance the buying power of Ukrainian consumers and hence expand the market opportunities for EU companies. The exports of sugar and sugar confectionary products, fruits and beverages to Ukraine are indeed already expected to increase significantly.

It should be noted as well that the agricultural sector in the EU is rather clustered and hence the FTA might affect some areas (in which those clusters are located) more than others. The wine area around Bordeaux and sugar production in central Poland are examples of product-areas that will benefit from an FTA, while in particular the EU-15 is more vulnerable to liberalisations of trade in crops and livestock products (compared to the rest of Europe (EC – Scenario 2020, 2007)).

9.2.3 Social impacts

The major social concerns in the agricultural sector in Ukraine relate to the lack of income earning opportunities and low average wages in rural areas of Ukraine.

Large numbers of rural residents of most active working age are currently forced to move away from their places of residence in search of employment. The major reasons are low-paid agricultural jobs or simply the lack of those. According to 2006 data, the average wage in the agricultural sector hardly reached 53 percent of the national average. Moreover, the owners of new restructured agricultural enterprises often pay even less than minimum wages to agricultural workers, thus violating labour laws.

We see that as a social consequence of the FTA, employment increases are predicted in most sub-sectors of Ukrainian agriculture, which seems to slow down the abovementioned trend. Also wages are expected to go up as – over time productivity increases because of (foreign) investments. However, first of all, this does not imply that the FTA can reverse the much larger trend of shifting employment from agriculture to manufacturing and services over longer periods of time. Second, the model does not account for decreases in employment due to technology growth and more capital- (and less labour-) intensive ways of producing. These two effects complement the quantitative analysis and downsize its positive effects.

Employment in meat production is expected to increase if SPS provisions and implementation are included in the FTA while sector experts focus attention on inefficiencies of many pig-breeding and cattle-breeding enterprises. Most likely they will have to modernise production and therefore employment at the sub-sector level will increase less than predicted.[41] To an extent, the positive employment effects demonstrated by the CGE outcomes represent an upper limit, which are expected to be lower in reality in sectors where inefficiencies and hidden unemployment are high like in the pig- and cattle-breeding enterprises. In addition, technological progress is not included in the model, which on the one hand reinforces the expectations that the positive effects on employment may be more limited due to increasing efficiency but on the other underestimate the effect of 'new' jobs created in the agricultural industry. An FTA between the EU and Ukraine may initially lead to slightly higher levels of unemployment in rural areas, before long-term effects kick in and the rate of employment reduction is slowing down.

Increasing competition is expected to lead to strong pressure on the Ukrainian agricultural industry to modernise and improve production technologies. In the short run – when the investments are not yet in effect – this may lead to reductions in employment. In the long run, increased efficiency will also likely lead to a reduction in the number of employees doing today's jobs, but increase employment in 'new' jobs in the agricultural industry. The Ukrainian agricultural industry would then be able to produce much more for lower prices with less (labour) inputs.

[41] This effect occurs because production and export increases and the model assumes constant returns to scale and a symmetric reduction of tariffs.

Modernising Ukrainian agriculture also has the positive social impact of improving the quality of work, working conditions and possibilities for self-employment through entrepreneurial activities in Ukraine's rural areas.

Wage increases and – in the long run – modernisation of the agricultural sector, combined with increases in employment can increase the disposable incomes of workers in rural areas and thus have a negative impact on the GINI coefficient (i.e. a positive effect on income equality). Whether the overall FTA impact will lead to converging incomes depends also on the FTA effects in the industrial and service oriented sectors since the GINI coefficient is a relative equality index.

The regional income distribution is also expected to be affected by performance of the agricultural sector, which is an important and politically sensitive issue in Ukraine. The FTA shows potential positive economic and social effects for agriculture thus providing a development opportunity for the sector and the rural areas in western Ukraine. In terms of regional income distribution this is the more important as the FTA also leads to income increases, positive employment effects and rising wages in the south-eastern parts of Ukraine where heavy industries and manufacturing dominate (see other chapters of this study).

An increased variety of food products, possible increases in fruits and vegetables production and better quality of food (because of higher SPS standards) are likely (in the longer run) to affect public health positively. The increase in income is correlating also with better eating habits and a rise in the consumption of fruits and vegetables. Better health and safety standards that may result from an extended FTA are also likely to enhance public health. Similarly the FTA is expected to include flanking measures that will be addressed in the final report. It will take time to adopt the new SPS and safety standards, so these effects would be long term effects. Improvements in the education level of the agriculture workers and producers are also expected with the implementation of new standards. The strength of these social impacts depends, of course, on the courage and decisiveness with which the FTA is implemented.

Another important social issue is labour migration. As mentioned at the beginning of this section, labour migration out of the rural areas is a phenomenon that is currently happening. The FTA may have a dampening effect on labour migration.

- On the one hand, in the short run, transitional unemployment in agriculture will lead to the unemployed reallocating themselves to other sectors of the economy, i.e. construction or transport. This may also lead to geographical migration from rural areas to the cities. At the same time, many of the unemployed will not have an opportunity to leave their places of residence, which may – in the short run – aggravate the poverty problem in rural areas. These trends should be of concern to the Ukrainian authorities and FTA in developing a strategy and negotiate policy provisions to alleviate poverty and generate employment in rural areas;
- On the other hand, the EU-Ukraine FTA will most likely have a positive effect on the level of earnings in the sector and a mitigating effect on negative employment growth in the long run. This might keep the agricultural workers from migrating to other regions or sectors. As a result of FTA, working conditions of those employed will also improve which is another reason for not migrating.

The restructuring of Ukraine's agriculture – that has already been initiated and will be further encouraged by an FTA – can be seen as a necessary part in Ukraine's transition and development that involves – often painful – adjustments for industries, regions and/or groups of people. Mitigating measures and development plans have to address these issues to bridge the gap between the short run pains and long run benefits.

9.2.4 Environmental impacts

According to the DG Trade website*: "The EU firmly believes that further opening of trade for agricultural products is an important contribution to sustained and continued economic growth for all countries. But progress in trade must not damage the wide role of agriculture and legitimate consumer concerns. Citizens are worried by the impact of globalisation on the environment, health, social standards and cultural diversity. These 'non-trade concerns' are the fundamental links between sustainable agriculture, maintaining the landscape and the environment and responding to consumer concerns."*

The magnitude and character of the FTA environmental impacts in Ukrainian agriculture depend first of all, to a large extent on political decisions (as agriculture is one of the more regulated and politically sensitive sectors) and secondly, on the liberalisations already included in the WTO scenario. For environmental impacts on Ukraine and the EU, it is hard to distinguish between the WTO impacts and the additional FTA impacts, simply because the WTO impacts are not very clear. This is a limitation we face in this section of the report.

Most impacts are a consequence of WTO accession of Ukraine. These include dealing with the Soviet past:

- low productive extensive farming, up to 54 percent of land being ploughed up;
- acute pollution and deforestation problems;
- widespread wind and water erosion of soil, etc.

In some cases this legacy shows up in the form of old storage places packed with more than 20 thousand tonnes of unlabelled insecticides and pesticides, in other cases just as poor practices and lack of managerial solutions.

The WTO at first instance, and the FTA beyond that, may provide Ukrainian farmers with know-how and techniques that may significantly contribute to necessary environmental improvements. However – unless flanking measures are taken – the FTA environmental impact will be negative.

The downward trend of using less chemical, mineral fertilisers, dangerous pesticides, etc. as a consequence of the transition problems of Ukraine, is under pressure now from a change of production from regional self-supply to large scale production of the most profitable monocultures like sunflower or rapeseed. This also leads to the restart of using chemicals and other pesticides. For example, the use of mineral fertilizers was 141 kg per hectare of sown area in 1990, 13kg in 2000, and already as much as 32kg in 2005. The FTA could look at flanking environmental measures to address this issue, which could have an immediate impact on quality of the environment and soil protection

In the nearest future Ukrainian agriculture has to define its priorities in bio-production, use of intensive methods of livestock breeding and use of Genetically Modified Organisms (GMO) technologies, etc.

Traditionally poor management has resulted in heavy eutrophication problems. Ukraine neither ratified nor signed the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone and for the moment looks far from doing so. This means it is harder to address negative environmental impacts.

Ukraine's first successes in climate change activities after ratification of the Kyoto Protocol in February 2004 show good perspectives also for innovations in agriculture. In spite of developed cattle breeding and poultry farming and a constant rise in energy prices, so far no joint implementation projects are officially validated to recover methane at farms, even though this technology is easy to implement and replicate. Also so far no joint implementation projects are under development for nitrous oxide emissions reductions, a strong greenhouse gas, at crop and grazing lands.

The FTA regulatory approximation can have a positive environmental impact on intensive poultry or pig farms through further enforcing the permitting system and assisting with the implementation in Ukraine of the provisions of the European Union's Directive 96/61/EC on Integrated Pollution Prevention and Control (IPPC) that Ukraine has started to actively implement in 2006. According to preliminary estimations there are about two hundred such farms with significant potential of environmental performance improvement.

Another environmental problem is the chronic challenge of public under funding of nature conservation and soil remediation projects.

In the Table below, we find the environmental effects summarised for Ukraine.

Table 9.3 Summary of environmental impacts for Ukrainian agriculture

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
CO2 emissions from animal farming and biodegradation of agricultural waste	▽	–	▽	No	H
Land					
Total utilized agricultural area	?	––	○	Yes	H
Soil quality (fertilizer in soil, gross nutrient balance)	↕	–	○	Yes	H
Reduction of erosion	△	––	○	Yes	H
Organic farming area	?	↕	▽	Yes	H
Biodiversity					
Size of protected natural areas	○	-	○	Yes	H
Number of endangered species	○	-	○	No	/M
Environmental quality					

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Agricultural hazardous waste	△	--	▽	No	H
Use of renewable energy in agriculture	△	--	△	Yes	H
Fresh and waste water					
Nutrients (N and P) going into waterways	△	--	○	Yes	M
Irrigation water quantity	○	-	○	Yes	M
Number of rural WWT plants	△	--	○	Yes	H

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

The + signs for Ukraine in the agricultural sector are valid with the estimated improvements the FTA brings to the Ukrainian agriculture, especially in responsible use of pesticides and reduced use of fertilizers. Increased animal farming will increase methane emissions in Ukraine.

EU environmental impacts

The overall environmental impact of this FTA on EU agriculture is considered to be negligible in magnitude as in the short run the EU 27 agriculture is expected to have max 0.1 percent change in production output and EU agriculture has already implemented most if not all of the most stringent EU environmental regulations.

The increased production of certain agricultural products (fruits and vegetables during winter season) in the EU for the growing Ukrainian market can have small negative impacts resulting in increased pressure on irrigation water quantities, reduction of erosion and soil quality. Increasing livestock and bio-fuel crop farming together with the absence of good agricultural practices will result in uncontrolled nutrient leakages from Ukraine (indirectly) into international waters (e.g. the EU Black Sea coast, Danube river and Baltic Sea) shared by the EU. This would increase the pressure for flanking measures (e.g. wetlands restoration) also in the EU.

Transfer of animal and crop farming from the EU to Ukraine will have positive impacts for the EU in the form of reduced leakage of nutrients and decreased demand for fertilizers and pesticides. The EU policy goal to increase the share of renewable energy would benefit in the long run from access to renewable energy crops (corn, rapeseed), agricultural waste and wood pellets from Ukraine. This would reduce the CO2 emissions from energy production in the EU. However, a high question mark is the overall impact of CO2 emissions from agriculture both in the EU and Ukraine since the unit emissions in Ukraine are higher than in the EU because of the low use of biogas installations and farm waste for energy supply in farms.

Pressures to reduce rapeseed and sugar beet production in Northern Europe would increase when new supplies from Ukraine reach the EU market. However, these pressures would be balanced partially with the increased demand for renewable energy resources in the EU. Increased animal farming and meat production in Ukraine in combination with

the increasing import of these products into the EU raises the need to regulate the use of GMO's for food in Ukraine.

Regionally the environmental effects of the FTA in the EU are distributed unevenly; (a) pressures to use more irrigation water and negative impacts on erosion and soil quality affect southern regions; (b) nutrient leakages impact negatively especially the EU costal zones of the Black Sea; and (c) positive land use changes and reduced livestock dung affect central and northern regions.

The EIA results are summarised in Table 9.4 below.

Table 9.4 Summary of environmental impacts for EU agriculture

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
CO2 emissions from animal farming and biodegradation of agricultural waste	?	––	○	No	H
Land					
Total utilized agricultural area	○	0	○	Yes	H
Soil quality (fertilizer in soil, gross nutrient balance)	?	–	○	Yes	H
Reduction of erosion	?	–	○	Yes	L/M
Organic farming area	○	+	?	Yes	H
Biodiversity					
Size of protected natural areas	○	+	○	Yes	H
Number of endangered species	○	0	○	?	L/M
Environmental quality					
Agricultural hazardous waste	○	–	○	No	H
Use of renewable energy in agriculture	?	–	?	Yes	M/H
Fresh and waste water					
Nutrients (N and P) going into waterways	▽	––	○	No ?	M
Irrigation water quantity	▽	–	○	Yes	M
Number of rural WWT plants	○	+	○	Yes	H

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

10 Annex X In-depth analysis Metallurgy

In this Annex, the details of the impact analyses for the metallurgy sector are presented – in addition to the core information provided in the report.

10.1 Potential impact of an FTA

10.1.1 CGE modelling results

The assumptions underlying the CGE model for both FTA scenarios are summarised in Table 10.1 below and the model outcomes are presented in Table 10.2.

Table 10.1 Scenario overview metallurgy (2004 as benchmark)

WTO scenario	Scenario 1 Extended FTA	Scenario 2 Limited FTA
91% tariff reduction Standard costs reduced by 15% No reduction in border costs	100% tariff reduction from base case Reduction border costs by 50% Standard costs reduced by 35%	98% tariff reduction from base case Reduction border costs by 10% Standard costs reduced by 25%

Table 10.2 Model outcomes of the FTA impact on the metallurgy sector (% change

	Scenario 1: Extended FTA		Scenario 2: Limited FTA	
Indicators by sub-sector	SR	LR	SR	LR
Ferrous metals, metals nec				
Prices	-1.2	-1.1	-0.3	-0.2
Production	2.6	3.9	0.4	1.3
Skilled employment	2.68	4.05	0.44	1.36
Unskilled employment	2.69	4.07	0.44	1.36
Exports	3.0	4.0	0.0	1.0
Imports	1.0	1.0	0.0	0.0
Exports to EU	12.0	13.0	4.0	5.0
Imports from EU	4.0	4.0	1.0	2.0
Metal products				
Prices	-2.0	-1.9	-0.8	-0.7
Production	5.8	6.9	2.0	2.8
Skilled employment	5.96	7.23	2.04	2.86
Unskilled employment	6.00	7.28	2.05	2.87
Exports	9.0	10.0	4.0	4.0
Imports	3.0	4.0	2.0	2.0
Exports to EU	22.0	23.0	10.0	11.0

Indicators by sub-sector	Scenario 1: Extended FTA		Scenario 2: Limited FTA	
	SR	LR	SR	LR
Imports from EU	8.0	8.0	4.0	4.0

The metallurgy sector shows the anticipated positive impacts from an extended FTA for Ukraine in terms of increases in output and employment. The effects are stronger for an extended FTA, which is especially true for trade in general and trade with the EU in particular.

Also in the longer-run, when capital investments are allowed and internal capital re-allocation is possible in the Ukrainian economy, output will increase even more and so do employment and trade.[42] In case of a limited FTA there will be small increases in exports to and imports from the EU, while decreases in trade with third countries result in little or no trade effects in general. Particularly for the sub-sector metal products the effects of an extended FTA will be substantial, with predicted increases in output of over seven percent and increases in exports of approximately 23 percent in trade with the EU.

Outcomes of the model for the EU are all limited. Only in the metal products sub-sector some effects are predicted for exports (small decrease) and imports (increase of around 8%). However, these effects are dispersed and therefore negligible.

