Chapter 3

Raising the competitiveness of the economy

This chapter explores the challenge Ukraine faces in maintaining and enhancing its competitiveness over the long term. It begins with an analysis of some indicators of current competitiveness and the trends underlying recent developments. Two major conclusions emerge from this first section:

- *Although Ukraine's current international specialisation compares relatively favourably with its overall productivity level, it is rather narrowly based – Ukraine has revealed comparative advantages in only a limited number of sectors.*

- *While productivity growth has been particularly impressive in recent years, Ukrainian producers will come under increasing pressure in the years to come from rapidly rising energy and labour costs, and the tendency towards real appreciation vis-à-vis Asian countries whose currencies are currently dollar-linked. At the same time, it will become increasingly difficult to maintain strong productivity growth, particularly given that opportunities for relatively easy productivity gains via labour-shedding and increased capacity utilisation are becoming rarer.*

The analysis therefore turns to the question of what Ukraine can do to facilitate continued rapid convergence, focusing in particular on the potential role that enhanced competition could play in strengthening competitiveness. The evidence strongly suggests that, in Ukraine as elsewhere, competition stimulates better firm performance; but competition in many markets in Ukraine is still too weak, owing to both structural factors and, in many spheres, anti-competitive regulation and weak institutions. Finally, it is argued that increased FDI inflows and renewed privatisation could both help Ukraine maintain strong productivity growth. The chapter presents the results of a study of the effect of privatisation on multifactor productivity in Ukraine, using panel data for the vast majority of initially state-owned manufacturing firms. This analysis confirms the substantial benefits of privatisation – whether to domestic or foreign owners – for productivity growth in Ukraine, benefits that are found to increase over time. Moreover, the chapter points to evidence of substantial complementarities between competition and privatisation: as a rule, private firms respond more readily to enhanced competition than do their state-owned rivals, and privatisation generates greater benefits when combined with robust competition.

Ukrainian competitiveness: an assessment

"Competitiveness" is a broad concept, used in many ways and in many contexts. When applied to countries, it often denotes the ability to trade and integrate in global markets. In that sense, it involves having a sufficient number/range of industries that are able to compete successfully against foreign producers on both external and domestic markets.[1] This understanding of competitiveness concerns not only firms' productivity, but also the quality of their output and their ability to differentiate products. At times, "competitiveness" is also used in a much broader sense, to refer to the large number of factors, institutions and policies of a country that can spur its firms' dynamism. These include the legal and regulatory framework, the education and innovation systems, and other conditions favouring or impeding entrepreneurship. This broader definition is typically the one that, implicitly or explicitly, underlies the kind of competitiveness assessments issued by the World Economic Forum or various national competitiveness bodies.

Throughout this chapter, competitiveness will refer essentially to the first, narrower concept, excluding any analysis of the policy inputs that could have an impact on whether, to what extent and at what cost firms are able to become more competitive – those issues have largely been addressed in the previous chapter. Three indicators of competitiveness will be examined in turn: the quality and differentiation of production and exports, the ability to generate fast productivity growth, and trade performance. In the short run, exchange-rate movements and related shifts in labour-cost competitiveness are, of course, important factors for explaining a country's performance, but they will be examined here on a medium-to-long-term perspective: the undervaluation of a currency with respect to fundamentals may be helpful in the short run, but is not necessarily a sustainable source of competitive advantage. Over the long run, real appreciation in a catching-up economy is inevitable,[2] and, to the extent that it goes together with rising living standards, desirable. This discussion therefore aims to determine which Ukrainian sectors already appear to demonstrate a degree of international competitiveness, together with fast productivity gains, and to identify the challenges that must be addressed if they and/or other Ukrainian sectors are to grow more competitive in the future.

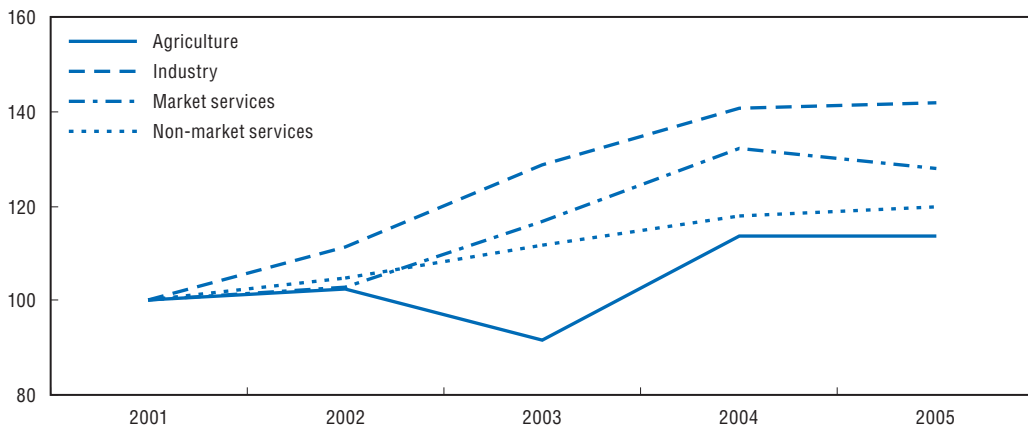### Ukraine's export structure is highly specialised

As noted in Chapter 1, the structure of Ukrainian industrial production and exports is highly concentrated and consists predominantly of goods with a low degree of processing. Moreover, the trend in recent years has been towards still greater concentration of exports: the three largest categories of exports – food products, minerals and metals – accounted for approximately 65% of total export revenues in 2006, up from 59% in 2000 (Table 3.A1.1). This reflects a combination of factors:

- Artificially low gas prices favoured further specialisation in energy-intensive industries, particularly steel and chemicals.

● Export prices for steel products more than doubled between 2001 and 2006 in dollar terms. In volume terms, however, exports of iron and steel grew modestly, at an average rate of 2% per year during 2003-06.[3]

● The development of new industries has been impeded by poor framework conditions for entrepreneurship, the absence of a level competitive playing field and – last, but certainly not least – the very low penetration of export-oriented FDI. Of course, low FDI is at least partly a consequence of poor framework conditions. Given a better business environment, the low level of wages and the relatively high skill level of the workforce would constitute a particularly attractive factor for FDI and the development of more labour-intensive industries.

● Ukraine retains a strong comparative advantage in agriculture and food. While the performance of its agro-industries has been remarkable, the lack of restructuring in the farm sector itself has translated into very slow productivity gains there (Figure 3.1 and Annex 2.A2). However, WTO accession is likely to intensify pressures for agricultural restructuring, which may also be facilitated by the involvement of the country's relatively dynamic agro-industrial sectors. The latter would benefit from greater upstream efficiency and could, as in Poland, become import catalysts of market-oriented restructuring in the farm sector.[4]

Figure 3.1. **Labour productivity index by sector**
Index 2001=100

Source: Derived from State Statistics Committee of Ukraine.

StatLink ⟲ *http://dx.doi.org/10.1787/072646730285*

The analysis of revealed comparative advantages (RCA) at a more disaggregated level confirms that only a few Ukrainian manufacturing sectors have reached a degree of international competitiveness that would enable them to export on a significant scale. Apart from energy intensive-sectors (iron and steel, inorganic chemicals and fertilisers) and mineral products, Ukraine's major RCAs lie in cereals, vegetable fats, and cork and wood. The only industry in the machine-building sector where Ukraine enjoys a significant RCA is the production of railway vehicles and equipment, exports of which have grown strongly since 2000.[5] Otherwise, Ukraine exhibits a limited degree of specialisation in only a handful of sectors. The structure of RCAs has not evolved much over the last decade,

except for cereals, the export performance of which has been relatively volatile. On the other hand, the country has substantial revealed comparative *dis*advantages in investment goods, telecommunications equipment, consumer goods, cars, pharmaceuticals and, of course, hydrocarbons. These comparative disadvantages are also far more pronounced today than a decade ago, reflecting the growing demand for more sophisticated goods.

Table 3.1. **Revealed comparative advantages**

SITC, rev 3		RCA								Export share	
		1996	2000	2001	2002	2003	2004	2005	2006	2006	Cumul.
67	Iron and steel	27.3	33.3	29.7	28.4	29.7	31.8	33.5	34.9	38.5	38.5
04	Cereals and cereal preparations	3.8	−0.1	2.6	5.5	−0.5	2.1	4.1	3.6	3.9	42.4
79	Other transport equipment (railway vehicles and equipment, …)	2.1	1.3	1.6	2.3	2.8	4.6	3.2	3.3	3.9	46.3
28	Metalliferous ores and metal scrap	4.5	5.9	3.7	3.5	1.9	2.5	2.7	2.6	3.9	50.1
42	Fixed vegetable fats and oils, crude, refined or fractionated	1.0	1.5	1.1	1.6	2.1	1.3	1.3	2.2	2.4	52.6
56	Fertilizers	3.9	2.8	2.1	2.0	2.3	2.1	2.5	2.1	2.6	55.2
52	Inorganic chemicals	2.1	1.6	1.5	1.0	1.4	1.3	1.5	1.5	2.0	57.1
24	Cork and wood	−0.1	1.2	1.1	1.2	1.3	1.2	1.1	1.1	1.1	58.3
84	Articles of apparel and clothing accessories	1.6	2.4	2.6	2.3	1.9	1.6	0.9	1.0	1.8	60.0
35	Electric current	0.1	0.6	0.4	0.4	0.5	0.4	0.5	0.7	0.7	60.8
51	Organic chemicals	2.4	0.2	0.4	0.6	0.7	0.5	0.5	0.7	1.8	62.6
02	Dairy products and birds' eggs	1.1	0.9	1.5	0.6	0.9	1.2	1.4	0.7	0.9	63.4
68	Non-ferrous metals	0.6	2.9	2.3	1.5	0.6	0.1	0.2	0.6	2.2	65.6
22	Oil-seeds and oleaginous fruits	1.4	1.2	0.7	0.0	0.9	0.4	0.2	0.6	0.7	66.3
61	Leather, leather manufactures and dressed fur skins	0.1	0.3	0.3	0.3	0.3	0.2	0.2	0.5	0.7	67.0
11	Beverages	0.5	−0.1	0.1	0.1	0.1	0.5	0.8	0.5	0.9	68.0

Source: United Nations, Commodity Trade Statistics Database (COMTRADE).

While Ukraine substantially reoriented its trade away from CIS markets in the 1990s, the geographic structure of exports has remained relatively stable since 2000: Europe and CIS countries each account for around a third of Ukrainian exports (with a 20% share for Russia), and Asia for a quarter. The high commodity concentration of exports, however, coincides with a pronounced regional specialisation. Ferrous metals loom larger in Ukrainian exports to Asia (and Africa); machinery, equipment and food products in exports to CIS countries; minerals, textiles and leather in exports to Europe; and, finally, chemical products in exports to America (see Table 3.A1.1). The export performance of the machine-building industries in CIS markets reflects a quality/price trade off: Ukrainian producers continue to enjoy a cost advantage in those markets. On the import side, domestic producers face growing pressure from Asian countries, especially in light industry: Asia more than doubled its market share in Ukraine between 2001 and 2005, with China's share rising from 1.2 to 5.0% (Table 3.A1.2).

Given its distance from the technological frontier in most sectors, Ukraine's specialisation in the production of relatively low value added goods is hardly surprising. A more relevant question is whether or not the current structure of the export basket is in line with the aggregate level of productivity of the economy. It is possible to make such an assessment, using an indicator of the theoretical productivity level associated with a country's specialisation pattern developed by Hausmann, Hwang and Rodrik (2005). They

Table 3.2. **Revealed comparative disadvantages**

SITC, rev 3		RCA								Import share	
		1996	2000	2001	2002	2003	2004	2005	2006	2006	Cumul.
34	Gas, natural and manufactured	−32.5	−22.7	−20.2	−19.9	−11.7	−11.1	−9.5	−10.5	10.6	10.6
33	Petroleum, petroleum products and related materials	−8.6	−14.2	−11.7	−9.7	−9.8	−11.3	−9.7	−10.4	15.4	26.1
78	Road vehicles (including air-cushion vehicles)	−0.8	−1.9	−2.9	−4.5	−6.7	−6.8	−7.2	−9.1	10.5	36.6
54	Medicinal and pharmaceutical products	−1.1	−1.8	−2.1	−2.5	−2.5	−2.5	−2.8	−2.9	3.2	39.7
72	Machinery specialized for particular industries	−1.4	−1.5	−1.5	−2.5	−2.2	−2.4	−2.4	−2.8	3.9	43.6
74	General industrial machinery and equipment and machine parts	−0.7	−0.6	−0.5	−0.9	−1.3	−1.2	−1.8	−1.9	4.2	47.8
76	Telecommunications and sound-recording and reproducing apparatus and equipment	−0.5	−0.9	−1.3	−1.1	−0.8	−1.6	−2.6	−1.8	2.3	50.1
57	Plastics in primary forms	−0.3	−1.1	−0.9	−1.0	−1.1	−1.3	−1.7	−1.7	2.5	52.6
32	Coal, coke and briquettes	−2.5	−1.1	−0.9	−0.8	−1.2	−1.2	−1.1	−1.5	2.2	54.8
65	Textile yarn, fabrics, made-up articles and related products	−1.7	−2.4	−2.4	−2.2	−1.9	−1.9	−1.8	−1.4	2.0	56.8
89	Miscellaneous manufactured articles, n.e.s.	−0.9	−0.8	−0.8	−1.0	−0.7	−0.9	−1.3	−1.2	1.9	58.7
55	Essential oils and resinoids and perfume materials; toilet, polishing and cleansing preparations	−0.3	−0.6	−0.7	−1.0	−1.0	−0.6	−1.3	−1.2	1.5	60.2
77	Electrical machinery, apparatus and appliances and electrical parts thereof	0.1	−0.1	−0.7	−0.3	0.0	−0.7	−1.3	−1.1	3.9	64.1
03	Fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof	−0.2	−0.4	−0.4	−0.4	−0.4	−0.4	−0.7	−0.9	1.0	65.1
64	Paper, paperboard and articles thereof	−0.9	−0.9	−1.2	−2.1	−1.8	−1.2	−1.2	−0.9	2.2	67.3
66	Non-metallic mineral manufactures	0.3	−0.2	−0.4	−0.4	−0.2	−0.5	−0.7	−0.9	1.8	69.1
71	Power-generating machinery and equipment	−1.3	−1.3	−0.6	0.3	−0.6	−1.6	−0.7	−0.9	2.3	71.4
87	Professional, scientific and controlling instruments and apparatus	−0.4	−0.7	−0.8	−0.5	−0.1	0.5	−0.6	−0.8	1.1	72.6
58	Plastics in non-primary forms	−0.2	−0.9	−0.9	−0.9	−1.0	−1.0	−0.8	−0.7	1.2	73.8
69	Manufactures of metals	−0.3	−0.2	2.2	3.2	0.4	0.6	−0.4	−0.6	2.2	76.0