10.1.2 Economic impacts

The FTA agreement between the EU and Ukraine has the following estimated economic impacts for both countries:

- Border costs reductions are important in metal trade with Ukraine as export-import documents preparation takes up to a month and large reserves need to be kept. Reductions can lead to lower 'trade costs' and thus higher levels of competitiveness for Ukrainian steel and cheaper prices for steel in Ukraine and the EU;
- Upon accession to the WTO – with the agreement between the EU and Ukraine regarding steel currently in place – we expect an increase in exports of steel from Ukraine to the EU – the FTA is expected to even more support steel trade. This is expected to lead to a significant improvement in the trade balance of Ukraine;
- In the longer-run, when capital can move freely, the model shows stronger positive results than in the short-run. This is confirmed by the in-depth analysis whereby we expect further production increases when the metallurgy sector improves its equipment base, also leading to improved environmental impacts (more later);
- Ukrainian producers are expected to introduce new and more productive production methods, as their export advantage thanks to the extended FTA can be revisited if they are not able to compete in the global markets against other low-cost metal producers like China;
- Attraction of foreign investments to some plants and resistance to foreign capital at some others may lead to vertical integration of major production plants and increases

[42] Which is entirely in line with the theory of diminishing returns to capital and labour. When capital is allowed to allocate freely, it will allocate where it yields the highest marginal return (domestic as well as foreign capital) and thus increase the marginal product of labour, which is then again the reason why wage increases are possible.

in transparency of their operations. Indirect effects may include management improvements and strategic planning development. Also Ukrainian companies may be interested in European technologies (Voestalpine, Salzgitter) in order to reduce the quality gap in steel production. The FTA can lead to the import of technology and know-how;

- Increased pressure of rising costs of production is leading to plant modernisations in order to maintain profitability. Major projects are expected to take place in energy saving and changes in the technology of production;
- Predicted growth of the construction and motor vehicles industry are expected to lead to increases in demand for steel from the side of these sectors and consequently growth in metallurgy;
- Improvements in standardisation or introduction of European standards as a result of the FTA are not expected to have a large significant economic impact due to only minor mismatches in both technical and chemical requirements between the EU and Ukraine; and
- As the ICPS study (2007) points out, in addition to the positive environmental effects resulting from adopting new production technologies, the efficiency and production can improve. This could allow Ukraine to start trading in Kyoto Protocol emission credits, while keeping its metallurgy production at the same level or even at a higher level. This would of course boost the economy as a whole also. The low level of emissions currently compared to the allowed level acts also as an incentive for European metal producers to transfer their production into Ukraine hence enhancing Ukrainian domestically based production and employment even further.

The economic impact of an FTA for the metallurgy sector in the EU will be limited to negligible. Some positive effects can be expected in terms of exports (four percent increase in the case of an extended FTA) and considering the concentration of the sector within the EU, this may positively affect some steel producing regions within the EU. However, at the moment many European producers have difficulties staying inside the allowed CO2 emission targets even with current production levels. By transferring some of their production to Ukraine – which would be possible and easier upon signing the FTA – European producers could also benefit from the FTA and increase their production.

10.1.3 Social impacts

Social impacts focus on poverty reduction, and mostly labour issues like productivity and upgrading production facilities with respect to labour circumstances and worker safety.

The first impact of the FTA – both in the limited and extended versions – is predicted to be an increase in employment between two and seven percent. This increase in job opportunities reduces unemployment and has positive wage effects. Furthermore, lower unemployment can lead to lower levels of poverty. Since the metallurgy sector employs by and large low-skilled workers the positive effect on poverty alleviation is expected to be substantial.

Currently the use of outdated technologies and furnaces with expired life spans endanger worker safety in the sector. Upgrading of production facilities has been initiated, especially after the gas price increases, but still has limited coverage. Nevertheless, technological changes to modernise metal production aimed at increasing energy efficiency and productivity – i.e. motivated for economic reasons – will *inter alia* lead to higher levels of worker safety and positive (secondary) health effects.

No longer do workers have to operate polluting machines in factory halls but instead they can enjoy machines with identical technologies to the EU.

The FTA is expected to lead to more inflow of foreign investments from the EU into the sector and facilitate upgrading of the machinery and production methodologies (as mentioned before) which is expected to lead to higher productivity and thus to higher worker salaries as well, since wages reflect labour productivity. Increased productivity also leads to lower prices – not for consumers but as an intermediate input – and as such has a significant impact on the cost of living in Ukraine.

Growing demand for metal and metal products from the side of other expanding industries, such as machinery and construction, will most likely have a positive impact on employment in the metallurgy sector, which is confirmed by the modelling results.

In the EU, the very small negative production effects can lead to a small decrease of employment in the sector but has the positive effect of lower steel prices for EU industries. The concentration of the metal industry in Europe could lead to the producing regions facing small unemployment problems. However, as mentioned earlier these effects are estimated to be very small in magnitude.

10.1.4 Environmental impacts

The extended FTA predicts for the long run a 6.9 percent increase in metal products production and a 3.9 percent increase in ferrous metals production in Ukraine. We assume increases in output in the EU because of the increased import of metal scrap and semi-finished raw materials. The FTA will result in an increase of greenhouse gas emissions, if the current situation in the sector is not changed.

The environmental impact situation for this export-oriented sector may be assessed as one of the most significant in the study, both due to support of production levels and because of its environmental performance. The summary is shown in Table 10.3.

Table 10.3 Summary of environmental impacts for Ukrainian metallurgy

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
CO2 emissions from metallurgy[43]	▽	––	○	No	H

43 Metallurgy CO2 emissions include all greenhouse gas emissions recalculated as CO2 emissions.

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Air pollution and ozone depletion	▽	––	△	No	M
Land					
Use of iron ore and other raw materials	○	0	▽	No	L
Management of contaminated sites	▽	––	○	Yes	H
Biodiversity					
Contamination of waterways	▽	––	▽	Yes	M
Environmental quality					
Waste management	○	––	○	No/Yes	L/M
Use of energy	▽	––	▽	No	M/H
Energy efficiency	○	––	○	No	H
Fresh and waste water					
Quantity of water use	○	–	○	No	M
Quantity of waste water	▽	–	○	No	M
Cleaning of waste water	○	–	○	No	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

The most important environmental impacts of the FTA with respect to the metallurgy sector are:

- An expected increase in the size of the metallurgy sector leads to increasing levels of pollution – especially if production continues to make use of the current production technologies. This will lead to lower air quality and higher levels of dangerous chemicals in the atmosphere;
- The FTA can provide EU support and – through liberalisation – FDI support for upgrading production methods and processes leading to more efficient and cleaner production (e.g. get rid of open heath furnices);
- Ukraine can start producing part of the metallurgy products for the EU so the EU can meet its Kyoto protocol commitments while Ukraine still has idle capacity there and can boost employment and domestic production;
- The FTA may include provisions to reduce dust emissions as will be elaborated in Chapter 15 of the main report;
- Implementation of continuous monitoring, which is absent now, and improving the system of monitoring in general should provide reliable data on environmental performance and reflect any improvement or worsening.

The EU environmental impacts are identified for metallurgy. The framework is based on the EU Reference documents for the sector[44], and the environmental impact assessment (EIA) follows the guidelines of the EU Environmental *Acquis* and screening of gross media impacts is in accordance with the IPPC Guidelines[45]. The environmental impact is related only to the change in the sector output, and therefore cannot always be exactly quantified because of the small magnitude of change. Scoring of sustainability impacts follows the Handbook. The EIA results are summarised in Table 10.4 below.

[44] European Commission, 2001a. Integrated Pollution Prevention and Control (IPPC). Best Available Techniques Reference Document on the Production of Iron and Steel Reference Document on Best Available Techniques in the Ferrous Metals Processing Industry. December 2001. European Commission, 2001b. Integrated Pollution Prevention and Control (IPPC). Reference Document on Best Available Techniques in the Non Ferrous Metals Industries. December 2001.

45 European Commission, DG Joint Research Centre, European IPPC Bureau, Integrated pollution control and prevention, Reference Document on Economics and Cross-Media Effects, May 2005

Table 10.4 Summary of environmental impacts for EU metallurgy

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversi-bility	Capacity to Change
Atmosphere					
CO2 emissions from metallurgy[46]	▽	––	○	No	M/H
Air pollution and ozone depletion	▽	–	○	No	M
Land					
Use of iron ore and other raw materials	○	0	○	No	L
Management of contaminated sites	△	–	○	Yes	H
Biodiversity					
Contamination of waterways	?	–	?	Yes	L/M
Environmental quality					
Waste management	△	–	○	No/Yes	L/M
Use of energy	△	–	○	Yes	M/H
Energy efficiency	?	––	○	Yes	H
Fresh and waste water					
Quantity of water use	○	–	○	No	M
Quantity of waste water	○	–	▽	Yes	M/H
Cleaning of waste water	?	–	○	Yes	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

The environmental impact is assessed to be most significant for the greenhouse gas and SO_2 and NOx emissions with an overall increase higher than the increase in production due to the lower industrial standards in Ukraine. The magnitude of this change is estimated to be from 1 to 0.5 million tons CO_2 per year without flanking measures.

Other negative impacts for the EU would arise from increased production from metal scrap and finished products based on intermediates products supplied from Ukraine. An increased flow of metallurgy sector wastewater effluents from Ukraine into international waters shared by the EU would increase the pressure for flanking measures also in the EU.

Positive impacts for the EU would arise from reduced primary production of iron, steel and non-ferrous metals. The impacts would be highly localised and would improve the air quality, reduce the energy consumption and could leverage the negative impacts if the reductions in production would happen on same sites as the increased use of metal scrap and intermediate products from Ukraine.

46 Metallurgy CO2 emissions include all greenhouse gas emissions recalculated as CO2 emissions.

11 Annex XI In-depth analysis Machinery & Electronics

In this Annex, the details of the impact analyses for the machinery & electronics sector are presented – in addition to the core information provided in the report.

11.1 Potential impact of an FTA

11.1.1 CGE modelling results

The assumptions underlying the CGE model for both FTA scenarios are summarised in Table 11.1 below and the model outcomes are presented in Table 11.2. This is carried out for both 'machinery & electronics' and 'motor vehicles and parts'.

Table 11.1 Scenario overview metallurgy (2004 as benchmark)

Sub-sector	WTO scenario	Scenario 1 - Extended FTA	Scenario 2 - Limited FTA
Machinery equipment and Electronics equipment	▪ 35% tariff reduction ▪ No reduction in border costs ▪ Standard cost reduced by 15%	▪ 100% tariff reduction ▪ Reduction of border costs by 50% ▪ Standard cost reduced by 35%	▪ 100% tariff reduction ▪ Reduction of border costs by 10% ▪ Standard cost reduced by 25%
Motor vehicles and parts	▪ No tariff reductions ▪ No reduction in border costs ▪ Standard cost reduced by 15%	▪ 100% tariff reduction ▪ Reduction of border costs by 50% ▪ Standard cost reduced by 35%	▪ 100% tariff reduction ▪ Reduction of border costs by 10% ▪ Standard cost reduced by 25%
Transport equipment	▪ 15% tariff reduction ▪ No reduction in border costs ▪ Standard cost reduced by 15%	▪ 100% tariff reduction ▪ Reduction of border costs by 50% ▪ Standard cost reduced by 35%	▪ 100% tariff reduction ▪ Reduction of border costs by 10% ▪ Standard cost reduced by 25%

Table 11.2 Model outcomes of the FTA impact on the machinery & electronics sector (% on top of WTO)

Indicators by sub-sector	Scenario 1: Extended FTA		Scenario 2: Limited FTA	
	Short run	Long run	Short run	Long run
Machinery equipment & Electronics equipment				
Prices	-1.3	-1.2	-1.0	-0.9
Production	7.4	13.1	4.4	6.2

Indicators by sub-sector	Scenario 1: Extended FTA		Scenario 2: Limited FTA	
	Short run	Long run	Short run	Long run
Skilled employment	10.8	13.9	4.5	6.5
Unskilled employment	10.8	14.0	4.5	6.5
Exports	16	19	8	9
Imports	4	8	2	4
Exports to EU	44	47	22	24
Imports from EU	14	20	16	21
Motor vehicles and parts				
Prices	-1.9	-1.8	-1.3	-1.2
Production	4.7	7.9	1.5	3.6
Skilled employment	5.0	8.4	1.6	3.9
Unskilled employment	5.1	8.5	1.6	3.9
Exports	9	11	4	7
Imports	4	8	2	5
Exports to EU	57	60	28	30
Imports from EU	66	84	90	102
Transport equipment				
Prices	-0.3	-0.2	-0.3	-0.2
Production	3.3	5.3	1.5	2.9
Skilled employment	3.2	5.2	1.5	2.8
Unskilled employment	3.2	5.2	1.5	2.7
Exports	4	6	2	3
Imports	3	6	1	3
Exports to EU	23	25	12	13
Imports from EU	25	33	19	25

The machinery and equipment sector is one of the larger sectors in terms of employment and output in Ukraine. When we look at the expected changes in output and employment, this sector tops the charts in absolute values. Changes of 13.1 percent in production as a consequence of the FTA and 14.0 percent in employment make this the number one sector in terms of changes in its production structure. Given the depressed state of the sector, the FTA may just be what is needed to boost it into higher levels of productivity, employment generation and output levels. Also the motor vehicles and parts sector shows increases in production, employment and trade, albeit smaller in percentage changes than the machinery & electronics sector.

Prices in both sectors are expected to decrease because of the FTA and the trade balance of the sectors may improve because exports increase faster than imports.

11.1.2 Economic impacts

There are various expected economic impacts of the FTA for the machinery & electronics sector that have a significant impact on the Ukrainian economy.

- Especially in the long-run in the extended FTA, we expect the sector and its sub-sectors to show large (up to 13.9 percent) increases in production because of lower prices and more international competition due to lower tariffs;
- According to data supplied by the Ministry of Economy, the FTA reduction of weighted average tariffs (much more relevant for this sector than post-WTO

reductions) will bring about a profound reduction of domestic prices for imported machinery & electronics commodities;

- Linked to increases in production, we expect lower tariffs, given the strength of the Ukrainian economy in machinery & electronics, to generate more trade with the EU and generate an increasing trade surplus;
- A reduction in border costs has similar economic impacts in that lower border costs lead to lower prices and more international competition. This will cause more efficient Ukrainian production, lower margins, more trade with the EU and cheaper imported and domestically produced parts & components;
- Ukrainian machinery & electronics equipment is not identical to EU equipment – especially in machinery – so the FTA has the effect of increasing the number of varieties and types of machinery on the EU and Ukrainian markets. Access to the EU market depends on provisions and achievements in approximation of technical standards towards EU standards. In order to bring production standards in line with EU standards, CASE expects the sector to have to spend an additional 4.4 – 20 percent of annual production in the coming years. This is a costly but much needed transition that needs time;
- In the transport equipment sector production is expected to increase and prices for equipment will drop slightly;
- As an enabling industry, the future of the machinery & electronics also depends on the performance of downstream sectors (e.g. aviation industry, agriculture, transport sector, production industries);
- A fall in motor vehicles prices is expected to increase households' disposable incomes because of lower prices. The combination of lower prices with growth of real income will stimulate further growth in the sector;
- Most of the leading Ukrainian companies are either state owned (i.e. in aerospace or aircraft sub-sectors) or controlled by local owners, who are reluctant to share rights and profits with foreigners in exchange for investments. Competitive pressures will force ineffective owners to sell the companies' stakes or conduct IPOs to remain afloat;
- The FTA is expected to increase competition and a kind of Darwinian 'survival of the fittest' where the domestic firms with the cheapest cost structures and highest margins will survive but other firms will go bankrupt. This is painful in the short run but strengthens the sector significantly in the long run[47]; and
- Even though the FTA effect on output of transport services is negative, upgrades of transport machinery are much needed to comply with future EU ecological standards which could result in a positive (indirect) impact for machinery & electronics output and employment;
- In the longer run, when capital investments in the industry take effect, the machinery & electronics as well as the motor vehicles and parts production can be carried out more efficiently and environmentally friendly (see environmental impacts). This is why in the longer run the positive effects of the FTA are larger than in the short run.

One should keep in mind that the model assumes unchanged technologies in the long-run, which is not a plausible assumption in the real world. Thus, the results of the model

[47] It is expected that domestic producers with profit margins lower than 10% may close all or part of their production capacities. Companies with better performance indicators are more likely to survive.

discussed above may be strongly affected by success (or failure) of R&D activities, quality of long-term investment projects and management decisions within sub-sectors. Noteworthy, the model provides average changes for sub-sectors saying that the overall effect for the industry on the whole is likely to be positive; however, it is important to keep in mind that there will be winners and losers in every sub-sector.

Another important issue worth mentioning is that Ukraine's competitive advantages like cheap human capital and an advantageous geographical position remain under exploited by leading European companies. Until now European producers preferred to found subsidiaries in Russia instead of Ukraine. Liberalisation of the trade regime between Ukraine and the EU is most likely to bring more outsourced production of EU companies to the country.

The machinery & electronics is likely to benefit substantially from cheaper financial resources resulting from an improved competitive environment in the financial sector. New opportunities to raise funds abroad will favour realisation of long-term investment projects and purchase of technologies. Companies, from their side, will need to improve quality of financial management and become more transparent towards potential borrowers.

11.1.3 Social impacts

Compared to the WTO scenario, employment increases are observed for the entire sector machinery & electronics including the transport equipment and motor vehicles sub-sectors, especially under the extended FTA scenario. Also wages are expected to go up in the sectors because of productivity increases and in spite of increased competition.