Source: United Nations, Commodity Trade Statistics Database (COMTRADE).

begin with a measure of the revealed sophistication of each product, which is the weighted average GDP per capita of all the countries that export the good. The weight corresponds to the revealed comparative advantage of each country in that good. This measure of sophistication for each product is then used to measure the sophistication of a country's entire export basket – an indicator called EXPY (Figure 3.2). EXPY represents the "theoretical" income level associated with a country's export structure. It is, of course, positively correlated with actual income – i.e. rich countries tend to specialise in rich-country goods. More importantly, the authors find that fast-growing emerging market economies (EMEs) tend to have EXPYs that are well *above* what one would expect given their actual level of per capita income. In other words, successful EMEs manage to penetrate export markets dominated by wealthier countries. In 2003, Ukraine ranked relatively well on EXPY, suggesting that its export structure has been conducive to growth and will probably remain so for some time yet.

Figure 3.2. **Relationship between *per capita* GDP and EXPY, 2003**

ln (EXPY (2003))

$$y = 0.3x + 6.4$$
$$R^2 = 0.7$$

ln (GDP per capita, PPP, 2003)
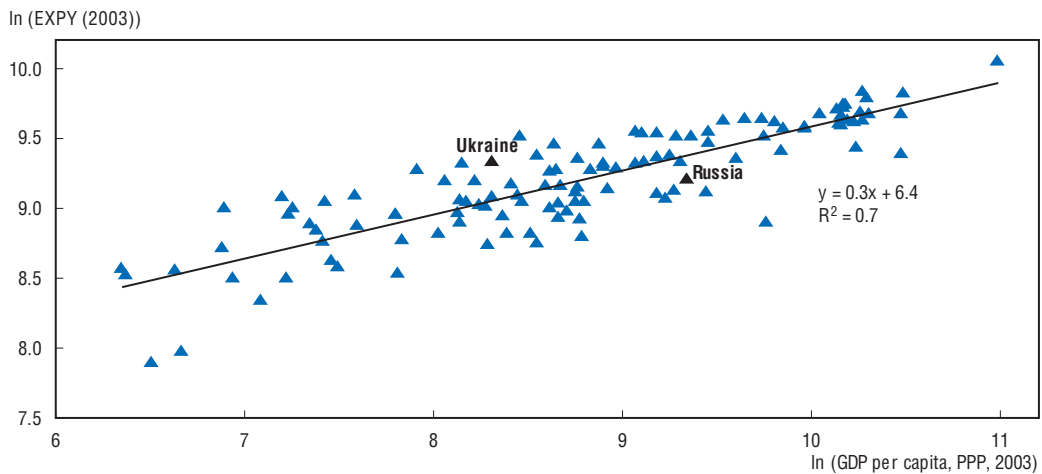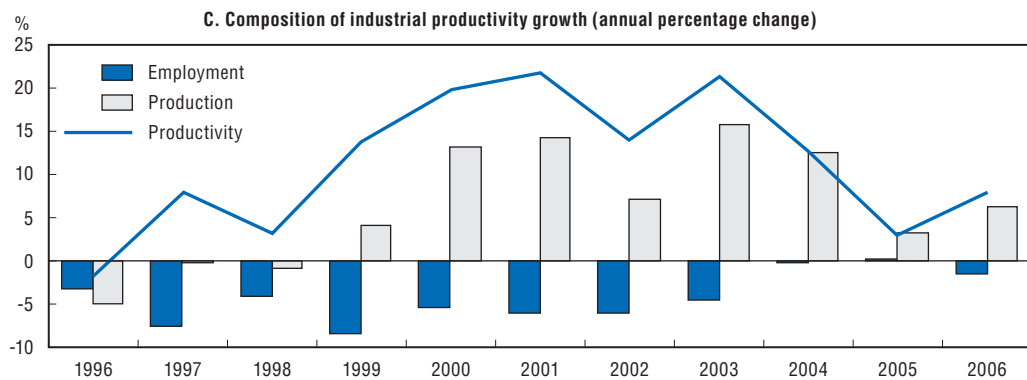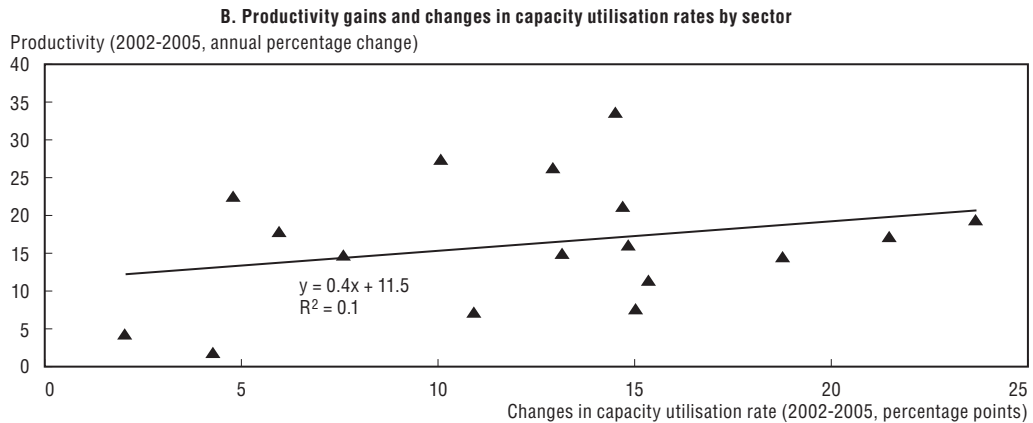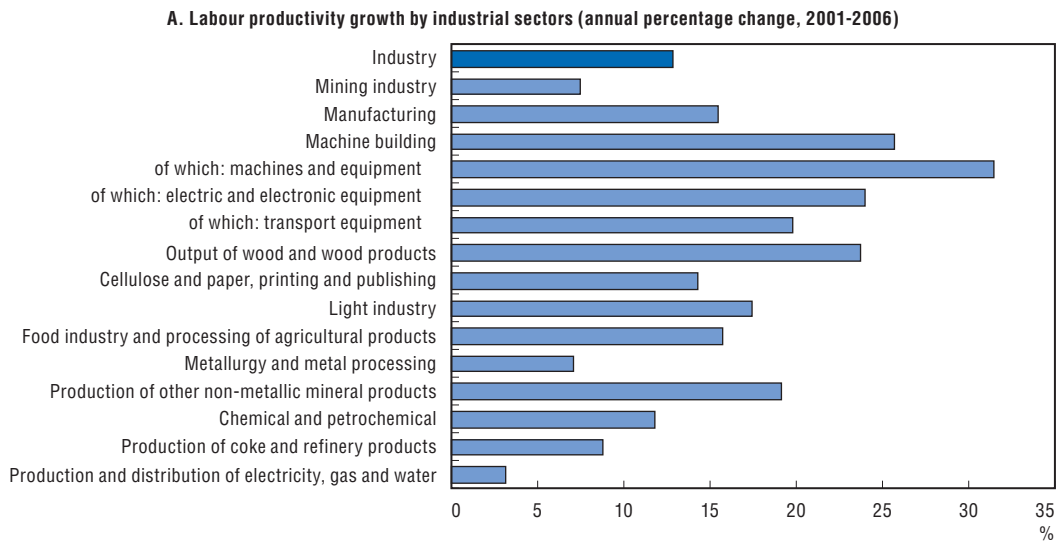
Source: Hausmann, Hwang and Rodrik (2005).