We expect employment increases in the motor vehicles sub-sector to be even stronger than the modelling exercise shows due to the expected FDI inflows because of resource reallocation and production fragmentation of large multinational car producers. This is further corroborated by in-depth interviews with motor vehicles representatives. The EU-Ukraine FTA is expected to strengthen the Ukrainian comparative advantages of cheap labour and the prospect of a domestic market for European car producers, who will likely expand their presence in Ukraine. The more Ukraine is able to reduce red tape and other border and standard costs, the stronger this effect will be.

Opening new European automobile plants and upgrading Ukraine's machinery production can have additional social effects. Working conditions are likely to improve with foreign firms entering the market and conducting greenfield investments (or upgrading existing machine parks) making use of the latest insights in worker safety, health conditions on the work place and clean production technologies.

Because of the concentrated location of the machinery & electronics industry we expect limited regional effects to occur, i.e. some regions will benefit substantially more than others.

Higher production will lead to lower levels of unemployment and thus on poverty, while at the same time increasing GDP per capita in the machinery & electronics sector. Even though the FTA effect on output of transport services is negative, upgrades of transport machinery are much needed to comply with future EU ecological standards which could result in a positive (indirect) impact for machinery & electronics output and employment;

Overall, since through FTA provisions the EU and Ukraine will agree on standards for quality of work, this will lead to the improvement of working conditions, especially in the manufacturing industries, including the machinery and electronic equipment sector. Moreover, the effect of an FTA including machinery & electronics is that a larger share of Ukrainians will decide to enter the labour market again, with higher wages offered and more job opportunities to choose from.

11.1.4 Environmental impacts

The screening of gross media impacts for machinery & electronics is in accordance with the IPPC Guidelines[48].

Table 11.3 Summary of environmental impacts for machinery & electronics

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
CO2 emissions from machinery & electronics[49]	○	–	▽	No	M
Air pollution and ozone depletion	○	–	○	No	M
Land					
Use of raw materials		-	▽	No	M
Management of contaminated sites	△	––	○	Yes	H
Biodiversity			○		
Heavy metal contamination	○	––		Yes	H
Environmental quality			○		
Waste management	△	–	▽	Yes	M
Use of energy	▽	–	▽	No	H
Energy efficiency	○	–	○	No	H
Fresh and waste water					
Quantity of water use	△	–	○	No	M

48 European Commission, DG Joint Research Centre, European IPPC Bureau, Integrated pollution control and prevention, Reference Document on Economics and Cross-Media Effects, July 2006; Reference Document on Best Available Techniques in the Smitheries and Foundries Industry, May 2005; Reference Document on Best Available Techniques on Surface Treatment Using Organic Solvents, May 2007; Reference Document on Best Available Techniques for the Surface Treatment of Metals and Plastics, August 2006

49 CO2 emissions include all greenhouse gas emissions recalculated as CO2 emissions.

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Quantity of waste water	▽	–	○	No	M/H
Cleaning of waste water	○	–	○	No	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

The machinery & electronics sector is recovering after the severe economic crisis of the 1990s and in 2007 it may be the most successful one. Many development plans are presented while from the pollution point of view the sector looks only moderately negative in comparison with powerful power production and ferrous metallurgy.

The expected environmental impacts of the FTA for Ukraine are:

- A better competitive performance of the sector because of the FTA may result in better environmental performance, like improvement of energy and materials use, efficient control and utilisation of solvents, etc.
- Strong sector growth may lead to increasing pollution levels with additional damage to the atmosphere and water;
- Casting at foundries is connected with the formation of inert sand waste with a significant impact on the environment;
- In any foreseen development no additional land use is required; restoration of production is expected to assist recovery and remediation of abandoned and scarcely used brown fields;
- Another impact may be that soil pollution increases – like previously in the Soviet times – as Ukrainian legislation is limited to air and water emissions.

The overall environmental impact of the FTA in machinery & electronics in the EU is considered to be negligible in magnitude, also in the long run. However, the green focus of the EU industrial policy worked on with Ukraine through the FTA helps the industry to reduce greenhouse gas emissions and to develop new low-energy and resource saving processes and products. Waste management is one of key concerns for machinery and electronics industry.[50]

The priority areas for machinery and electronics are climate change, use of resources and waste. These themes are further reflected in the environmental assessment of the sector, and in recommendations for flanking measures.

Below, in Table 11.4, we summarise the environmental impacts of the FTA for machinery & electronics for the EU.

[50] The EU Waste Thematic Strategy and related amendments to the Waste Framework Directive (75/442/EEC) underline the life cycle approach and highlight the importance of reinvigorating the initiatives on eco-design. Key points include the shift towards a materials based approach in waste policy, away from the mechanisms focused on particular types of end product such as under the Waste Electronic and Electrical Equipment Directive (WEEE) Directive.

Table 11.4 Summary of environmental impacts for the EU

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
CO2 emissions from machinery & electronics51	○	––	○	No	M/H
Air pollution and ozone depletion	○	–	○	No	M
Land					
Use of raw materials	○	0/-	?	No	L/M
Management of contaminated sites	○	–	○	Yes	H
Biodiversity					
Heavy metal contamination	○	–	○	No	M/H
Environmental quality					
Waste management	○	–	○	No/Yes	L/M
Use of energy	○	–	○	Yes	M/H
Energy efficiency	?	––	○	Yes	H
Fresh and waste water					
Quantity of water use	○	–	○	No ?	M/H
Quantity of waste water	○	–	○	Yes	M/H
Cleaning of waste water	?	–	○	Yes	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

The environmental impact is assessed to be most significant (even though negligible) for the greenhouse gas and CO2, SO2 and NOx emissions with an overall increase higher than the increase in production due to the lower industrial standards in Ukraine. Other negative impacts for the EU arise from increased production of finished products based on intermediate products supplied from Ukraine. However, the magnitude is negligible for the EU. Positive impacts for the EU would also be negligible.

[51] CO2 emissions include all greenhouse gas emissions recalculated as CO2 emissions.

12 Annex XII In-depth analysis Energy

In this Annex, the details of the impact analyses for the energy sector are presented – in addition to the core information provided in the report.

12.1 Potential impact of an FTA

12.1.1 CGE modelling results

The modelling results for coal, oil and gas production are presented in Table 12.1.

Table 12.1 Overview of model outputs for coal, oil and gas production

	Production		High skilled employment		Low skilled employment		Prices	Exports	Imports	Exports to EU	Imports from EU
	US$ bn	%	Number	%	Number	%	%	%	%	%	%
Base scenario	3,480		36,217		1,233,498						
Change on Base											
WTO accession	-0.056	-1.6	-592	-1.63	-20,229	-1.64	0.3	-6	12	-6	n/a
Change on WTO											
Limited FTA: short run	-0.038	-1.1	-775	-2.14	-26,520	-2.15	0.0	-3	17	-3	n/a
Limited FTA: long run	-0.027	-0.8	-630	-1,74	-21,586	-1.75	-0.2	-3	36	-4	n/a
Extended FTA: short run	-0.073	-2.1	-398	-1.11	-13,691	-1.11	0.1	-5	36	-5	n/a
Extended FTA: long run	-0.056	-1.6	-286	-0.79	-9,621	-0.78	0.4	-6	63	-6	n/a

Note: Description of CGE model results for Ukraine

12.1.2 Economic impacts

From the model outcomes and the detailed sector analysis, we see the following economic impacts effects of the FTA:

- *Substitution of the domestic energy production with imports* is expected due to a fall in energy (coal/oil/gas) output, combined with substantial increase in imports and fall in exports;
- *Deterioration of the trade balance in coal/oil/gas* is expected due to the substantial increase in value of imports (up to 63 percent) together with a fall in value of exports (up to 6 percent). Increase in imports also means increased dependence and a reduced energy security;
- *Increased competition in the energy market.* The requirements that the WTO puts (more transparency and competitive pricing) can lead to more competition in external energy trade. Yet, more competition in this case will not necessarily translate into more trade at lower prices, because of the highly political nature of the Ukrainian external energy trade;
- *FTA will influence the energy mix as well.* The model works with coal, oil and gas as one sector and, thus, does not show changes in the energy mix. With increased domestic energy prices we expect the share of gas to diminish and coal to increase in the short run. However an increased pressure to adhere to EU environmental regulation may again lead to more use of gas and less of coal in the longer run;
- *Real incomes* of the employees in coal, oil and gas production may go down as there is a downward pressure on wages due to increasing levels of unemployment;
- *Increased production of electricity* for domestic consumption, as electricity exports will reduce simultaneously. These effects are stronger for the extended FTA than for the limited FTA;
- *Increase in business confidence.* Implementation of the provisions of the MoU on nuclear safety will lead to increase in confidence of international community and markets in the Ukrainian nuclear energy sector. One can expect increases in electricity trade as a consequence (in fact, the MoU implies that increase in safety is a precondition for more trade in electricity). Guaranteeing of safety should be also a precondition for increase of nuclear energy production (the Energy Strategy 2030 envisages that the role of nuclear energy will grow). The cost of safety enhancement may have to be factored in the electricity prices and, thus, lead to their increase;
- *The nuclear sector*, being in public hands and receiving nuclear fuel from Russia may become a cheap energy producer with an unfair competitive advantage over some of its EU counterparts;
- *Modest increase in electricity prices.* Removal of subsidies for household tariffs can result in modest overall price increases. The possibility of direct contracts with (foreign) consumers and adherence to technical standards for nuclear fuel as well as rising Russian gas prices may potentially lead to a rise in Ukrainian electricity exports even though this hypothesis is not supported by the model outcomes. This development also depends on Ukraine's accession to the Union for the Coordination of Transmission of Energy (UCTE) and implementation of related technical specifications like the line load limits, load frequency control, line losses, parallel path flows and location matters. Also with respect to nuclear energy, once more we emphasise the need for addressing issues of nuclear safety in Ukraine;
- *Energy security* for the EU increases which is likely to lead to less volatility in energy prices (even though volatility can never be eliminated) while the price changes are negligible for consumers;

- *Investment opportunities* for EU companies increase which lead to more (financial) involvement of the EU in the Ukrainian energy sector and gains for Ukraine in terms of energy efficiency and the use of new technologies;
- *The trade balance* is expected to improve for the EU – according to the CGE outcomes – with more exports to and less imports from Ukraine.

12.1.3 Social impacts

The outputs of the modelling exercise show negative impacts on employment for coal, oil, and gas production, but positive effects for the electricity sector. Positive overall employment effects for the two sectors combined seem to dominate in the extended FTA scenarios, while overall employment effects in the limited FTA are negative. These impacts are mostly driven by the corresponding production changes in these sectors.

Since about 80 percent of total labour in coal, oil, and gas sector is employed in coal production[52], this sector is likely to be affected the most by the negative employment trends. The FTA is expected to speed up the adoption of the government programme for the coal sector restructuring. The programme foresees privatisation of the majority of Ukrainian mines. Private owners can introduce new technologies and equipment, aimed at raising productivity and output, but with possible negative employment effects.

However, the model results show that in the long-rung negative employment effects are less pronounced than in the short-run. This suggests that in the long-run (where according to the model the capital stock is allowed to adjust) private investments are likely to reach such levels that increased production will cause increases in employment again, driven by gradual production recovery.

One of the major social problems of the coal sector is the very low worker safety standards in Ukrainian mines. Statistics show a threatening picture: 168 miners were killed in accidents already in 2007, and according to these numbers Ukraine is ranked in the world second from the bottom after China. Though the number of miners killed in accidents has been showing a declining trend since late 1990s[53], the situation is still alarming. Successful implementation of the EU-Ukraine FTA, may lead to higher worker safety standards.

Separate from the FTA, Ukrainian Membership of the Energy Community in the medium-long run is also expected to generate significant positive health effects through lower nuclear risks and increased attention to health and safety standards in energy production. Regulatory approximation to EU standards is expected to further strengthen the quality of work, social protection of employees and emphasise the core aspects of decent work – in which Ukraine has a long way to go in (parts of) the energy sector. A specific issue in this respect is not just the approximation of standards and regulations, but especially the effectiveness of the enforcement of these regulations.

[52] Based on model input data, source: Ukrainian state statistics committee input-output tables.
[53] Source: Korrespondent, August 4, 2007, based on Ministry of Extraordinary Situations data.

Next to the direct health effects, there are also substantial indirect health effects of the FTA through environmental impacts in Ukraine and the EU. For the environmental impact we refer to section 12.1.4.

Impacts on employment in the electricity sector are expected to be positive, with most employment created under the long run extended FTA scenario.

The FTA facilitates the privatisation process encouraging foreign capital participation thus boosting investments in new machinery and equipment and the adoption of new and improved production methods. The FTA is expected to generate similar positive changes in working conditions standards as in raw materials production.

Finally, since the overwhelming majority of labour employed in the energy sector (97%) is low-skilled, this part of the labour force will be most affected by the changes. While, the coal, oil, and gas sectors will suffer especially in the short-run from employment reductions, the electricity sector is expected to create additional employment. Thus, it is important to be taking regional employment effects and re-education into account (Eastern regions of the Ukraine - where coal mining is mostly concentrated).

12.1.4 Environmental impacts

An overall key expected impact is that the Ukrainian energy balance as a result of the FTA will lead to an increase in prices and therefore promote a shift towards coal away from natural gas in the short run. The environmental impact is expected to be most significant for the greenhouse gas and SO2 and NOx emissions into the atmosphere with an overall increase higher than the increase in production due to the lower industrial standards in Ukraine. Since air does not stop at borders, these environmental effects also partially spill over to the (eastern) EU.

The energy sector impact on climate change originates partly from fuel combustion at power stations (above 15 percent of total GHG emissions in Ukraine). However, the key contributors are coal based methane emissions and leakages during extraction and transportation of natural gas (already covered in the in-depth analysis of transport services). The FTA will modestly increase the power sector GHG and SO2 and NOx emissions. Assuming that the volumes of natural gas transported through Ukraine to the EU will not considerably increase from current levels, the new methane emissions from natural gas pipelines can be omitted.

Concerning the *atmosphere,* assuming that the FTA enhances the current trend of annual growth in electricity production in Ukraine by 2.7 percent each year (4 year average), an estimated 4.4 million tons CO2 per year emission is expected if no flanking measures are set up in Ukraine. However, highly accumulated arrears of the electricity and gas sector together with access to new investment funds can reduce the increase of CO2 emissions. The air pollution impacts together with the increased pressures from transport emissions damage the ecosystem and man made environment with acidifying substances, and in relation to health, ground level ozone and particulate matter (“fine dust”) from coal fired power stations are the pollutants of most concern.

The *land use* impacts in the EU would be concentrated near the power utilities supplying electricity to Ukraine, provided that the long term effect of increased import of energy from the EU would materialise. Increased flows of imported coal, oil and natural gas would mainly have impact outside the EU. However, the negative impacts would be highly localised and the overall impact is negligible in terms of this FTA.

The impact on *biodiversity* in the EU ecosystems is assessed to be negligible due to the already high negative baseline from energy and transport. However, concerns remain about the overall impact of acidifying and ozone depleting pollution originating from Ukraine.

The *environmental quality* in the EU will potentially be improved as a result of implementation this FTA. Especially, in the long run the FTA would stimulate the implementation of the EU energy policy goals towards more efficient use of energy, recycling of waste for energy use, and increased share of renewable energy. However, the risks related to nuclear energy and nuclear waste management might reverse this positive impact.

The FTA would increase localised pressures for *fresh water resources and wastewater treatment* especially adjacent to coal fired power stations.

The summary of environmental effects for Ukraine and the EU are presented in the Tables below.

Table 12.2 Summary of environmental impacts for the Ukrainian energy sector

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
CO2 emissions from energy[54]	▽	––	▽	No	H
Air pollution and ozone depletion	▽	––	○	No	H
Land					
Use of energy resources (coal)	▽	–	▽	No	M
Management of contaminated sites	△	–	○	Yes	H
Biodiversity					
Acid rain, ecosystem damage	?	––	▽	Yes	M
Environmental quality					
Waste management	?	–	○	Yes	M
Use of energy	▽	–	▽	Yes	H
Energy efficiency	▽	––	○	Yes	H
Fresh and waste water					

[54] Energy CO2 emissions include all greenhouse gas emissions recalculated as CO2 emissions.