Productivity gains, though impressive, partly reflect the lag in industrial restructuring…

While the structure of exports appears to correspond reasonably well to Ukraine's current level of income, maintaining, if not increasing, productivity growth will be a challenge. As both nominal wages and energy prices are likely to continue to grow at a rapid pace, very strong productivity gains will be needed to match cost increases, especially given the current exchange-rate regime. As already noted in Chapter 1, productivity growth in industry following the 1998 financial crisis was relatively healthy until 2004 but slowed in 2005-06. Performance in manufacturing has been particularly impressive, with labour productivity growing by an average of 12.5% over 2001-06, despite the slowdown towards the end of the period. As expected, productivity growth has been significantly faster in industry than in services, especially non-market services (see Figure 3.1).

Productivity levels and trends probably also differ substantially among industrial sectors, but it is impossible to be precise, given the lack of data on value added or total employment by industrial sector. In their absence, labour productivity is computed using output rather than value added and employing a proxy for total employment which nevertheless covers roughly 84% of the total.[6] While this may lead to a slight upward bias in the estimates of productivity growth,[7] the following conclusions nevertheless certainly hold:

- Productivity gains have been particularly strong in machine-building and wood products, where Ukraine has exhibited comparative advantages, while lagging in mining, metallurgy, and electricity production and distribution. In general, however, most manufacturing sectors have recorded healthy performance, which is hardly surprising in a phase of global recovery (Figure 3.3A).

- These results in part reflect the more intensive use of production capacities: productivity gains have been somewhat stronger in industries that had more room to increase capacity utilisation (Figure 3.3B).

- Continued intensive labour-shedding, at least until 2003, contributed significantly to the rise in productivity (Figure 3.3C). This was undoubtedly a direct consequence of more

Figure 3.3. **Productivity dynamics**

A. Labour productivity growth by industrial sectors (annual percentage change, 2001-2006)

B. Productivity gains and changes in capacity utilisation rates by sector

Productivity (2002-2005, annual percentage change)

$y = 0.4x + 11.5$
$R^2 = 0.1$

Changes in capacity utilisation rate (2002-2005, percentage points)

C. Composition of industrial productivity growth (annual percentage change)

Source: Derived from State Statistics Committee of Ukraine.

StatLink *http://dx.doi.org/10.1787/072770872761*

active restructuring of firms, at a time when Ukraine was "catching up" on reforms in the transition process. While the speed of job reallocation between sectors and the pace of job creation were slower in Ukraine until the late 1990s,[8] the rate of labour turnover increased markedly during 2000-06. Since 2004, industrial employment has stabilised and productivity growth has slowed, which suggests that this phase of relatively "easy" restructuring is over.

● Labour-shedding has been particularly intense in the sectors which were most exposed to foreign competition: machine-building and, above all, light industry. In the latter, production has been increasing at a very modest pace, and productivity gains stem chiefly from falling employment.

These findings on the role of labour-shedding are reinforced by a comparative analysis of the relationship between firms' deviations from average labour productivity in their sectors and their employment share change. This measures the degree to which employment reallocation is productivity-enhancing. The results in Table 3.3 show that the relationship across the entire period is far stronger in Ukraine and Russia than Romania and particularly Hungary. In part, of course, the fact that labour reallocation has been more productivity-enhancing in Russia and Ukraine probably reflects the inefficiencies and structural distortions that existed in those countries at the start of the transition: misallocation of labour was less of a problem in Hungary than in most transition countries, and it was generally worse in former Soviet republics than in Central Europe.[9]

Table 3.3. **Correlation between labour productivity deviation and employment share change**

	1992-1995	1995-1998	1998-2001	2000-2003
Hungary	0.013	0.040	0.009	0.020
Romania	0.055	0.048	0.040	0.048
Russia	0.113	0.136	0.113	0.105
Ukraine	0.092	0.134	0.083	0.095

Note: These are correlations between the firms' deviations from sector labour productivity in the initial year and employment share changes between that and the next year. Entrant labour productivity is measured in the second year. The averages across the first two two-year periods within each four-year period are reported (*i.e.,* for 1992-95, it is the average of 1992-93 and 1993-94).
Source: Brown and Earle (2007a).

The very dynamic productivity gains observed in recent years did not translate into unit labour cost competitiveness gains, as real wage growth during 2001-06 roughly matched the rate of growth of labour productivity (around 15.5% per year on average in manufacturing).[10] The choice of reference period is not necessarily neutral here, however, since wages adjusted rapidly downwards in the wake of the 1998 financial crisis. Over a longer time horizon, productivity gains have outpaced real wage growth by a significant margin, and unit labour costs, measured in a synthetic "euro-dollar" currency, fell by almost 20% over a decade.[11] To a certain extent, recent wage acceleration probably represents a post-crisis "catch-up" phase; as pointed out in Chapter 1, international comparisons of wage and productivity levels suggest that the two are now in line. Moreover, there are only a handful of sectors in which wages grew at a significantly faster pace than productivity during 2001-06, namely mining and metallurgy (Figure 3.4). In these sectors, this certainly reflects the rents generated by positive terms-of-trade shifts, which have been shared between employees and employers. On the other hand, the largest

Figure 3.4. **Productivity and real wage growth by industries**
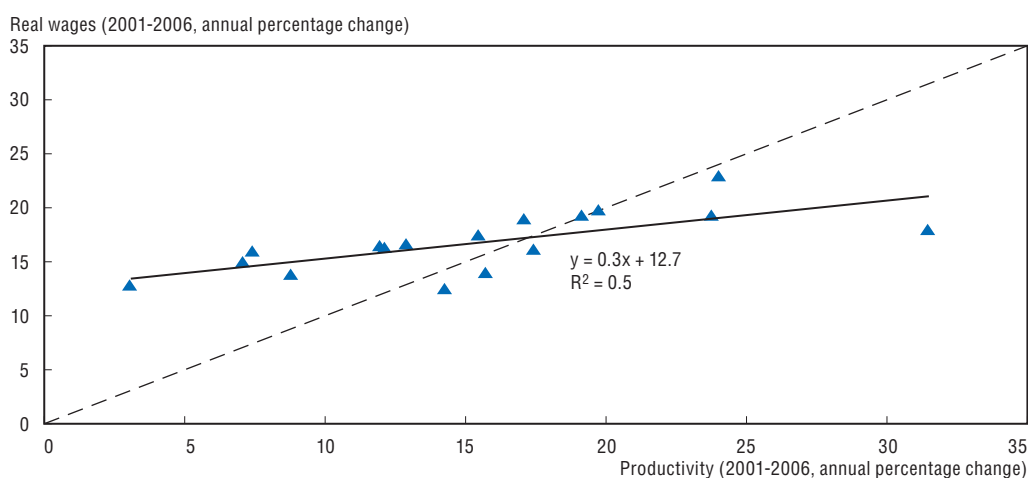
Source: State Statistics Committee of Ukraine, OECD calculations.

StatLink 📊 *http://dx.doi.org/10.1787/072778376817*

positive gaps between productivity and wages have been observed in the fastest-growing sectors – machine-building and, to a lesser extent, wood products. These sectors are also those where foreign competition exerts the strongest pressure on costs.

This relatively favourable picture with respect to the evolution of cost competitiveness is confirmed when Ukraine is benchmarked against its neighbour, Russia. Such a comparison makes sense, since the two countries began the transition with comparable industrial structures (apart from Russia's hydrocarbon wealth), similar institutions and similar levels of technology. Moreover, Russia is Ukraine's biggest trade partner. Ahrend, de Rosa and Tompson (2006) provide a detailed analysis of Ukraine's and Russia's productivity and competitiveness indicators for the period to 2004. Their conclusions may be summarised as follows:

- While Ukraine's aggregate level of productivity was lagging significantly at the beginning of the decade, it has been catching up fast and has experienced much more favourable developments with respect to cost competitiveness.

- The initial large difference in *output* per employee in nominal terms has been closed in most industrial sectors. A significant gap, however, persists in the fuel industry – a direct consequence of Russia's far greater resource wealth – and in the electricity sector.

- The gap in terms of *value added* per employee is still substantial, even if fuel and electricity are excluded, which may in part reflect cheaper energy bills for Russian manufacturers.[12]

… and did not automatically translate into better trade performance

A rigorous assessment of Ukraine's external competitiveness requires an examination of the evolution of relative costs and performance *vis-à-vis all* trade partners. Competitiveness *vis-à-vis* Russia improved fast and so did exports to Russia,[13] but an analysis of global trade performance yields a much more mixed picture: the non-mineral trade surplus fell from 14.9% in 2004 to just 2.8% in 2006 (Table 3.4). As noted in Chapter 1, the quality of trade data makes any analysis of recent trade developments more difficult. However, while it is likely that the magnitude of the shift in the trade balance is smaller than it appears, there is no doubt about the reality of the recent pronounced deterioration

Table 3.4. **Evolution of the non-mineral trade balance**

As a percentage of GDP

	2002	2003	2004	2005	2006
Europe	−1.7	−2.5	−0.9	−5.3	−5.1
Asia	9.1	6.3	7.9	4.0	1.7
CIS	4.4	4.4	4.7	4.5	3.7
America	0.2	0.0	1.7	0.6	0.9
Total	**13.2**	**10.0**	**14.9**	**6.0**	**2.8**

Source: Derived from State Statistics Committee.

of external accounts. Moreover, external balances have moved into deficit despite a favourable terms-of-trade shock, indicating that Ukrainian producers are struggling to compete on both external and domestic markets. The disappearance of the non-fuel trade surplus *vis-à-vis* Asian partners and the continued growth of the trade deficit *vis-à-vis* European countries would suggest that Ukrainian producers have been losing ground with respect to competitors from these zones.[14]

These regional developments partly reflect the evolution of bilateral exchange rates. While the hryvnia depreciated substantially in real terms against the rouble, which was pushed upwards by huge terms-of-trade gains,[15] it has been appreciating steadily against the dollar and thus against many dollar-linked Asian currencies (Figure 3.5). This trend is thus likely to have contributed to the rapid growth of imports from Asia. The appreciation *vis-à-vis* the euro has been more gradual and in line with the overall appreciation of the real effective exchange rate (REER). While the REER had not yet returned to its pre-crisis level by the end of 2006, it is nevertheless worth noting that the speed of real appreciation, which averaged almost 3% per year during 2000-06, is close to what would seem to be the upper bound of estimates for the Balassa-Samuelson effect in transition economies.[16] Indeed, recent work points to a much weaker Balassa-Samuelson effect – around 1% per year, according to Égert (2005).

Figure 3.5. **Real exchange rates**[1]

Index Q1 2000=100
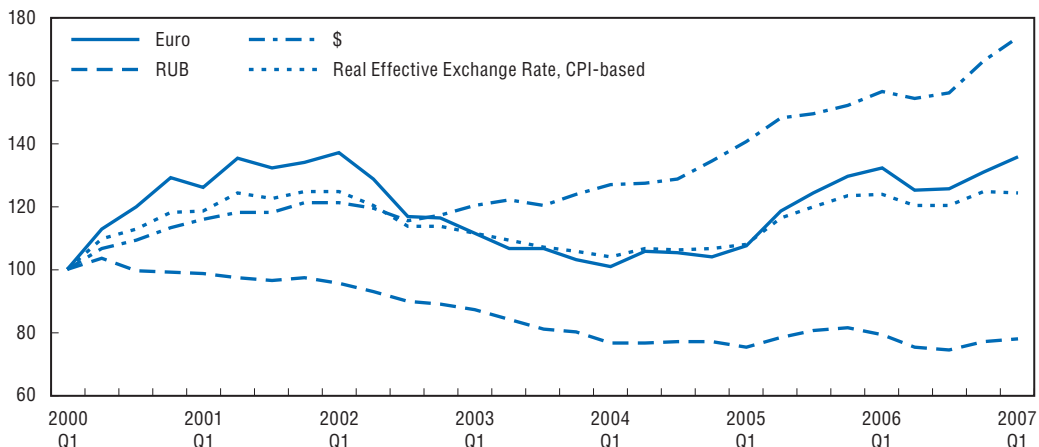
1. An increase means a real appreciation.

Source: Derived from IMF, International Financial Statistics.

StatLink 🔗 *http://dx.doi.org/10.1787/072805470013*

Table 3.5. **Price elasticities of exports and imports with respect to the real exchange rate**

	Exports	Imports
Agricultural products	0.45	0.97*
Chemicals	0.69**	0.59**
Manufactured goods	0.31*	0.81**
Iron and steel	0.25	n. a.
Machinery and equipment	0.90**	0.54*
Other manufactured goods	0.56	0.45
Total	0.51**	0.77**

* significant at 10%.
** significant at 5%.
Source: United Nations, COMTRADE database and OECD calculations.

One way to assess more precisely the role played by real exchange rate fluctuations on trade performance is to estimate the price elasticities of export and import volumes. In view of the difficulties presented by Ukrainian trade data,[17] the export data used here are those of Ukraine's trade partners. Table 3.5 presents the results of estimations of standard trade equations, relating imports and exports to bilateral exchange rate movements, using panel data. Separate estimates are presented for different sectors in order to control for the absence of price deflators.[18] The results, though not always very precise, seem to point to relatively standard values for price elasticities. Not surprisingly, the sensitivity of metal

Figure 3.6. **Share of high and medium-high technology in manufacturing exports to OECD countries**