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Quantity of water use	○	–	○	No	M
Quantity of waste water	▽	–	○	Yes	M/H
Cleaning of waste water	?	–	○	Yes	L

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

Table 12.3 Summary of environmental impacts for the EU energy sector

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
CO2 emissions from energy[55]	▽	––	○	No	M/H
Air pollution and ozone depletion	▽	–	○	No	M
Land					
Use of energy resources (coal)	○	0/–	▽	No	L
Management of contaminated sites	+	–	○	Yes	H
Biodiversity			○		
Acid rain, ecosystem damage	?	–	○	Yes	L/M
Environmental quality					
Waste management	○	–	○	No/Yes	L/M
Use of energy	+	–	?	Yes	M/H
Energy efficiency	?	––	○	Yes	H
Fresh and waste water					
Quantity of water use	○	–	○	No	M
Quantity of waste water	○	–	○	Yes	M/H
Cleaning of waste water	?	–	○	Yes	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

Overall, trends that will influence these impacts include the phasing out of outdated facilities, nuclear safety, increased dependency for imported energy resources both in the EU and in Ukraine, increased environmental requirements and technology development for low carbon options.

[55] Energy CO2 emissions include all greenhouse gas emissions recalculated as CO2 emissions.

13 Annex XIII In-depth analysis Trade in Services

In this Annex, the details of the impact analyses for the trade in services sector (and sub-sectors) are presented – in addition to the core information provided in the report.

13.1 Potential impacts of an FTA

Before we present the potential impacts of the FTA, we stress the fact that except for mode 3, the tax equivalents used in the CGE modelling are hypothetical and assumed to be equal to mode 3 tax equivalents. This means that liberalisation results from the CGE modelling that are associated with their removal are based on these assumptions and therefore need to be interpreted with care. Based on these assumptions, we warn against detailed impacts and subsequent policy implications.

13.1.1 Distribution services

Results from the CGE modelling

The outputs of the modelling exercise show important positive effects for the distribution sector in Ukraine – beyond those resulting from WTO accession – for the implementation of an FTA. In the long run model variant, production and employment in the distribution sector are estimated to increase by slightly under 3 percent in the limited FTA scenario and by close to 5 percent in the extended FTA scenario. In the latter case this is translated into an increase in employment within the sector of some 100,000 persons.

The large positive outcome is understandable if the inter-relationship between trade liberalisation and the role of the distribution sector is considered. Expanding the volume of physical trade between the EU and Ukraine will inevitably increase demand for the intermediary services provided by the wholesale segment of the distribution sector; both in terms of services related to supply of goods to the Ukrainian market and also through Ukraine's role as a transit location between the EU and Russia and the surrounding region.

Positive impacts can also be expected in the retail segment of the market. Despite the restructuring of the retail segment that may come about through the entry of EU and other major international retail suppliers and the potentially negative impacts that this may have on smaller local retailers, it needs to be remembered that trade expansion will expand both the volume and range of products entering the Ukrainian retail market that overall should expand the value of output/production in the sector. Further, the adoption of retail

concepts emphasising consumer service elements within retailing should further increase employment demand.

Table 13.1 Overview of scenarios for distribution services

Scenario	Description	Model hypothesis
Base scenario		
WTO accession	Cancellation of the limitations during the five-year transition period on the share of foreign capital in the authorized fund of enterprises which distribute printed editions.	
Limited FTA	Limited liberalisation in modes 1-4; limited increase in goods for distribution; limited extent of regulatory approximation to lower NTBs	Limited elimination of barriers to FDI
Extended FTA	Liberalisation in modes 1 – 4; increases in goods for distribution from trade liberalisation, increases in FDI into services, far-reaching agreement on regulatory approximation leading to removal of NTBs	Full elimination of barriers to FDI

Table 13.2 Overview of model outputs for distribution services

	Production		High skilled employment		Low skilled employment		Prices	Exports (in general)	Imports (in general)	Exports to EU	Imports from EU
	US$ bn	%	number	%	number	%	%	%	%	%	%
Base scenario	14.46		98,363		1,989,800						
Change on Base											
WTO accession	0.014	0.1	148	0.1	2,985	0.2	0.8	-5.0	3.0	-5	3
Change on WTO											
Limited FTA: short run	0.044	0.3	285	0.3	5,770	0.3	0.4	-4.2	1.9	-4	2
Limited FTA: long run	0.405	2.8	2,833	2.9	57,505	2.9	-1.3	-1.1	1.0	2	1
Extended FTA: short run	0.174	1.2	1,141	1.2	23,221	1.2	0.7	-7.4	4.9	-7	5
Extended FTA: long run	0.695	4.8	4,924	5.0	100,226	5.0	-0.2	2.1	2.9	2	3

Economic impacts

As the wholesale and retail market is far from being saturated in Ukraine, the EU-Ukraine FTA will most likely make this sector even more attractive for the new entrants from the EU, thus, increasing FDI inflows into the sector. This will lead to increased competition, which will have both positive and negative impacts in which the former outweigh the

latter: positive – since the overall enhanced competitiveness will increase productivity, lower prices and higher growth of the sector; negative – because some domestic operators (especially smaller ones) may not survive and lose their market share to the more competitive international service providers.

Despite strong competition for domestic operators, overall employment in the sector will most likely increase, since incoming international distribution service providers will create more work places within their Ukraine-wide chains than those lost because of increased competition. This is supported by the modelling results, where employment for both high- skilled and low-skilled workers substantially increases especially in the long-run extended FTA scenario.

In both scenarios, the exports are expected to decrease in short run, while in the long run they will increase slightly. Hence, an FTA would increase the trade deficit slightly in the trade with the EU in short run, while in long run it will even out again. The imports are increasing slightly, which means that there are more European retail and wholesale companies entering the Ukrainian market. This will boost competition and increase the number of varieties of products for consumers. As mentioned before, fuels and ferrous metals are of particular importance for the wholesale segment. Since trade in both these product categories is expected to increase substantially because of the FTA, trade in distribution services is further enhanced.

Consumers/service users will benefit from the increased competition in several ways. First, increased competition will lead to the improvements in quality of services and to the enhanced product variety available through the wholesale and retail chains. Second, as a result of increased competition there might be reduction in prices.

Part of the positive impact depends on the degree to which the FTA achieves agreement on regulatory approximation for specific sectors and goods products – that subsequently needs to be distributed. The deeper the integration through regulatory approximation and implementation, the larger the positive effects.

Social impacts

As pointed out in the economic impacts and our further analysis, the Ukraine FTA will have a positive impact on employment in the distribution services sector.

Modelling results show that both low-skilled and high-skilled employment increases in the short-run amount to 0.3 percent for the limited FTA and 1.2 percent for the extended FTA, while in the long run we have even more optimistic estimates of 2.9 percent and 5 percent respectively. Given the low share of high-skilled workers characteristic for the sector, in the long run this translates into over 57.500 low-skilled and approximately 3.000 high skilled work places in the limited FTA scenario and over 100.200 low-skilled and 5.000 high-skilled work places in the extended scenario.

Derived from strong employment growth and employment opportunities is the fact that we expect poverty to decrease – the more because the distribution sector is an enabling sector that has an impact economy-wide – and health impacts to be positive, with increasing life expectancy and lower mortality rates. This latter effect can be enhanced

even further, if – in parallel to employment growth – enough emphasis is placed on decent work and improvements of the quality of work and employment circumstances and surroundings. The FTA provides the perfect vehicle to emphasise these effects.

During this transition process, for this sector, the strong skewness towards low-skilled employment in the sector needs to be kept in mind. Care should be taken that the incentives for higher education among young Ukrainians do not diminish, especially given that the EU-Ukraine FTA will most likely lead to a closing income gap (on average) as presented in the Global Analysis Report.

Another important social impact is the fact that development in distribution services (especially retail trade) is geographically uneven, benefiting the industrial areas in Ukraine more than the agricultural countryside.

Environmental impacts

Looking at distribution trade, the size of Ukrainian distributive trade is 635 smaller than the EU distributive trade size. This has been accounted for when estimating the environmental impacts and conclusively the overall environmental impact of the EU Ukraine FTA is mostly negligible.

- In Ukraine, the environmental impact of changes in distribution services is connected with a negative influence of further increases of motor vehicles use, as private cars are more and more used for shopping. Increase of packaging waste is to follow as well. Both factors are aggravated by specific Ukrainian conditions, like low quality and sometimes even faked motor fuels, poor state of car fleet because of traditionally long use of cars and widespread import of old second hand cars from Europe, almost complete absence of waste separation, very limited recycling programmes, no programmes for utilisation of dangerous substances, electronic waste, batteries, etc.

Thus motor vehicles evoke of greenhouse gases and air pollutants emissions like PAH, particulates, CO, NOx, and SOx when diesel engines.

The distributions sectors impact on the *atmosphere* is expressed in overall emissions of greenhouse gases, but these emissions are mainly related to the transport emissions. Additional air pollution and ozone depletion is to some extent generated from plastic packaging procedures and use of refrigerators. However, the change induced by this FTA is negligible to the baseline value in the EU.

The impact on *environmental quality* is more tangible; increased amounts of packaging waste increases pressures on waste management during collection and on landfills. All new recyclable and eligible for energy use packaging materials induced by this FTA need to be taken care of in the existing waste incineration and power facilities. Currently it is not possible to estimate the actual amount of additional packaging waste generated by this FTA. As for use of energy and energy efficiency we assume that this FTA has no negative impact on the baseline development in the EU.

The estimated impact on the *fresh and waste water* indicator follows the distributive sector development in the EU, and the impact of this FTA on it is negligible.

Table 13.3 Summary of environmental impacts for Ukrainian distributive trades

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
CO2 emissions from transport[56]	▽	–	▽	No	H
Air pollution and ozone depletion	○	–	○	No	H
Land					
Use of raw materials, land use	○	–	○	Yes/No	M
Management of contaminated sites	△	–	○	Yes	H
Biodiversity					
Protected areas, ecosystem, species	○	–	○	Yes	M
Environmental quality					
Waste management	△	–	○	Yes	M
Use of energy	○	–	○	Yes	H
Energy efficiency	△	––	○	Yes	H
Noise pollution	○	––	○	Yes	H
Fresh and waste water					
Quality of ground water	○	0/–	○	Yes	M
Quantity of waste water	△	–	○	Yes	H
Cleaning of waste water	△	–	○	Yes/No	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

13.1.2 Transport services

Results from the CGE modelling

The outputs of the modelling exercise show negative initial effects for the transport sector in Ukraine – beyond those resulting from WTO accession – for the implementation of a FTA but a major rebounce in the longer-run. In the short-run version of the extended FTA, production and employment in the transport companies are estimated to decrease by 7.8 percent. In the longer term, the model results show that a part of the short-run losses are offset again by improvements in the production and employment situation. This is shown in Table 13.5. In addition, in-depth interviews with representatives of the transport sector in Ukraine and economic experts from ICPS, combined with the CGE model limitations, make us conclude that even though transport services may suffer a short run setback, in the longer run – even though the Ukrainian transport services may still suffer – the overall sector will rebounce.

As described in this Chapter, the transport sector is characterised by oversupply of outdated transport infrastructure, inefficient service provision – often through state

[56] Transport CO_2 emissions include all greenhouse gas emissions recalculated as CO_2 emissions.

monopoly service providers – and, as a consequence suffers from insufficient investment, for example in maintenance and technological development. Major structural reform within the transport sector is required and the FTA can be seen as providing a catalyst for this necessary development. Opening up Ukraine's transport sector (internal water transport, computer reservation systems (Amadeus) and basic transport of passengers and freight) to increased international competition – which may involve private sector participation in provision of services currently in government hands – will necessitate considerable efforts to improve efficiency and productivity. However, the negative consequences this may have for the domestic transport companies in the short-run need to be weighed against the positive contribution that efficient and cost-effective transport services will provide to enhancing other sectors of the Ukrainian economy and the sector itself in the long run.

Table 13.4 Overview of scenarios of transport services

Scenario	Description	Model hypothesis
Base scenario		Tariff equivalent barrier to foreign service provider estimated at 16.7%
WTO accession	Cancellation of the limitations on the share of foreign capital in the authorized fund of enterprises which supply transport services; Internal waterways transport Passenger transportation and freight transportation: no obligations in terms of commercial presence; Air Transport Services Computer Reservation System (CRS): no obligations in terms of cross-border supply and commercial presence; Rail Transport Services Passenger and freight transportation no obligations in terms of cross-border supply and commercial presence; Road Transport Services Passenger and freight transportation no obligations in terms of cross-border supply and commercial presence	Tariff equivalent barrier reduced to 11.7% (-30%)
Limited FTA	Allowance of FDI into the transport services sector with some exceptions in the public transport sector, partial opening of rail, road, ports and airports for investments and limited elimination of border barriers	Tariff equivalent barrier reduced to 6.7% (-60%)
Extended FTA	Complete allowance of FDI and investment into the transport sector; breakdown of monopoly and state-owned structure of public transport and heavy improvements in infrastructure. Opening of rail, road, ports and airports for foreign investments and deep aviation sector reform, integration of Ukraine into the pan-European transport networks, elimination of border barriers (including visa procedures for transport service providers)	Full elimination of barriers to FDI: Tariff equivalent barrier reduced to 0% (-100%)

Table 13.5 Overview of model outputs for transport services

	Production		High skilled employment		Low skilled employment		Prices	Exports (in general)	Imports (in general)	Exports to EU	Imports from EU
	US$ bn	%	number	%	number	%	%	%	%	%	%
Base scenario	10.53		83,288		2,236,311						
Change on Base											
WTO accession	0.337	3.2	2,695	3.2	72,389	3.2	2.5	-5.0	-12.0	-5	-7
Change on WTO											
Limited FTA: short run	- 0.358	- 3.3	-2,895	- 3.4	-77,757	- 3.4	-0.3	-5.3	6.8	-5	3
Limited FTA: long run	- 0.053	- 0.5	-355	- 0.4	-9,325	- 0.4	-4.3	1.1	6.8	-1	3
Extended FTA: short run	- 0.821	- 7.6	-6,600	- 7.7	-177,831	- 7.7	-1.0	-9.5	16.2	-9	10
Extended FTA: long run	- 0.369	- 3.4	-2,987	- 3.5	-80,283	- 3.5	-1.4	-4.2	17.3	-4	10

Economic impacts

Calculations show that the total market of transport services is expected to decrease substantially in Ukraine through the liberalisation of trade in goods as both output and employment is reduced in the short run, because due to very low competition between national transport service providers, Ukrainian operators will suffer decreases in production output and employment especially in the short run. The state monopoly structure with respect to roads and the railway system, ports and airports as well as many maintenance systems, has lead to low production, low productivity, over-employment, low R&D levels and low levels of service. An FTA that includes liberalisation of the transport services market with a focus on the post-WTO situation like internal water transport (bound in WTO), computer systems (IATA, AMADEUS) and basic transport of passengers and freight will lead to major restructuring due to foreign competition (gains for the EU), streamlining of the industries, lower prices, and more attention to maintenance for the long-run.

The short-run transition pain may be less severe than this study suggests, as on the other hand, ICPS (2007) mentions in their study, that there is scope for positive growth effects and externalities to the secondary transportation market. This would include e.g. gasoline stations and hotels and other sectors in the Ukrainian economy.

Ukrainian companies supplying transport services to consumers on the Ukrainian market are likely to face greater competition from EU firms. This greater competition will come from the removal of tariff and non-tariff barriers. However, what will be a loss for Ukrainian transport companies will be a gain for Ukrainian consumers, who will enjoy lower prices as a consequence. At the same time the Ukrainian consumers can enjoy improved transport safety and better protection of consumer rights if the Ukrainian aviation legislation is harmonised with the EU standards. Also the variation and quality of services is expected to go up thanks to competitive pressures.

Effects of the FTA will be different depending on the transportation sector. No significant changes are expected in pipeline transportation, as the volume of services provided by pipelines depends on other variables (mostly oil and gas demand), maritime transport and auxiliary transport services are already liberalised in the WTO accession, and foreign companies are not expected to be allowed to enter the market.

Ukrainian air transportation services may suffer the greatest losses in terms of production as national carriers cannot compete with efficient European airlines. The latter experience much larger economies of scale, have reduced costs, are integrated into worldwide airline alliances and have monopsony powers to negotiate for example fuel price reductions. They will also experience significant employment losses inevitable in order to maintain competitiveness. A mitigating factor may come from the experience of other CEE countries, where the number of passengers has gone up significantly, reducing the potential negative impact of the FTA on the Ukrainian aviation industry. Ukraine is also an important aircraft producing country. As such, adhering to technical standards may open a large EU market for Ukrainian aircraft.

High skilled employment will decrease among administrative staff partially due to a possible computer reservation system introduction. Demand for labour is expected to fall in transit trucks transport and sea transport sectors where the share of low skilled employment is rather high.

Our trade estimations show that more transportation services will be imported from the EU with an extended FTA, which means that many European companies will enter the Ukrainian market. Also training opportunities increase for EU firms. Yet the increase in imports from EU is significantly less than from all countries in total. Due to the relatively low level of competitiveness of the Ukrainian transport companies, their exports to other countries will decrease, though in the long run exports decrease less than in the short run. Additionally, the EU aviation sector is expected to gain from an integration of Ukrainian air transport into worldwide distribution networks.