As a percentage of manufacturing exports, 2004
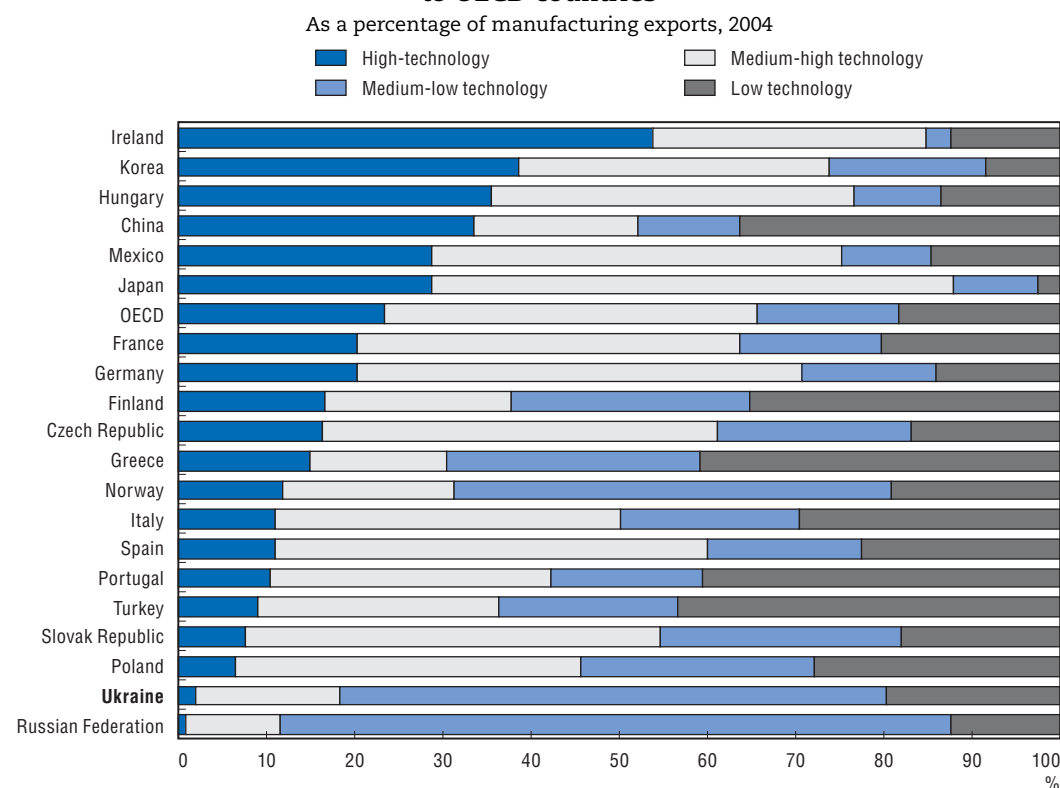
Source: OECD, STAN Bilateral Trade Database 2006/I and OECD calculations based on OECD ITCS database.
StatLink 📉 *http://dx.doi.org/10.1787/072808468601*

products is much lower than that of machinery, chemicals or agriculture products. These estimations thus indicate that the strong performance of exports to Russia and the rapid deterioration of the trade balance *vis-à-vis* Asian countries are partly explained by cost-competitiveness developments.

Beyond the cost competitiveness issue, the quality factor is also important. When it comes to more sophisticated goods, Ukrainian manufacturers struggle to compete with European producers.[19] The level of intra-industry trade with Europe, Ukraine's main "non-hydrocarbons" trading partner, is very low.[20] At present, the share of high value added goods in manufacturing exports to OECD economies is below 2% (Figure 3.6). Moreover, the share of low and middle-low technology products in Ukraine's export basket is much larger than for Central and Eastern European economies, although it is smaller than that of Russia. Over the medium-to-long run, climbing the value added chain will require a significant change in the pattern of specialisation – especially given the dramatic changes in energy prices.

Accelerating productivity convergence

Strengthening competition improves the performance of Ukrainian firms…

As noted in Chapter 2, closing the productivity gap between Ukraine and the more advanced economies will require increasing economic and technical efficiency – that is, the efficiency of resource allocation and the efficiency of production.[21] Strengthening competition can contribute a great deal to the achievement of both these ends. Robust competition in product markets improves firm performance.[22] It serves to stimulate both capital deepening and technical progress.[23] For transition countries, fostering competition has presented a particularly daunting challenge, not only because soft budget constraints and the suppression of competition were integral to the socialist system but also because the industrial structures bequeathed to the transition countries by central planners were often highly concentrated. Yet successful, competition-oriented reform has been rewarded: where post-communist reformers were more successful in fostering competition, performance has tended to improve.[24] In the case of Russia, in particular, recent studies have found a positive correlation between competition and total factor productivity growth.[25]

The potential benefits of increasing competition are likely to be even larger in Ukraine than in most OECD members or in many neighbouring countries, because competition in Ukrainian markets, though increasing in recent years, is relatively weak overall. To a significant extent, this reflects the large number of important Ukrainian sectors that are highly concentrated and characterised by a substantial degree of monopoly or by oligopolistic competition.[26] The country's competition authority, the Anti-Monopoly Committee of Ukraine (AMCU), estimates that firms operating in sectors characterised by the structural pre-conditions for competition – that is, by the absence of monopoly or the concentration of substantial market power in the hands of one or a few firms – generated only around 55% of total sales in 2004, against roughly 45% of sales arising in situations of monopoly, market dominance or oligopolistic competition.[27] In many cases, the less competitive markets are in heavy industrial and infrastructure sectors, where high levels of capital intensity constitute barriers to entry.[28] The Committee notes that this assessment is based solely on market structure; it omits regulatory and other interventions in product markets that reduce or eliminate competition where it might otherwise be

expected to develop.[29] As will be seen below, these additional impediments to competition are considerable. The AMCU's estimates correspond fairly well to the results of managerial surveys concerning the level and intensity of competition in particular markets.[30]

They also find confirmation in the Herfindahl-Hirschmann indexes (HHIs) shown in Figure 3.7. Calculated on the basis of a 5-digit classification, the indexes show very high degrees of market concentration overall. Indeed, they are higher than the comparable indicators for Russia in every major sector. Concentration levels have tended to rise in key export sectors in recent years, including metallurgy, chemicals, machine-building and food, while they have declined modestly in the construction materials and light industries. Figure 3.7 also shows that competition is much weaker at regional level, which suggests a high degree of segmentation between regional markets. This segmentation, which owes much to the actions of sub-national governments, is particularly evident in the gap between national- and regional-level HHIs for the food industry, a sector in which regional and municipal authorities are particularly prone to intervene.

Figure 3.7. **Herfindahl-Hirschmann concentration indexes, 2005**
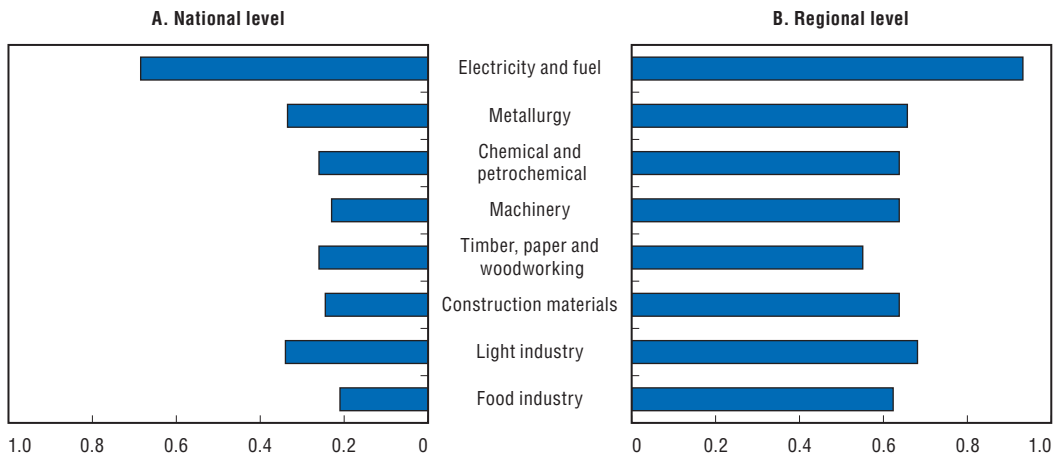
Source: OECD calculations using the register of Ukrainian enterprises, 2000-2005.