As before with distribution services, the depth of the FTA agreement determines the exact potential for economic gains. Road, rail, port fees and transit procedures are improving but can be further harmonised to generate more potential for transport, international trade and serve as an engine for Ukrainian economic growth. Liberalising maritime transport, auxiliary transport and computer systems as well as modernisation of the infrastructure have similar enhancing positive economic impacts.

Social impacts

The extended FTA envisages full elimination of barriers to FDI, which stipulates a stiffer competition from foreign services providers than in the case of a limited FTA. Increased competition can create pressures to reduce costs and raise labour productivity, thus, leading to employment reductions. Moreover, domestic providers will most likely lose some of their market shares to more competitive foreign operators. Worth mentioning is also the fact that the extended EU-Ukraine FTA envisages liberalising the service sectors including the free movement of those providing these services. Therefore, the extended FTA may also cause employment reductions as a result of labour migration to the EU. However, in the longer run, it should be noticed, that the foreign operators can employ (cheaper) Ukrainian transport sector workers, hence mitigating the negative effect to employment in the sector. Also the EU firms that enter the transport services markets have to conform to EU *acquis* standards and ILO labour standards and therefore employment generation in Ukraine by EU firms will improve labour conditions and safety standards for Ukrainian employees in the transport services sector.

In light of Ukraine's integration into the European Common Aviation Area, the aviation sub-sector might appear the most vulnerable in terms of employment effects due to significant increases in competition. Experts acknowledge that already today Ukrainian carriers are faced with increasing competition from the foreign airlines. This competition is likely to become much more stringent, since the Ukrainian market, where passenger turnover increases by 30 percent every year, tends to be very attractive for European operators, which enjoy up to 5 percent passenger turnover annual growth rates.[57] Thus, local carriers might be faced with a risk of loss of market share to foreign airlines, accompanied by employment reductions. However, there is a positive side to it as well: Ukraine will have to abide by the European safety standards, including working conditions of the pilots and flight attendants, which will undoubtedly improve passenger safety and contribute to the goals of decent work.

Passenger safety is an important issue for rail and road transportation, where the accident rates have been increasing. Among the main reasons for this negative trend, experts name poor infrastructure maintenance. If the FTA has the effect of improving the infrastructure, this leads to a positive indirect effect on passenger safety through the promotion of EU investment in rail and road infrastructure and improvements in infrastructure management.

Environmental impacts

Ukraine transports services by water, roads, railways, and pipelines, which collectively account for 71 percent of the overall services exports. Pipeline transportation is a major source of export revenues and in 2006 Ukraine earned about US$ 2.5 billion transporting Russian gas and oil to Europe.

The geopolitical and geo-economic location of Ukraine determines to a large extent its transport services development with their significant negative environmental impact due to new infrastructure projects and land use, destruction of habitats and transit freight and

[57] Source: Korrespondent # 31 (270), August 11, 2007

passenger traffic increase. But to some extent these should be softened by the renovation of the present inefficient and polluting system.

The immense potential for improvement is available in all its constituents of road, rail, air, water and sea transport. As it was noted earlier, there are considerable difficulties in the interoperability of transport systems between Ukraine and European countries, aggravated by the underdevelopment of physical infrastructure for all transport modes, obsolete transit traffic management techniques, rigidity in the legal base regulating international transport between Ukraine and its neighbours.

For road transport, the EU firms will gain market share at the expense of the Ukrainian road transport sector, the more when EU environmental standards provide challenging for Ukrainian trucks to cross the EU borders; i.e. when EURO-5 engine standards are preferred over EURO-2 (currently most common in Ukraine).

Looking at the transport sector, Ukraine has one of the most developed railway networks in Europe. Its density index is the highest among all the CIS countries. 43 percent of the total length (22,000 kilometres) is electrified. Measured by freight traffic flows, the Ukrainian rail network is number four in the world after China, Russia and India. But the poor state of railroads and carriages contributes to losses during transportation. Losses of loose goods as well as leakages of liquids. It also leads to dangerous accidents like with the derailment of 15 railroad cars carrying yellow phosphorus in Western Ukraine in July 2007, when the poison cloud produced by the fire contaminated 90 square kilometres containing 14 villages.

Also, if the FTA will support and facilitate air transport, the recovery in the post-1990s period will continue. This will put a strain on the environment through greenhouse gas emissions of planes. Several of the Ukrainian airlines use old machinery-park aircraft, which cause more CO2- and noise pollution than is currently the standard. Also these aircraft are not fuel-efficient. Therefore, investments in this sector may have large positive environmental effects.

However, significant environmental impacts are connected with the development of pipelines, like the Odessa-Brody project of a 674 km long crude oil pipeline, and participation in the International Transport Corridors system, because four out of nine trans-European transport corridors traverse the territory of Ukraine (also relevant in this respect are the recommendations from the High Level Group (TEN-T) from 2003). Modernisation of the gas transportation system gives the possibility to use the Kyoto Protocol mechanisms with a view of reducing methane emissions through leakages.

The Table below summarises the impact of transport services on the environment in Ukraine.

Table 13.6 Summary of environmental impacts for Ukrainian transport sector

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
CO2 emissions from transport[58]	▽	––	▽	No	M/H
Air pollution and ozone depletion	○	––	○	No	M
Land					
Use of raw materials, land use	▽	0/–	○	No	L
Management of contaminated sites	△	–	○	Yes	H
Biodiversity					
Protected areas, ecosystem, species	○	–	○	Yes	L/M
Environmental quality					
Waste management	△	–	○	Yes	M
Use of energy	○	–	○	Yes	H
Energy efficiency	△	––	○	Yes	H
Noise pollution	○	––	○	Yes	H
Fresh and waste water					
Quality of ground water	○	–	○	Yes	M
Quantity of waste water	△	–	○	Yes	M/H
Cleaning of waste water	△	–	○	Yes	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

Relevant to the environmental impacts of this FTA for the EU is the increased transport between the EU and Ukraine. The magnitude of change in the long run is estimated to 3-15 percent assuming that the monetary value of transport can be directly correlated to freight tonne per kilometre. These effects are measured against the White Paper defining the EU transport policy until 2010[59].

Currently, in the EU the following environment related challenges have to be faced – challenges the EU-Ukraine FTA should not make significantly larger:

- Despite significant improvements, serious air pollution impacts persist[60];
- In relation to health, ground level ozone and particulate matter ("fine dust") are the pollutants of most concern;
- Ecosystems are also damaged by the deposition of the acidifying substances – nitrogen oxides, sulphur dioxide and ammonia – which lead to loss of flora and fauna, and by ground level ozone that results in physical damage and reduced growth of agricultural crops, forests and plants;
- Air pollution also causes damage to materials leading to a deterioration of buildings and monuments;

[58] Transport CO_2 emissions include all greenhouse gas emissions recalculated as CO_2 emissions.

[59] White Paper entitled 'European transport policy for 2010: time to decide', 12 September 2001, COM(2001) 370 final, http://ec.europa.eu/transport/white_paper/index_en.htm.

[60] Commission of The European Communities, Brussels, 21.9.2005 COM(2005) 446 final, Thematic Strategy on air pollution

- Air pollutant emissions of SO_2 and NOx from ships are a serious concern, and they are expected to exceed those of all land-based sources in the EU by 2020.

Table 13.7 Summary of environmental impacts for EU transport sector

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
CO2 emissions from transport[61]	▽	––	○	No	M/H
Air pollution and ozone depletion	▽	––	○	No	M
Land					
Use of raw materials, land use	▽	0/–	○	No	L
Management of contaminated sites	○	–	○	Yes	H
Biodiversity					
Protected areas, ecosystem, species	○	–	○	Yes	L/M
Environmental quality					
Waste management	△	–	▽	No/Yes	L/M
Use of energy	○	–	○	Yes	M/H
Energy efficiency	?	––	○	Yes	H
Noise pollution	▽	––	○	Yes	H
Fresh and waste water					
Quality of ground water	▽	–	○	No	M
Quantity of waste water	○	–	○	Yes	M/H
Cleaning of waste water	?	–	○	Yes	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

The EU-Ukraine FTA needs to consider:

- The carbon dioxide emissions of the transport sector depend on the specific fuel consumption of vehicles – vehicle park upgrades reduce the CO2 emissions (Euro 4 standards for new passenger cars and Euro 5 for heavy transport vehicles);
- Transport related volatile organic compounds (VOC) emissions originating at petrol filling stations induce the formation of ground level ozone;
- The impacts of this FTA on the *atmosphere* can not be ignored because older road vehicles and low quality transport fuels originating from Ukraine cause disproportionate levels of pollution in terms of CO2, NOx, VOC, and PM2,5 emissions and ozone depletion;
- The *land use* impacts in the EU would be concentrated near the border crossings with Ukraine where increased use of raw materials for road and parking areas would be needed;

[61] Transport CO_2 emissions include all greenhouse gas emissions recalculated as CO_2 emissions.

- The impact on *biodiversity* in the EU ecosystems is assessed to be negligible due to the already high negative baseline from transport;
- The *environmental quality* in the EU will not improve as a result of implementing this FTA but also not deteriorate. In the short-run there may be some adverse effects, but in the long run the FTA would increase the amount of more fuel efficient and less emission vehicles;
- The FTA would induce pressures for *fresh water resources and waste water treatment* because of increased risk for motor oil and fuel spills into ground and sewage systems.

13.1.3 Communication services

Results from the CGE modelling

The outputs of the modelling exercise show relatively modest effects for the communication sector in Ukraine – beyond those resulting from WTO accession – for the implementation of an FTA. Even under an extended FTA, the long run-impacts on production and employment in the communication sector are increases of 2.6 and 2.7 percent respectively. These estimates can be set against the rapid underlying growth rates being observed within the sector. More noticeable however, are the large increases in imports of communications services that are estimated to accompany an extended FTA. This can be seen as part and parcel of the increased access to international communications service providers that would be available to Ukrainian customers and the increased demand for such services that would accompany greater integration and trade between the Ukraine and the EU.

Table 13.8 Overview of scenarios for communication services

Scenario	Description	Model hypothesis
Base scenario		Tariff equivalent barrier to foreign service providers estimated at 4.9%
WTO accession	Cancellation of the limitations on the share of foreign capital in the authorised fund of enterprises which supply telecommunications services; Cancellation of the limitations on the share of foreign capital in the charter funds of television and radio broadcasting companies; With regards to telecommunication services Ukraine bounded itself to provide market access in the first three modes of supply without limitations in all types of telecom services. Services include, but are not limited to following sub-sectors: voice telephone, telex, telegraph, electronic mail, on-line information and database retrieval	Tariff equivalent barrier reduced to 3.4% (-30%)
Limited FTA	Implementation of most WTO based commitments, limited regulatory approximation of telecom services, some limits remain in place regarding share of foreign capital in funds of new services	Tariff equivalent barrier reduced to 2.0% (-60%)

Scenario	Description	Model hypothesis
	and in postal services	
Extended FTA	Strong check on implementation of WTO based commitments; further liberalisation and regulatory approximation of telecom services (licensing, interconnection, numbering, etc.), no more limits remain in place on share of foreign capital in funds of news services, no more limits to in place on share of foreign capital in funds of postal services, strong upgrade in infrastructure	Full elimination of barriers to FDI: Tariff equivalent barrier reduced to 0% (-100%)

Table 13.9 Overview of model outputs for communication services

	Production		High skilled employment		Low skilled employment		Prices	Exports (in general)	Imports (in general)	Exports to EU	Imports from EU
	US$ bn	%	number	%	%	%	%	%	%	%	%
Base scenario	3.62		22,262								
Change on Base											
WTO accession	-0.025	-0.7	-153	-0.7	-5.0	7.0	0.8	-5.0	7.0	-5	7
Change on WTO											
Limited FTA: short run	-0.029	-0.8	-179	-0.8	-6.3	7.5	0.5	-6.3	7.5	-6	7
Limited FTA: long run	0.076	2.1	478	2.2	1.1	5.6	-1.3	1.1	5.6	1	6
Extended FTA: short run	-0.058	-1.6	-369	-1.7	-12.6	17.8	1.1	-12.6	17.8	-12	18
Extended FTA: long run	0.094	2.6	589	2.7	-2.1	15.0	0.0	-2.1	15.0	-2	16

Economic impacts

Trade in communication services is likely to experience a short run transition period in which the sector will have to adjust and adapt after which – when capital flows and investments enter – the sector will grow, generate employment and production and international trade.

Telecommunication services are linked to the overall growth of economic relations between countries. In order to have high volumes of exchange in this kind of service, economic partners need to represent economic interests to each other. The ability to attract outside funds and consequently increase communication frequencies between

countries depends on the attractiveness of a country. In this respect the regulatory principles advanced in trade agreements can anchor a strategy to enhance transparent predictable regulations. The FTA provisions can act as an incentive to invest in modernising the present digital infrastructure and present institutions and regulators in order to achieve higher competitiveness and greater independence for the country in developing the ability to collect and analyse market information.

Competition between mobile telephone service providers is rather open and fair. The market is relatively mature and we do not expect any noticeable changes because of the FTA. The situation is different in the traditional telephone services sector. The FTA is likely to increase the presence of large mobile operators including foreign companies, and thus encourage competition between them and the traditional telephone service provider (Ukrtelecom) on international and national destinations putting a downward pressure on prices and increasing pressure on service provided. A key turning point in the provision of communication services will be a provision in the FTA to liberalise traditional telecom services, to allow leasing elements of the telecom network in order to resell services and allow new companies to enter the market and build their own physical networks.[62]

The FTA can help to set standards for the telecom networks and pave the way for more service competition options. This issue is crucial for newly appearing services (WiFi, VOIP, 3G) and the question of their non-interference with radio frequencies. The standards issue also relates to liberalisation of the equipment supply market that enables telecom services. The satellite service providers are extremely sensitive to the risk that they could hold a license to provide service in a country but not have the necessary approvals needed to certify, and thus sell, their equipment. The FTA can reduce a number of requirements that Ukraine maintains which has a lowering effect on the fixed costs of entry or establishment.

With an extended FTA the imports of communication services especially from EU countries will increase significantly in the short and long run. A limited FTA would create slightly smaller increases in imports and in both scenarios the long run increase is lower than the short run. As production in Ukraine grows in the long run, imports decrease. Hence, the increase in competition is likely to strengthen the competitiveness of Ukrainian production in the long run.

Because of the enabling nature of the communication sector, and importance for intra- and inter-firm communication, the FTA must have the effect of lowering costs for communication, allowing cheap access to digital means of communication and increasing competition between digital knowledge and information providers.

Social impacts

The model predicts negative employment impacts in the short run and positive effects in the long run – for both extended and limited FTA scenarios. The difference between the short-run and long run effects can be explained by the model assumptions on capital

[62] It is worth to note that the government may be more amenable to introducing resale competition faster than facilities-based competition since the former still guarantees leasing revenue to the facilities operators.

stock, which is kept constant in the short run but allowed to adjust in the long run. Thus, in the long run investments are likely to reach sizeable enough levels to evoke output increases, and as a result – increases in employment. In-depth analysis of this sector, confirms these model outcomes.

Employment issues in the telecommunications sector are related to the privatisation of Ukrtelecom, the state monopolist in fixed telephony. Experts consider Ukrtelecom an inefficient and hugely overstaffed company with substantial social burdens. Thus, Ukrtelecom's privatisation is expected to be accompanied by employment reductions needed to reduce costs and raise productivity. Further liberalisations of the communications markets like telecommunications are also expected to lead to the introduction – through FDI and international competition – of decent work standards through multinational (telecommunication) companies and more gender equality over time (in the longer-run).

With respect to communication services, the positive social impacts of the FTA may accrue mainly to the services provided in major cities like Kyiv, Odessa, Lviv, Kharkiv, Dnipropetrovsk and Donetsk while leaving the rural population further behind.

Ukraine's integration into European networks necessitates infrastructure modernisation and introduction of new technologies that will most likely entail rising labour productivity in the sector. Consequently, in the long run, increases in real wages are possible, fuelled by rising labour productivity. The latter is also predicted by the CGE model analysis.

Environmental impacts

The environmental impact of communication services can be omitted in this FTA because the only serious impact comes from the disposal of electronic waste (mobile phones, portable PC's and their accumulators). As a safeguard flanking measure, safe disposal of old transformers and spent accumulators including recycling of electronic waste could be recommended.

As it was noted earlier, poor waste management in Ukraine nowadays resulted in almost complete absence of waste separation and recycling programmes. Implementation of European best practices and provisions of The Waste Electrical and Electronic Equipment Directive (WEEE Directive) for all types of electrical goods may greatly contribute to environmental safety in Ukraine.

All environmental impacts are considered negligible referred to the current EU baseline.