StatLink ⌧🔊🖙 *http://dx.doi.org/10.1787/072837553351*

While the concentration measured by HHIs has not decreased significantly over the last five years, managerial surveys suggest that pressure from domestic and foreign competitors increased steadily in the early 2000s, although foreign competition appears to remain a negligible factor for most domestic firms (Figure 3.8).[31] This result is not as paradoxical as it might appear. The strength of competition depends not only on the degree of market concentration or the development and enforcement of competition law, but also on trade policy, the creation of an effective bankruptcy mechanism, privatisation and sectoral regulatory policies – in other words, on the whole complex of policies and institutions that allow the threat of competition to emerge. Thus, although both the legal instruments and the institutions concerned with competition policy have been improving (Box 3.1), the increasing intensity of competition probably owes more to privatisation, liberalisation and stabilisation than to competition policy *per se*.[32]

There has been only limited empirical work on the relationship between competition and enterprise performance in Ukraine, apart from a few cross-national studies in which it has been included.[33] This section therefore presents the findings of an econometric

Figure 3.8. **Managerial assessments of competitive pressure**

Share of enterprises reporting competitive pressure as a constraint on growth
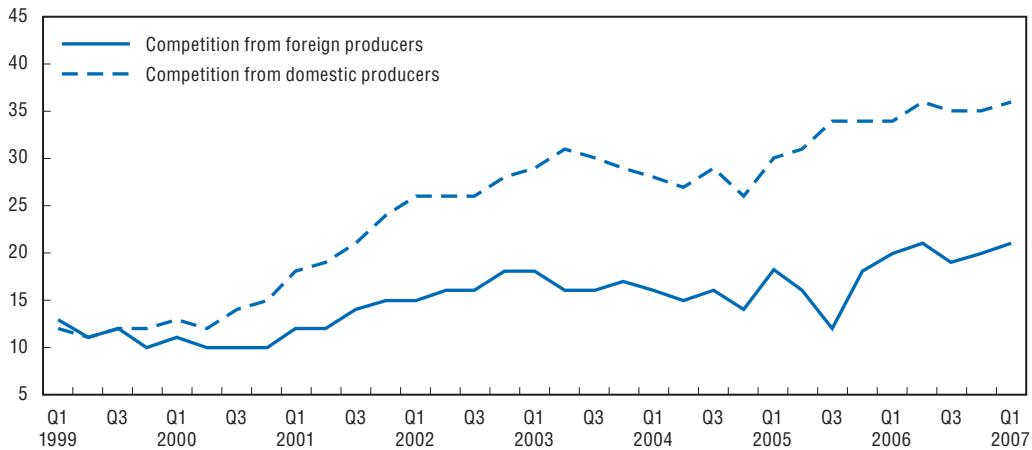
Source: Scientific and Technical Complex for Statistical Research.

Table 3.6. **Labour productivity regressions**

Dependent variable	Manufacturing industries			Market services
Real labour productivity growth	All manufacturing	Export oriented	Import competing	
HHI	−0.18***	−0.28***	−0.29***	−0.15*
	(−7.23)	(−5.32)	(−5.22)	(−1.94)
Import penetration	−0.00	0.11**	0.11*	
	(−0.08)	(2.01)	(1.83)	
Distance to frontier[1]	−0.01***	0.01*	0.05***	0.07***
	(−3.29)	(1.85)	(4.31)	(4.55)
*HHI*distance to frontier*	0.01	0.01	−0.04*	−0.05*
	(1.16)	(0.58)	(−1.78)	(−1.96)
Year dummies	yes	yes	yes	yes
Number of observations	102 215	30 315	22 889	14 438
Number of firms	39 248	16 493	11 388	8 813

Fixed effects estimations.
t-statistics in parenthesis.
* significant at 10% level; ** significant at 5% level; *** significant at 1% level.
1. Distance to frontier is computed as the difference between the highest productivity in the sector and firm's productivity.
Source: OECD calculations using the register of Ukrainian enterprises, 2000-05.

analysis of the impact of competition on labour productivity gains based on enterprise-level data drawn from the official register of industrial enterprises for 2000-05. The analysis explicitly takes into account the impact of foreign trade operations and competition from foreign producers via the introduction of the import penetration ratio into the regression. The following conclusions emerge (see Table 3.6):

● Concentration, measured by the 5-digit HHIs, has a negative and highly significant impact on labour productivity growth.

● These results are robust for manufacturing as a whole, and there is evidence that the effect is stronger when import- or export-competing industries are considered separately.

- For market services, the effect is found to be weaker (and less significant) but still sizeable.

- Import competition has a positive impact on domestic firms' productivity. The effect is stronger in sectors where foreign penetration is lower, which may suggest that the initial opening to imports has a particularly strong effect in stimulating local firms to raise productivity.[34]

... but reducing anti-competitive barriers will require a multi-faceted approach

In view of these results, it is unfortunate that successive Ukrainian governments have been so reluctant to take the steps needed to ensure robust competition in product markets. Throughout the transition period, they have continued to adhere to a wide range of practices aimed at supporting existing economic sectors and protecting incumbent firms. To be sure, competition law is now much improved and, on paper at least, it is broadly in line with international norms (Box 3.1), but anti-competitive policies and practices are still widespread.[35] The barriers to exit outlined in Chapter 2 serve in large measure to suppress competition and thus to delay rather than to facilitate needed structural change. This cannot but impede any attempt to enhance Ukraine's competitiveness over the long term, since the most potentially competitive firms and sectors are handicapped by the cost of supporting less efficient rivals. Broadly speaking, weak competition in product markets reflects not only economic barriers, but the interaction between market structures, regulatory practices and weak institutions.

Market structures largely define the terrain on which competition law is applied. Given the presence of so many sectors with relatively high degrees of concentration, it is not surprising that roughly half the AMCU's caseload concerns alleged or actual abuse of dominant position. During 2000-05, the Committee pursued around 7 300 such cases, with the number of dominance cases per annum rising about 2.4-fold over the period. Most of these concerned monopoly pricing or attempts to restrict supply to particular customers or markets. As the economy has matured and Ukrainian industrial organisation has become more complex, the importance of collusion has grown, but dominance cases are still the most common.