Table 13.10 Summary of environmental impacts for communication services

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
Land	○	–	○	Yes/No	M
Biodiversity	○	0	○	Yes	M

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Environmental quality					
Use of energy	○	–	○	Yes	H
Energy efficiency	△	–	○	Yes	H
Noise pollution	○	–	○	Yes	H
Fresh and waste water	○	0	○	Yes/No	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

13.1.4 Financial Services

Results from the CGE modelling

While estimating the quantitative affects of the FTA between Ukraine and EU we assumed a 28.9 percent tariff equivalent for imported services based on the original study of existing NTBs in the financial sector concentrated on provision of services by subsidiaries established through FDI (Movchan, 2007). For the purpose of the current study we assumed similar level of tariff equivalents for all types of financial service import modes. The model assumes increases in the cost of imported financial services compared to domestic services. The assumptions for the scenarios are summarised in Table 13.11 and the FTA effects for the financial service market are summarised in Table 13.12. It is clear that the domestic financial services sector is hit by the envisaged FTA, even though the long-run effects are less negative than the short-run ones, suggesting a longer-run rebound.

As with the transport sector, the outputs of the modelling exercise show important negative short-run effects for the domestic financial sector in Ukraine – beyond those resulting from WTO accession – for the implementation of a FTA. In the short-run variant of the extended FTA, production and employment in the financial sector are estimated to decrease by 14.6 and 15.0 percent respectively. In the longer term, the model results suggest offsetting effects due to capital mobility, though even in the long run, reductions in production and employment are 11.4 and 12.1 percent respectively.

The general indications of the CGE outcomes are clear, but this quantitative analysis does not tell the whole story about potential effects of free trade in financial services for several reasons:

- First, one should keep in mind, that dynamic effects (i.e. stemming from an improved competitive environment and R&D) of liberalised trade which are difficult to quantify may outweigh negative effects related to increases in imports;
- Second, restructuring of the Ukrainian financial sector is likely to have immense positive externalities for other sectors of the Ukrainian economy because companies will start consuming cheaper and better services, price competitiveness of production will increase and risks will be dealt with in a better and cheaper way;

Financial services in the EU FTAs

FTAs signed between the EU and its trading partners differ in scope. Beside liberalising trade in financial services through MFN, market access and/or National Treatment provisions) EU FTAs often require the adoption of a common accounting system compatible with EU standards, strengthening and restructuring of the banking, insurance and financial sectors as well as improvement of supervision in the financial sector. Most of the EU FTAs state that parties shall not be prevented from taking measures for prudential reasons and to ensure integrity and stability of financial system. Unlike most agreements (that look at long-term FDI capital flows only), the FTA with Croatia contains provisions regarding short-term capital whereby the parties commit to ensure free movement of capital with maturity shorter than one year. The EU FTA singed with Chile is the most ambitious FTA so far for a non-accession country and should be the minimum reference point for the FTA with Ukraine. What makes the EU-Chile FTA agreement a distinct one are provisions extending the scope of cooperation in the financial sector.[63] An Enhanced Agreement with Ukraine is expected to go beyond these provisions alone.

What the EU-Ukraine FTA may envisage

As Ukraine made rather comprehensive commitments during the WTO accession negotiations, the scope for further concessions remains limited at first sight. However, the main value added of the FTA on top of the WTO commitments may include important issues such as:

- Alignment of the national financial regulations with the EU "acquis" and improvement of institutions relating to financial market operations;
- Elimination (with respect to the EU banks) of discriminatory capital endowment requirement concerning the branches of foreign banks to facilitate market access;
- Elimination of limitations as to the types of allowed activities for branches of EU insurance companies;
- Harmonisation of Ukrainian financial legislations with the EU norms that focus on implementation of the EU Capital Requirements Directive (including Basel-II requirements), life and non-life insurance Directives, Markets in Financial Instrument Directive;
- Adoption of the International Financial Reporting Standards (IFRS) in Ukraine;
- Development of financial market infrastructure (i.e. related to payment settlement);
- Prevention of financial malpractices.

In fact the EU aims to agree on a deeper FTA with Ukraine in financial services than with any other non-accession country before, which includes not only a focus on market access but also on regulatory approximation and integration; to create an integrated financial market that does not stop at national borders.

[63] For example regarding new financial services and data processing in service sector, the possibility of recognition of prudential measures of the other party through harmonisation, the establishing of a Special Committee on Financial Services to consider further actions with the aim to facilitate and expand trade in financial services.

Table 13.11 Overview of scenarios for financial services

Scenario	Description	Model hypothesis
Base scenario		Tariff equivalent barrier to foreign service provider estimated at 28.9%
WTO accession	Branches and representative offices of foreign banks will be allowed to operate in the country since Ukraine's joining the WTO. Permission to foreign insurance companies to establish branches and deal with risks relating to maritime shipment and commercial aviation and space launching and freight, and insurance intermediation related to those risks, as well as risks reinsurance and consultancy services. Local insurance intermediaries will be allowed to distribute services of non-resident foreign companies.	Tariff equivalent barrier reduced to 20.2% (-30%)
Limited FTA	Concessions following Ukraine's WTO accession will be followed by alignment of the Ukrainian laws and by-laws with the EU norms. In particular, the process includes partial harmonisation of the Ukrainian legislation with the EU Capital Requirements Directive, life and non-life insurance Directives. Ukraine is also expected to bring its prudential supervision regulations in line with the EU requirements.	Tariff equivalent barrier reduced to 11.5% (-60%)
Extended FTA	Full implementation of the EU "acquis communautaire" in the "financial sector" leading to full removal of regulatory barriers impeding international trade as well as long and short run capital flows. Permission to branches of foreign insurers to provide all kinds of insurance services in Ukraine, elimination of discriminatory endowment capital requirement in relation to branches of foreign banks.	Tariff equivalent barrier reduced to 0% (-100%)

Table 13.12 Overview of model outputs for financial services

	Production		High skilled employment		Low skilled employment		Prices	Exports (in general)	Imports (in general)	Exports to EU	Imports from EU
	US$ bn	%	number	%	number	%	%	%	%	%	%
Base scenario	5.08		142,590		602,058						
Change on Base											
WTO accession	-0.188	-3.7	-5,381	-3.8	-22,728	-3.8	0.0	-4.0	n.a.	n.a	n.a

	Production		High skilled employment		Low skilled employment		Prices	Exports (in general)	Imports (in general)	Exports to EU	Imports from EU
	US$ bn	%	number	%	number	%	%	%	%	%	%
Change on WTO											
Limited FTA: short run	- 0.269	-5.5	-7,694	-5.6	-32,601	-5.6	-0.7	-4.2	n.a.	n.a	n.a
Limited FTA: long run	- 0.152	-3.1	-4,500	-3.3	-19,115	-3.3	-1.0	0.0	n.a.	n.a	n.a
Extended FTA: short run	- 0.741	- 15.1	-21,369	- 15.6	-90,850	- 15.7	-2.4	-6.3	n.a.	n.a	n.a
Extended FTA: long run	- 0.579	- 11.8	-17,123	- 12.5	-72,849	- 12.6	-2.7	-1.0	n.a.	n.a	n.a

Economic impacts

Evaluation of consequences of an FTA between the EU and Ukraine for the financial sector is a challenging task as effects of liberalised trade regime for service providers come in through several channels and mechanisms. Trans-border trade in financial services is complicated by administrative regulations, differing prudential standards, capital account controls etc. Noteworthy, a precise evaluation of FTA effects in the financial sector is impossible since market players will be affected mostly by factors which are difficult to quantify. Here follows a brief discussion on how financial sector trade liberalisation in different modes might affect the functioning of the Ukrainian financial market as a consequence of the FTA.

Modes 1 and 2

As a part of the WTO schedule, Ukraine committed to fully liberalise both modes of service provision for most financial services. It is expected that more natural persons and legal entities are willing to buy financial services from companies located abroad. We expect that short run effects of the trade liberalisation measures will be negligible, but will become more important in the long run. First, in the short run, information uncertainty regarding quality of services of foreign companies may prevent Ukrainian clients from entering into contracts with foreigners. This is primarily true for retail services market as people tend to have more trust in companies located in their districts. Second, financial companies located abroad are unlikely to provide most of services to Ukrainian consumers (i.e. credits, insurances etc.) due to high transaction costs related to evaluation of clients' financial state and risk monitoring. However, as information uncertainty decreases (for instance, following advertising campaigns and because of increased transparency), natural and legal entities are likely to take advantage of cheaper services of foreign providers. Provision of financial services through modes 1 and 2 requires further liberalisation of operations of the Balance of Payments financial account. The potential FTA agreement is likely to include provisions towards further liberalisation but allowing the parties to impose restrictions relating to short-term capital flows. In this

respect, it is important to emphasise that financial service trade liberalisation and the opening of the capital account are two distinct issues. The Ukrainian authorities and the NBU will be able to take prudential measures to ensure stability of the financial system.

One may expect, however, that as capital account liberalisation proceeds, mode 1 will become more important in financial services trade and more similar to mode 3. The long-run effects of trade measures relating to this mode are likely to be more significant and foreign service providers are likely to get several percent of the Ukrainian market by providing services across the borders.

Mode 3

Most of the trade liberalisation effects in the financial sector relate to increasing presence of subsidiaries and branches of foreign financial institutions in the Ukrainian market. An increase in the share of foreign capital in the financial sector is inevitable under international integration of markets. Experience of the EU clearly demonstrates that subsidiaries and branches of foreign companies are becoming increasingly present in the market of most EU member states, not only new ones[64].

We expect that subsidiaries will become the prevailing form of commercial presence of foreign companies in Ukraine. The role of non-residents' branches, however, is likely to be insignificant even in the long run. Although Ukraine already committed to allow foreign branches under the WTO accession, the high level of minimum capital endowment needed for foreign branches seems to be a key obstacle for foreign banks to expand activities in Ukraine. Thus, presence of foreign banks' branches will not be too pervasive: banks are not willing to establish networks as the cost of presence in Ukraine may become burdensome. The capital endowment requirement also means that only reputable banks from developed countries like EU and the USA may want to come to Ukraine.

To estimate the potential impact of foreign banks' presence in the Ukrainian market on top of the WTO commitments, it may be useful to look at the experience of the former EU candidate countries. As a number of researches indicate, "branches of foreign banks rarely penetrate the markets traditionally served by domestic banks, concentrating their activities primarily on wholesale operations"[65]. It is expected that branches will focus on corporate clients rather than retail banking services. In 2001, when EU-15 banks were free to open branches in the EU-10, foreign banks did not affect substantially the domestic banking sector of the branches' host countries[66].

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64 In 2003, market share of foreign branches and subsidiaries in non-life insurance was 12.6% in Germany, 21.25% in Spain, 32.7% in Italy, 48.8% in Austria, 88.5% in Check Republic, 97.5% in Slovakia. The share of foreign subsidiaries and brahches in life insurance was 14.2% in Germany, 23.5% in Italy, 57.1% in Check Republic, 99.3% in Slovakia. In banking sector by the end of 2004, the share foreign branches and subsidiaries in the EU stood at 24.7%. In particular, in new member states 71% of the banking sector was foreign controlled (of which 63.5% by EEA banks), compared to 15.5% in the euro area.

65 Tochitskaya I., Giucci R., Pelipas I., Should Branches of Foreign Banks be Allowed to Operate in Belarus, IPM Research Center, PP/01/04.

66 In 2001, 35 commercial banks and 7 branches of foreign banks functioned in Bulgaria, 33 banks and 8 branches in Romania, 19 banks, 2 branches and 10 representative offices in Slovkia.

Further trade liberalisation under the FTA is likely to encourage further consolidation of the sector and new M&A deals will follow. However, some time after the Ukraine and the EU are implementing a full-fledged FTA in services, the intensity of mergers and acquisitions is likely to decline. Foreign companies, primarily the EU ones, are currently taking advantage of the favourable investment climate in banking and insurance sector created by the WTO and upon signing the further going FTA will even more expand in the market.

Access of Ukraine's banks to the market of the EU through the third mode is allowed under the PCA in line with the EU GATS commitments. In practice, entry of Ukrainian suppliers of financial services into the EU market mainly takes and will take place through subsidiaries as the strict regulatory regime in the EU may make it de facto difficult for Ukrainian services to enter. Further concessions on the EU side regarding this point depend on harmonisation of Ukrainian financial legislation to the "acquis communautaire" and implementation of proper institutions.

Mode 4

Ukraine committed to allow market access of key personnel in a commercial presence for up to five years, contract service suppliers and independent professionals for up to three years and 180 days of stay for services sellers. Foreign companies coming into Ukraine are likely to appoint managers picked from the inside staff to design development strategy of subsidiaries. However, as experience of foreign banks' subsidiaries shows, most investors choose to hire local top level staff that proves to be perfectly acquainted with both the local financial market situation and European banking and insurance business technologies.

The EU mobility regulations are more strict with three years for key personnel, six months for contractual services suppliers in specific sectors and 90 days for services sellers. Liberalisation of EU Mode 4 for Ukrainian services suppliers will likely be a sensitive issue because of the fact that even citizens from EU new member states face restrictions to provide their services in other EU member states and due to the fears of labour migration from the EU and Ukrainian sides.

The economic impacts regarding Mode 4 depend to a large extent on the degree of mobility that is agreed. The more far reaching mutual service liberalisation the more integrated the financial markets of the Ukraine and EU become.

Social impacts

The modelling results show negative effects for the financial sector in Ukraine, especially in the short run, regarding employment. Unlike the other service sectors financial services are represented by a substantial share of high-skilled labour in Ukraine – comprising about 20 percent of total labour. Therefore, at first sight, it looks alarming that the outcomes for reductions in high-skilled employment for this sector are the same as for low-skilled – over 15 percent. However, this result is mainly the consequence of CGE model specifications.[67]

[67] In all sectors changes in low- and high-skilled worker employment levels appear to be very similar.

Even if domestic providers of financial services in the Ukraine would find the competition too strong under the extended FTA, the negative effects to the employees are not likely to be as strong. Foreign financial service providers entering the Ukrainian market will need also Ukrainian employees to serve the local market. This will naturally alleviate the negative effects for the employment and workers could only change from a domestic employer to a foreign one.

Irrespective of the scenario, in the short run the social issues related to unemployment are expected to be more pronounced than in the long run. This suggests that care needs to be taken in the short-term transition perspective.

Since the extended FTA envisages liberalisation of services sector including a certain degree of free movement of service providers, next to stronger competition, labour migration to the EU can be a consequence, while capital will flow from the EU to Ukraine (which is not directly shown).

Overall impacts for host and sending countries of Mode 4 liberalisation are positive, and although such liberalisation often provokes (legitimate) political and social concerns, most of these can be addressed through appropriate policies.[68] However, actual commitments under Mode 4 are still limited, while at the EU level, labour migration policies are still over-ruled by Member States' policies and even within the EU-27 there is still no complete free movement.

Employment mobility effects will differ, depending on the type of Mode 4 liberalisation considered. In addition, each mode brings with it its specific political and social issues and effects in the host 'country' (EU) and sending country (Ukraine). An indication of such issues is summarised in Table 13.13 below.

Table 13.13 Possible Mode 4 scenario commitments and associated political and social issues

Mode 4 scenario commitments*	Social / political issues EU	Social / political issues Ukraine
Positive list of Mode 4 commitments with numerical ceilings	Advantage: Possibility to solve measured labour shortages in specific sectors and control influx of workers at overall and sectoral levels. Issues/effects: Limited flexibility, danger of illegal movement if ceilings are set at low levels and/or certain sectors excluded; Danger of lobby interests determining lists and ceilings; Clear needs assessment has to be made for both selection of sectors and	Issues/effects: Competition among labourers for the limited positions available, danger of illegal trafficking.

[68] http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2004/04/14/000009486_20040414171539/additional/130530322_20041117160102.pdf

Mode 4 scenario commitments*	Social / political issues EU	Social / political issues Ukraine
	determination of ceilings. Difficult to realise.	
Positive list of Mode 4 commitments without numerical ceilings	Issues / effects: Flexibility for selected sectors; possibly unfair competition for sectors that are not included on positive list but complementary;	Possible worker shortages in selected sectors in Ukraine.
Free movement with safeguard clauses**	Efficient allocation of resources, with possibility to limit influx of foreign service suppliers if it is too large or to sudden and potentially causes negative social impacts. Need to agree on fair and reasonable clauses and criteria.	Uncertainty for service suppliers as to the possibilities and duration of their stay.
Free movement without safeguard clauses	Advantage: Efficient allocation of resources and flexibility of firms to enter into contract with foreign service suppliers to work on specific projects. Issues / effects If large influx in specific sector and/or region social tensions among 'threatened workers' in host countries; difficulties in enforcing temporariness.	

* Specific social issues and effects will be influenced by the actual sectors selected for the positive list as well as the length of stay, level of skills and nature of the contracts.

** Described effects are generic, as the nature and extent of safeguard mechanisms determine specific effects.

Among the possible positive social impacts should be mentioned the effects of increased competition in the sectors which puts a downward pressure on prices for financial services, which will have an overall positive effect on many facets of the Ukrainian economy. Not only the financial service sector, but all sectors in Ukraine will benefit. This decrease in cost levels can positively affect the well-being of households, increasing household's disposable incomes.

Finally, in the longer run increased employment opportunities – not just in the services sectors – but particularly increases in wages and the quality of work, may reduce out-migration of labour and particularly the worst forms of this migration: illegal migration and 'slave' trade of women into prostitution. As such it should improve the position of some of the weakest groups (low-skilled / uneducated and poor persons and particularly women) in Ukrainian society.

Environmental impacts

The environmental impact of financial services can be omitted in this FTA because the impacts come from the disposal of electronic waste (mobile phones, portable PC's and their accumulators), slightly increased use of paper, energy and CO_2 emissions related to increased travel between the EU and Ukraine. As a safeguard flanking measure, safe disposal of old transformers and spent accumulators including recycling of electronic

waste could be recommended as well as reduction of ecological footprint from travel and resource use.

In official data, emissions of the sector are usually presented by zero values, which means they are rounded off to zero, and a direct impact of the sector on the environment is fairly low. But financial services belong to the main factors that in reality co-determine the state of the environment and the current acute Ukrainian environmental problems since they may be explained to some extent by insufficient conditions for environmental financing. That is true both for the domestic market and involvement of international financing institutions and bilateral donors.

The FTA can help to solve the existing problems of environmental finance, including:

- In spite of the ear-marked tax on natural resources from the early 1990s the only reliable source of public funding is the State Environmental Protection Fund of Ukraine, which revenues comes from pollution charges;
- No long term loans for environmental financing are available. Short-term loans are issued with very high interest rates;
- No post closure and site remediation financial mechanisms are available;
- Environmental insurance programmes are still at the inception stage;
- No reliable financial administration for public money is available. The same is true for international environmental assistance.

Solving of these problems may increase international environmental assistance to the level of former PHARE programmes, secure efficient use of public money and be a catalyst to leverage private domestic funding, resulting in real breakthrough environmental finance and corresponding improving the state of the environment.

All environmental impacts for the financial sector are considered negligible referred to the current EU baseline.

Table 13.14 Summary of environmental impacts for financial services in Ukraine

INDICATOR	Overall Direction magnitude	Existing conditions	Equity	Reversibility	Capacity to Change
Atmosphere					
Land	○	–	○	Yes/No	M
Biodiversity	○	0=	○	Yes	M
Environmental quality					
Use of energy	○	–	○	Yes	H
Energy efficiency	△	–	○	Yes	H
Noise pollution	○	–	○	Yes	H
Fresh and waste water	○	0=	○	Yes/No	M

* For the meaning of the signs in the Table, we refer to section 1.4 of the main report.

14 Annex XIV In-depth analysis Competition Policy

In this Annex, the details of the impact analyses for the horizontal issue 'Competition Policy' are presented – in addition to the core information provided in the report.

14.1 Potential impact of an FTA

14.1.1 WTO commitments

Even though there is no single legal framework on competition policy under the WTO, as of today, many WTO agreements address competition issues in the respective sectors or economic spheres such as the Agreement on Subsidies and Countervailing Measures (about state aid), the Agreement on Agriculture (domestic support for agriculture), Article XVII of GATT (state trading enterprises), Agreement on Trade Related Investment Measures (discrimination of foreign investors), etc. Ukraine is obliged to ensure a full compliance and effective implementation of these mandatory WTO agreements favouring the competitive environment in the country.

In particular, Ukraine's WTO commitments on *state aid* include:

- Abolishing and abstaining from introduction and maintenance of prohibited subsidies granted at all levels of government upon accession to the WTO, namely export and import-substitution subsidies (to date no such subsidies are maintained in Ukraine);
- Application of domestic taxes including the excise taxes and the value added taxes in full compliance with the WTO norms, including the Agreement on SCM, without any discrimination in regard to imports from the WTO Members and to domestically produced goods;
- Administration of free economic zones in compliance with WTO provisions, including the Agreement on SCM and other WO agreements, and ensuring the application of normal taxes, tariffs, customs charges and other regulations to goods, which are produced in these zones and enjoy tax and import tariff exemptions, during their entering the rest of Ukraine; and
- Notification requirements: obligation to notify the relevant WTO Committee about all existing state aid schemes and individual aid, as well as on legislative and administrative provisions and their changes (on an annual basis)[69].

[69] In regard to agriculture, Ukraine has committed not to introduce and maintain export subsidies to agricultural producers (Ukraine has been providing no such subsidies at all). Upon the tough rounds of the agricultural support negotiations, 2004-2006 years have been agreed as a base period for binding of Ukraine's commitments on the aggregate measure of domestic support to agriculture (AMS). According to the estimates of the Ministry of Agricultural Policy of Ukraine, the

With regard to *state-trading, state-owned and state-controlled enterprises*, Ukraine's WTO commitments envisage that all they will act in full conformity with Article XVII of the GATT, the Understanding on Article XVII and other WTO provisions upon Ukraine's accession to the WTO. In particular, these enterprises are to make purchases of goods and services, which are not intended for governmental use, and sales in international trade in accordance with commercial considerations (including price, quality, availability, marketability, and transportation) and to afford other enterprises of the WTO Members to compete for such purchases or sales. Ukraine will have to notify all such enterprises to the WTO.

14.1.2 Economic impacts

Competition is a basic mechanism that defines the market structure of the market economy that encourages companies to provide consumers products that consumers want at low prices and with high quality. Competition policy aims at ensuring that all companies operate on a level-playing field, where competitive companies succeed. It ascertains that government interventions do not interfere with the smooth functioning of the internal market or harm the competitiveness of companies. However, the level-playing field may require strict regulation on the environmental, health and safety issues.

In the area of competition policy Ukraine committed itself, as part of the Action Plan, to approximating its legislation with respect to antitrust and state aid to that of the EU, as well as to ensuring a credible enforcing of this harmonised legislation and maintaining a well-functioning independent competition authority.

Anti-trust policy

Improving the anti-trust policy – combined with flanking measures – will have the following anticipated impacts:

- Increased competition and a level-playing field for competition;
- Increased levels of protection and enforcement of economic competition in Ukraine's markets and thus reductions in static inefficiencies;
- Lower prices and improved quantities of services and outputs.

State aid policy

An improved state aid system will allow fulfilling important economic and social objectives with minimal detrimental impact to competition and international trade.

- Lower budget expenses from the side of the Ukrainian authorities on state aid – funds than can be allocated elsewhere in the economy;
- Increased competition and a more equal playing field for competition;
- Reduction in static inefficiencies by subsidising economic sectors at the expense of other sectors and with the use of public funds;
- Increased focus and attention for horizontal issues like R&D and SME development instead of looking at specific sectors.

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product specific support in agriculture will total about US$ 609 million, while non-product support - about US$ 594 million annually upon Ukraine's accession to the WTO[69].

State monopolies and state-trading enterprises

Obligations concerning state monopolies and state-trading enterprises under the EU-Ukraine FTA can tie the country and safeguard it against discriminatory practices during and after the transition period. Also FTA provisions may increase transparency of the functioning of the state monopolies, and thus improve the general competitive environment in the country.

14.1.3 Social impacts

The EU-Ukraine FTA through its competition policy leverage is expected to have rather ambiguous social impacts. The key issues to be negotiated within future FTA - state aid, anti-trust, and state monopolies policies – should increase competition in the most monopolised sectors and in general improve the overall competitiveness of Ukrainian enterprises. These impacts can lead to lower goods and service prices. On the other hand, increased competition also creates pressures to reduce costs and raise labour productivity, thus, leading to potential employment reductions.

The most affected sectors are expected to be those with a highly monopolistic structure and state ownership dominance, such as the transport and telecommunications, energy and coal industries. However, since the harmonisation of the FTA competition provisions is rather a long process, the competition policy effects are expected to be long term in nature.

Ukraine – since 1990 – has gone through a tough transition period from a centrally planned economy to a market economy. Even though formally Ukraine is a fully functioning market economy, several aspects of market forces still need to be implemented and enforced – especially in the utilities markets of Ukraine – which will lead to a further (and final?) reallocation of resources in the Ukrainian economy.

Competition policy, through its lowering effect on prices, will generate more income and thus lead to less poverty among poor Ukrainians, especially when price reductions involve basic commodities or services.

A final expected social impact is the potential reduction of corruptive practices. Due to the reductions in state aid and increased competition, potential abuse of funds or potential re-direction of state funds are eliminated.

14.1.4 Environmental impacts

The magnitude of the overall impact of competition policy is defined by the ratio of GDPs. In 2005 the EU-25 GDP was €10.794 billion while the Ukrainian GDP was about €90 billion, so correspondingly the EU-Ukraine GDP ratio is about 100.

Crucial issues

The environmental impact covers the following crucial issues:

- Business environment index (BEI) and FDI inflows;

- Antitrust policy;
- State aid policy; and
- Energy sector special issues i.e. the relationship between competition and energy security.

Ukraine-specific issues

Competition policy is especially important for Ukraine where business and society has no necessary tradition with market forces. Moreover they inherited traditions of the Soviet time including high alleged levels of state corruption and arbitrary regulation. A functioning market is one of the most important factors for environmental protection activities.

Environmental projects contain important aspects that should be addressed by competition policy. By their nature they are traditionally supported by public funds, international assistance, etc. For instance grant awards for businesses for pollution abatement measures is common practice for the Ukrainian environmental funds system. But criteria of such support have never considered fair competition, and this evidently may result in the environmental funds system causing market distortions.

Environmental protection activities first of all need proper ranking and a set of priorities. Any further development of Ukrainian competition policy with its specific and common issues needs to come with support of the FTA negotiations. The requirements of environmental protection need to be integrated into the definition and implementation of state aid policy, in particular so as to promote sustainable development.

Business environment index (BEI) and FDI inflows

As a result of the FTA the amount of potential FDI inflows would increase annually from 417 to 525 million US$ if the business environment improves by 10 to 30 percent correspondingly. FDI would increase between 85 and 612 percent of the current value because of a 10 to 30 percent increase of the BEI. The *environmental impact* of this FDI inflow is generally considered to be positive, however increased demand for electricity and water will increase CO2 emissions and pressures for wastewater treatment. The same applies for waste management. In addition, rules have to be agreed on the level of environmental standards applied to new industrial sites with reference to the environmental *acquis*.

Antitrust policy

The antitrust area covers two prohibition rules set out in the EC Treaty to ensure that competition is not distorted or restricted:

- Agreements between two or more firms which restrict competition are prohibited (e.g. cartels); and
- Firms in a dominant position may not abuse that position (e.g. predatory pricing aiming at eliminating competitors from the market).

Opening up of electricity, gas and rail transport in Ukraine for competition may have *adverse environmental impacts* if the technical standards and environmental performance requirements are not regulated at the same time. Also monopoly rights of state funded providers should be covered by environment, health and safety regulation.

Agriculture is an economic activity where competition rules should apply also. The governing principle is to increase the competitiveness of agriculture by reducing support prices and possibly and temporarily compensating farmers through direct aid payments. In the long run this sector does not require specific antitrust exemptions. Harmonisation of the Ukrainian agricultural environmental indicators and performance with the *environmental acquis* needs to be included in the goals of this FTA.

Energy sector special issues

Competition policy has to take into account the specifics of the sectors, hence a linkage to energy security is required. The *environmental impact* of this FTA culminates in the changes that the energy sectors in both the EU and Ukraine will undergo. The increased emissions of CO2, SO2 and NOx have to be taken into account when designing policy and flanking measures. Security of supply considerations in FTA negotiations may only in exceptional cases override the possible distortions of competition, health and safety issues and negative *environmental impacts*. This is especially valid since most of the energy sector in Ukraine is publicly owned and energy efficiency of the gas and electricity markets is low. The FTA negotiations need to provide sufficient incentives for investment in energy infrastructure to increase the environmental performance of the sector. Also the regulatory framework for energy liberalisation and enhanced competition rules (anti-trust, merger control and state aid) need to act to improve the environmental performance of the sector. Striving for reliable energy supplies at reasonable prices whilst respecting environmental protection is crucial for the European and Ukrainian economies.

15 Annex XV In-depth analysis Government Procurement

In this Annex, the details of the impact analyses for the horizontal issue 'Government Procurement' are presented – in addition to the core information provided in the report.

15.1 Potential impact of an FTA

Reform – more specifically, the nature of reform – of the government procurement system in Ukraine has potentially huge benefits for the country.

15.1.1 CGE modelling results

As part of the CGE modelling, we have looked at including government procurement effects through modelling a reduction in non-tariff barriers, notably for large investments in sectors, as is summarised in Table 15.1.

Table 15.1 Overview of scenarios for government procurement

Scenario	Description	Model hypothesis
Base scenario		
WTO accession	Legislation passed as part of the process of WTO negotiations, the last amendment dating from December 1, 2006 (coming into effect March, 2007)	
Limited FTA	Limited success in further passing and implementation of government procurement procedures; limited legal approximation to EU standards.	Reduction in NTBs related to participation in government procurement by 25% - 40% (depending on sectors)
Extended FTA	Ongoing and successful improvements in government procurement legislation through legal approximation to EU procurement standards, and successful monitoring of implementation.	Reduction in NTBs related to participation in government procurement by 35% - 50% (depending on sectors) showing deep progress in this area

With respect to this horizontal issue, it is important to note – as presented at the start of this Chapter, that Ukraine will only seek regulatory approximation in the field of

government procurement after joining the WTO, which means its approximation efforts to WTO standards are likely to coincide with its EU FTA negotiations, albeit the latter require a much deeper level of approximation.

The effects of improvement in government procurement are felt throughout the entire Ukrainian economy, leading to increased levels of welfare, lower prices and a higher rate of return on investments because of allocative efficiency. More specifically, government procurement in relation to large public works, services provision and advice, in the transport sector, energy sector, (financial) services sector, machinery & electronics sector, metallurgy sector (to name a few), is entangled with the entire economy at all times. Properly functioning government procurement thus has economy-wide economic, social and environmental impacts.

It is important to note the distinction between government procurement encouraging competition throughout the tendering procedure and market access. Government procurement is aimed at the right to participate in a tender procedure, not about creating market access and influencing the market structure. From the procurement perspective it does not matter whether a monopolist or several competing firms all bid for a tender as long as there is a fair and open system. Competition within the tendering procedures is increased though, and even though this does not change the actual market structure, it may increase potential competition, thus affecting those firms operating on the markets in line with the theory of contestable markets.

15.1.2 WTO commitments

In line with the WTO accession negotiation process, Ukraine has committed itself to start negotiations on joining the plurilateral WTO Agreement on Government Procurement (GPA) upon its accession to the WTO. Ukraine is obliged to obtain an observer status to the GPA at the time of WTO accession and to start the GPA negotiations one year later. Upon joining the GPA, Ukraine will have to carry out procurement in a transparent manner and apply equal non-discriminatory treatment to all foreign suppliers.

Should Ukraine start the GPA negotiations, it will be required, first, to ensure compliance of its national procurement legislation with the GPA principles and provisions, which provide for an open and international competition and non-discriminatory procurement regime, and second, to strengthen transparency, the institutional framework and procedural aspects in this area. Third, each country joining the GPA tabulates an entity offer and negotiates with interested members of the WTO GPA those procurements that will be covered by the GPA. In addition, Ukraine will have to submit to the WTO Procurement Committee a checklist of issues with detailed information concerning the GPA accession (GPA/35).

As mentioned at the outset of this Chapter, we realise that a different depth is reached bilaterally between the EU and Ukraine regarding government procurement, when compared to the GPA commitments Ukraine is likely to engage in. However, due to the fact that both lie very far in the future and a clear distinction cannot be made, we refrain from trying to separate the effects.

15.1.3 Economic impacts

After the negotiations, Ukraine is obliged to integrate FTA obligations on government procurement into its legislations and to ensure their effective implementation. It means that Ukraine will further continue reforming its government procurement system towards compliance with the best international practices of governance in the government procurement area. The expected economic impacts linked to specific reform measures are summarised in Table 15.2 below.

Table 15.2 Economic impacts of government procurement reform

FTA induced Reform	Expected economic impact
Reduce the list of exclusions to government procurement and broaden its scope and coverage to include utility monopolies, postal services, railway transport, pipeline transport, natural gas, financial services, and telecommunications services	Increase competition in the areas that the broader government procurement now encompasses leading to lower (bidding) prices and higher quality of procured work. If transparent, the exclusions reduction also leads to less opportunities for corruption, better use of public funds because of more accountability
Exclude from the Procurement Law the possibility that state-owned enterprises can procure for commercial purposes	Increase transparency and reduce the seemingly high levels of corruption to win commercial contracts
Increased market access to Ukraine for foreign suppliers of goods, services and works (specifications on monopolisation of domestic procurements, FDI regulations and restrictions,	Higher levels of competition on the Ukrainian government procurement market, leading to higher efficiency of domestic bidders but also pressure on margins of competing firms, access to best practices and technologies from abroad, more efficient work for lower prices, better use of public funds
Enforcement and practical implementation of the national treatment and non-discrimination principles: the removal of discriminatory and anti-competitive practices	Increased openness of the Ukrainian procurement markets and higher levels of competition
Improve procurement procedures and practices: Make more use of open tenders and competitive procedures; Make standard bidding documents digitally available, do so free of charge and specify distribution channels and organisation; Approximate EU legislation in estimation procedures of a contract value; Provide clear, precise and non-discriminatory technical specifications; Create a mechanism to decide on the use and transparency of different procurement methods; Increase the time periods for submission of tenders to give domestic and foreign suppliers more time to prepare and submit bids; Reduce the provisions for cancellation of procurement proceedings that make the process prone to abuse and manipulation;	Higher value for money for procuring entities, cheaper participation in tenders for bidders, more time to develop high-quality proposals, and a more stable and transparent procurement system Lower acquisition prices because of competition and increased efficiency of the use of public funds Better access of procuring entities to high-quality and cheaper goods, services and works (very important public entities procuring for social needs, e.g. health sector, education, etc.) Encouragement of SME activities and entrepreneur-ship in Ukraine because of lower procurement costs and higher inclusion of SMEs into the procurement procedures

FTA induced Reform	Expected economic impact
Ensure independent and objective review of bidders' complaints	Higher discipline of domestic officials of the Ukrainian authorities, improved law enforcement and an increased reliability of the procurement system leading to lower costs, lower acquisition prices and more trust in the system
Strengthening and improving the institutional framework of government procurement	Increase suppliers' trust in the Ukrainian procurement system, depolitisation of the procurement system in Ukraine, create a more consolidated, transparent and efficient coordination, monitoring and control system at lower costs, ensure a level playing field in national procurement and reduce *de facto* corruption levels
Overall impacts of these measures on the government procurement system: • A more stable procurement system; • Increased levels of competition leading to lower prices and increased pressure for delivering quality – better use of public funds; • Increased competition between domestic and international bidders reduces bidders' margins; • Easier access to EU procurements because of approximation of Ukrainian to EU procurement legislation; • Lower tendering costs for bidders due to more transparent, cost-effective and administratively streamlined procedures; • More equity in public tendering through increased transparency and less discrimination and opportunities for corruption against participants (e.g. SMEs or international participants); • Higher quality of inward investments because of improved management & technical competences and skills; • Reduced levels of (potential) corruption in the government procurement system and thus better use of public funds;	

In the short-run, the effective market access of Ukrainian suppliers to the huge EU procurement markets upon the EU-Ukraine FTA, it is not expected to increase considerably. This is not due to impediments in the procurement scheme of the EU with respect to Ukrainian bidders, because they are expected to decline as regulatory approximation of Ukrainian to EU procurement regulation continues. However, due to the highly competitive character of the EU procurement markets combined with the less-developed supply chains and technological capacities of Ukrainian companies to compete efficiently, in the short-run we do not anticipate large effects. This short-run situation may improve in the medium to long run only if certain policies are put in place. When, as a consequence, competition and international openness increase productivity and technology levels of Ukrainian industries, this situation is expected to change. A study by DG Market (2004) shows that although price dispersion for products remains quite large, application of EU procurement rules has decreased prices by around 30%.[70]
Given the fact that the government procurement sector is a large one and given the non-transparent system and alleged widespread levels of corruption, we expect 'invisible resistance' against government procurement reforms in order to protect these 'hidden' interests.

[70] 'A report on the functioning of public procurement markets in the EU: benefits from the application of EU directives and challenges for the future', DG Market study, 3rd of February 2004.

15.1.4 Social impacts

Next to economic impacts, the government procurement system also has significant social impacts.

First of all, the difference between a well-functioning government procurement system and a non-functioning system (e.g. because of various possible fraudulent practices) is the difference between employing public money to conduct works and services that generate work, earn wages and reduces poverty versus the absence of these effects.

Secondly, a functioning government procurement system is expected to be a lot more efficient (see the abovementioned DG Market study) which frees money for addressing social issues. A better managed government procurement system can also increase the number of social projects (e.g. improvements in health care, and the creation of food safety laboratories) in the country and hence generate positive social impacts.

Thirdly, the non-transparent and highly corrupted system of government procurement in Ukraine indirectly influences the health status of the Ukrainian population. Population and specifically the health sector are affected through the channels of government procurement of medicines and medical equipment and through government procurement of food for children (including catering for kindergartens, schools, orphanages, etc. If procured at too high prices consumers pay too much for their health care and medicine.

Fourthly, improved government procurement procedures will lead to an increased quality of life in general, not only through health care. For example, public works are conducted cheaper and with higher quality (e.g. building bridges, dikes), transport levels improve (e.g. quality of buses), corruption levels are decreasing, and money is available for social projects.

Fifthly, improvements in the government procurement procedures in Ukraine can lead also indirectly to improvements in the education system and level of education. With a better organised public procurement system, which is more cost-efficient, schools can be improved at lower costs and better equipment and better educated and paid teachers can be bought and work respectively. Also additional measures may further improve education and lead to a virtuous circle with government procurement improvements.

Sixthly, lower costs for participating and gathering information regarding government procurement procedures, are expected to lower the participation threshold, allowing SMEs to become much more involved. This is expected to have a significant positive impact on employment and levels of innovation.

Finally, the effects on employment – besides the previous SME argument – depend on the level of public procurement projects carried out. Improvements in the system can lead to more public projects implemented during one year. With well-managed budgets, enhanced competition and cheaper cost, more projects can be carried out with the same amount of money. As the demand for services goes up, employment can go up as well. An important social consequence is linked to quality of work: approximation and

implementation of EU procurement rules (Article 28) lead to specific preferences for less able people and allows for clauses related to prison labour.

In general, an FTA, which covers public procurement, is likely to cause significant improvement of social aspects of life in Ukraine.

15.1.5 Environmental impacts

This chapter summarises the key environmental themes and potential impacts to be taken into account while negotiating procurement issues within the Ukraine-EU FTA including the WTO Agreement on Government Procurement (GPA) as a baseline.

Government procurement is one of the most important factors that defines the effectiveness of public environmental funding. Improvement of the system leads to a better allocation of public environmental funding that currently leaves a lot to be desired.[71]

Financing of environmental projects may rise sharply in the nearest future, because Ukrainian authorities plan to disburse up to 10 billion US$ of the Kyoto Protocol "green scheme" investments through the newly created National Agency of Ecological Investments of Ukraine. It will be a new test for the government procurement system, similar to the realisation of the first joint implementation projects under the Kyoto Protocol. During the preparations a new inconsistency was revealed, which is not yet resolved.[72] Important steps pointed out in the Action Plan to be covered also from the point of view of environmental aspects are: limited use of exceptions from procurement procedures; and adequate access to information about public procurement procedures. Omitting these points increases greatly the risk for irreversible environmental damage. The major issues that the FTA between the EU and Ukraine will need to address are:

Sustainable environmental policies:
Short-term economic gains should not override long term environmental objectives throughout the procurement cycle. Approximation to EU government procurement rules (Article 39) allow Ukraine to address and include environmental concerns into its procurement system.

[71] Evidently, it is one of the most complex issues to regulate, as it requires clear-cut procedures and transparency that does not provide room for interpretation of corruptive practices. Regretfully Ukraine cannot so far boast many successes in this sphere as also *The Global Corruption Report 2007 of Transparency International* shows. From its establishment in the early 1990s the system of environmental funds in Ukraine is the only reliable source of environmental expenditures. The *OECD 2006 Performance Review of the State Environmental Protection Fund of Ukraine* states that in general, the performance of the funds has benefited from wider reforms in public finance that have strengthened their financial discipline. The Fund's resources significantly increased and almost doubled between 2000 (about €7.4 million) and 2004 (€14.5 million). For comparative purposes, the investment need for renewal and modernisation of technological infrastructure, aimed at approximation to EU standards is about €50-60 billion.

[72] Namely in accordance with existing Ukrainian legislation any public funding of services from 20,000 UAH onwards and works from 50,000 UAH onwards should go through sophisticated bidding procedures, but the project participants are already defined at very first stage of its implementation.

In general the improvement of the public procurement system in Ukraine in line with the European standards is expected to enhance the environmental situation in all fields and the use of public funds directed towards environmental protection.

16 Annex XVI In-depth analysis Technical Standards

In this Annex, the details of the impact analyses for the horizontal issue 'Technical Standards' are presented – in addition to the core information provided in the report.

16.1 Potential impact of an FTA

16.1.1 Economic impacts

The economic impacts of alignment of Ukraine's technical sphere with that of the EU are multidimensional. One can distinguish direct and indirect effects. Directs effects can stem from reduction of companies' costs related to passing conformity assessment procedures. Indirect effects primarily come from additional incentives for Ukrainian producers to improve production processes, implement quality control management schemes, and invest in new technologies. Indirect effects are mostly of a long-term nature and they are difficult to quantify.

An extended survey of 500 Ukrainian exporters to the EU showed huge benefits potentially originating from alignment of Ukrainian technical norms with those of the EU[73]. In 2005-2006 Ukrainian companies exporting to the EU had to increase their production costs by 13.9 percent on average in order to ensure their products compatibility with EU norms. Some part of these additional expenses would not have been necessary if Ukraine had aligned its technical regulation system with that of the EU *ex ante*.

As the survey reveals the EU product quality standards are the most difficult to observe by the Ukrainian producers. They are followed by requirements regarding labelling and marking, testing and certification etc. It is worth noting that companies report that Ukraine-issued certificates are recognised by the EU authorities in most cases, however, they not always enough to export commodities. All metallurgy companies manage to receive Ukrainian certificates that are accepted in the EU. However, the situation is more complicated for agri-food producers: 17 percent of agricultural and 38 percent of food products exporters noted that Ukrainian certificates are not valid in the EU.

[73] The discussion is based on the paper "Non-tariff barriers in Ukrainian exports to the EU" by Jakubiak M. et al, CASE Report # 66, 2006.

Another important issue is about cost of certification. According to companies' representatives, testing and certification procedures took about 4.2 percent of total production costs. The situation is even further aggravated if companies need to duplicate their testing efforts. About 45 percent of big and 43 percent of small Ukrainian companies had to double test their production in both Ukraine and the EU. This leads to the conclusion that introduction of harmonised conformity assessment schemes and the mutual recognition principle will lead to production cost reductions and eventually enhancement of the price competitiveness of producers.

Although implementation of the EU norms reduces costs relating to certification and trade, companies may face substantial increases in costs necessary to upgrade production processes and implement quality control schemes. However, these are short terms costs in most cases, giving substantial payoffs in the long run. According to the survey results, implementation of EU standards is the most challenging for agricultural products exporters – 63 percent of them claim that meeting the EU technical norms is much more costly than those of Ukraine.

The CGE model accounts for costs relating to observance of the EU technical norms (referred to as 'standard costs') incurred by Ukrainian producers. Under the model setup the standard costs increase the cost of production for exports and they are modelled as additional value added in sectors where trade takes place. In the simulations it is assumed that additional costs are applied to exports going to the EU only as no data on other destination countries is available. It is expected that the EU-Ukraine FTA will lead to a reduction of such costs. Under the extended FTA the standard costs are expected to fall by 50 percent and 35 percent for agri-food and industrial goods respectively relative to 100 percent of the base year (which is equivalent to a reduction by 20 percentage points relative to the post-WTO state). The limited FTA scenario assumes 40 percent and 25 percent respective cost reductions (minus 10 percentage points on top of the post-WTO state). Such assumption are based on the fact that the FTA should inevitably lead to higher harmonisation of technical norms and better access to cheaper and shorter conformity assessment procedures as well as introduction of mutual recognition principles between Ukraine and the EU in key sectors. However, it is not reasonable to expect full elimination of standard costs under the FTA agreement. The reason is that Ukraine is too slow in modernising its technical regulatory system and full harmonisation of domestic legislation and institutions is a long-run perspective beyond the period of FTA implementation. Moreover, the technical regulation system is on reform headway in the EU, and Ukraine may lack institutional capacity to keep pace with the developments in the EU. Comparable experiences in CEE countries joining the EU also show that standard cost reductions of up to 50 percent are very ambitious.

Standard costs differ across sectors. Table 3.3 of the Global Analysis Report (GAR) summarises survey findings for 37 NACE codes. Output and export changes stemming from the FTA are to a large extent driven by standard costs. While tariff changes are almost insignificant for many sectors under both the limited and extended FTA, standard costs (along with indirect effects relating to changes in the production structure) play a key role in shaping the outcomes for specific sectors. For example, weighted average imports tariffs in the 'transport equipment' sub-sector of 'machinery & electronics' fell from 0.86 percent (post-WTO tariff) to 0 percent which is unlikely to affect the sector in

any substantial mode. However, the output of the sub-sector goes up by 1.5 percent-5.3 percent (relative to the WTO) depending on FTA scenario. This may be primarily explained by the fact that producers start to economise on standard-related costs which enhances competitiveness of their production. Another example is 'textiles' experiencing a tariff reduction from 1.76 percent to 0 percent as a result of the FTA. At the same time the sector sees pronounced positive economic effects – the output goes up by 21.4 percent-48.4% relative to the post-WTO scenario. Economised standard costs seem to be the key determinant of drastic changes in the sector output.

To summarise, it is worth noting that differing technical norms are one of the key impediments for Ukrainian exports to the EU. Implementation of the EU acquis will lead to lower costs relating to observance of technical standards and assessment procedures. However, at the same time companies will have to make more investments in order to meet technical regulations and standards accepted in the EU. While additional costs are one-off investments in most cases, potential benefits are of long-term nature. The net effect of introduction of the EU-compatible technical norms and institutions is overwhelmingly positive.

16.1.2 Social impacts

The process of approximation of Ukraine's technical standards and regulations with those of the EU will undoubtedly facilitate trade and improve the investment climate by ensuring transparency, predictability and simplification of regulation. The most affected sectors in this respect are expected to be those for which harmonisation of norms will significantly reduce their current costs of compliance with the EU. These include agri-food, manufacture of textiles and wearing apparel, wood and paper products, motor vehicles, machinery and apparatus[74]. Increased exports of these sectors should serve as a driving force for the production expansion and hence for potential job creation.

In the agri-food sector the improved quality of products will have an additional positive impact – in the long run it is likely to positively affect the health levels of the Ukrainian population (e.g. higher nutritional levels). While a significant expansion of textiles and wearing apparel production will increase the labour participation rate of women, and thus increase gender equality, since predominantly women are employed in these sectors. Overall, harmonisation of technical norms should reduce health and safety hazards, thus positively affecting public health, also because regulatory approximation goes hand in hand with machinery upgrades.

16.1.3 Environmental impacts

Like in many other countries Ukrainian legislation has a clear cut three level structure, where the third level ordinances, like technical standards, are commenced by governmental agencies themselves and may be relatively easy updated or changed.

[74] Based on paper "Non-tariff barriers in Ukrainian exports to the EU" by Jakubiak M. et al, CASE Report # 66, 2006.

Ukrainian institutions like The State Committee on Standardisation, Metrology and Certification, and the State Statistics Committee used this opportunity for harmonisation of Ukrainian legislation with the EU, also for environmental issues. For example the international standard ISO 14001, which specifies a framework of control for an Environmental Management System, became national standard of Ukraine already in 1997. Such approach constitutes one the mainstream activities of The Ministry of Environmental Protection of Ukraine, where every proposed emission limit value, norm or performance is checked against EU environmental legislation.

The harmonisation process is supported *inter alia* by the National programme of adaptation of Ukrainian legislation to the legislation of European Union. The National programme determines the mechanism of achievement of conformity to the criteria of membership of the European Union. It was enacted by the Law of Ukraine of March 18, 2004 No. 1629 and includes environment in its listed first stage priorities.

Ukraine ratified 27 key environmental conventions and is the Party to 26 environmental conventions. At this time, 173 standards that represent European and international standards have been introduced in Ukraine, and this work actively goes on.
Corporate practice of international companies in Ukraine helps to significantly improve environmental performance and levels of responsible care, also by actual implementation of technical standards and indicators that are sometimes not required by Ukrainian legislation like material data safety sheets (MDSS).

Without doubt, the FTA will promote this environmental harmonisation process and help to achieve better levels of pollution control, safety conditions and other key environmental objectives by applied technical standards.