The AMCU in 2000-05 also pursued 3 500 cases against public authorities engaged in actions that reduced, distorted or eliminated competition in particular markets – fully one-quarter of the Committee's caseload over the period. The great majority of these cases were in markets where the structural preconditions for competition existed. This provides some indication of the extent to which the actions of central, regional and municipal authorities serve to protect incumbents and restrict entry. Such actions often involve the deliberate administration of various regulatory regimes – ranging from sanitation and fire-safety to standardisation and certification – in such a way as to restrict competition or prevent entry. Such anti-competitive regulatory practice (which is illegal under the Law on Regulatory Policy) underscores the link between competition issues and the kind of regulatory reform discussed in Chapter 2. The AMCU reckons that, if formal and informal barriers between regional and local markets are taken into account, then the proportion of sales generated in markets where the conditions for robust competition prevail stands as low as 30%: in many regions, competition is restricted not only in such spheres as housing and utilities, which are still dominated by SOEs and municipal enterprises, but also in food and food-processing, retail trade, transport and construction. This view is confirmed to some extent by the very high regional HHIs presented above. Yet the AMCU data tell only

---

Box 3.1. **Anti-monopoly law and the role of the AMCU**

The legislative basis for anti-monopoly policy in Ukraine is the law "On the Protection of Economic Competition", which was adopted in 2001 to replace the much-amended 1992 law "On Limiting Monopolisation and Preventing Unfair Competition in Entrepreneurial Activity". The 2001 competition law, which entered into force in 2002 and was further amended in 2005 and 2006, brings Ukraine somewhat closer to international – and, in particular, EU – norms in the field of competition law. The earlier law focused very much on issues of dominant position, discrimination and unfair competition; it said little about such matters as collusion, merger control and state aid, all of which receive much more detailed treatment in the new legislation. The new law also allows the AMCU to identify cases of joint dominance and to use economic evidence, rather than merely formal legal criteria, to identify cartels and groups of related entities.

Primary responsibility for developing and administering competition law lies with the Anti-Monopoly Committee of Ukraine (AMCU), which is responsible for monitoring the application of competition law; preventing, detecting and punishing violations of the same; monitoring economic concentration; and promoting fair competition.[1] In principle, the AMCU has considerable independent regulatory and enforcement power, and also has the right to review the competition implications of primary and secondary legislation, as well as the specific decisions of executive-branch bodies. However, while the AMCU can give mandatory instructions to other state bodies to desist from activities that violate competition law, the Committee itself can be – and sometimes is – overruled by the government. The cabinet's *carte blanche* when it comes to authorising exceptions to competition rules underscores the priority that industrial policy seems to enjoy over competition policy in Ukraine.

Some areas of the amended 2001 law still need further revision – the materiality thresholds triggering merger clearance, for example, are low and often force companies to seek prior AMCU approval of actions that have no bearing on competition in Ukraine, and Ukrainian merger control rules still view virtually any local activity of any of the parties to a merger as sufficient grounds to claim jurisdiction over it. This is, by international standards, an overly broad understanding of the relationship between transaction and jurisdiction. However, the more serious problems concern the application of the legislation that exists, given the limited human and financial resources at the disposal of the AMCU and the weaknesses of the court system. The latter problem is compounded both by the lack of judges really conversant in competition issues and by the existence of provisions of the Commercial Code (see Chapter 2) that contradict the competition law. While the AMCU has tended to operate on the basis of the 2001 law and its subsequent amendments, judges are free to apply the provisions of the Code.

1. It is also responsible for such issues as coordinating public procurement. This has generated some criticism in Ukraine, although it is not unique to that country. Competition authorities in OECD countries likewise have enforcement interests concerning the collusion and corruption dimensions of procurement, and a few OECD competition agencies are also charged with handling procurement process appeals. In the Ukrainian case, however, the question is whether the AMCU is adequately resourced to handle the full range of procurement issues, in addition to its core functions.

Source: AMCU (2006); OECD (2006b); Svechkar (2006); Stotyka (2004); Akimova and Shcherbakov (2002).

---

part of the story: much of the anti-competitive behaviour of state and municipal institutions is perfectly legal and is therefore not reflected in AMCU enforcement statistics. Implicit and explicit subsidies to selected companies and sectors (particularly SOEs) distort

competition, as do many other initiatives taken in the name of local or national "industrial policies" that effectively privilege "priority" sectors at the expense of others.[36]

Finally, the problems outlined above are compounded by the weakness of institutions in Ukraine. The weakness of the rule of law in general, and of the court system in particular, means that entrepreneurs are hesitant to rely on law to seek redress in the event of unfair competition. Weak protection of intellectual property rights means that violation of patents and trademarks is widespread and often remarkably flagrant. Weak corporate governance also affects conditions for competition: cases of dominance and oligopoly pose particular problems where beneficial ownership of firms is hidden. Even where connections between companies are widely known to the business community and/or the general public, it can be difficult to prove in court that they are related entities. More generally, agents recognise that the ability of rivals to tap "administrative resources" – *i.e.* to draw on the implicit or explicit favour of state bodies – can enable them to violate competition rules with impunity. Official favouritism is a widely recognised problem: an IFC managerial survey in 2003 found that 61% of respondents regarded unequal conditions of competition as a serious or very serious problem for their businesses. This awareness creates incentives to accumulate administrative resources of one's own: firms that do not develop the necessary relationships with key public officials will suffer for it, so even managers who might prefer (and profit from) fair, transparent, rules-based competition must play this game.[37] These considerations underscore the relevance for Ukraine of recent cross-national research on the impact of competition policies on growth, which finds that the quality of institutions may matter more than the specific features of competition law or the design of competition agencies.[38]

Successful restructuring of network sectors could increase competition

Competition in Ukraine suffers as a result of the relatively large share of output that is generated in highly monopolised and largely unrestructured network industries. In 2006, more than 2 300 companies were classified as "natural monopolies",[39] most notably in sectors such as gas, electricity, heat and other municipal utilities, as well as rail transport and telecommunications. Around ten of these were national-level players, with the rest dominating specific regional or local markets. To these one might add a few important but rather less natural monopolies, such as RosUkrEnergo, the controversial Swiss-registered company that in 2006 became a monopoly supplier of Russian and Central Asian natural gas to Ukraine, and its domestic arm Ukrgaz-Energo, a 50/50 joint venture of RosUkrEnergo and Naftogaz Ukrainy.[40] Despite the large role played by such companies in the economy, monopolies regulation in Ukraine is almost uniformly weak. While some progress has been made in developing the capacities of the National Electricity Regulatory Commission and in taking the first steps to restructure rail transport, tariff-setting for regulated monopolies tends to be opaque and highly politicised. This is particularly true at local level, where the public authorities setting tariffs lack the necessary expertise and, in many cases, appear to be heavily influenced by the companies they regulate.[41] The result of inconsistent and fragmented tariff regulation is that monopoly suppliers in some spheres are required to undercharge, providing implicit subsidies to some or all of their consumers, while in other sectors, there is evidence of spectacular profits being earned by regulated industries. The financial problems of Naftogaz Ukrainy exemplify the former problem, while the latter underlies the AMCU's estimate of profit rates in cargo transport at 42-48% in the

early 2000s.[42] In either case, the result is inefficient spending and the distortion of competition.

Ultimately, the condition of Ukraine's network industries must be seen as a major obstacle to be overcome if Ukraine wishes to enhance efficiency and international competitiveness, for a number of reasons:

● The kind of cross-subsidies and other distortions described above cannot but distort competition in other sectors. To take the most obvious example, mis-priced energy biases competitive conditions in favour of less energy-efficient firms and sectors.

● The external competitiveness of tradable sectors depends to no small extent on the efficiency of the non-tradable sectors on which they rely for services and other inputs.[43] That is one reason why the weakness of the energy transformation sectors described in Chapter 1 matters so much.

● The efficiency of infrastructure sectors also represents a consideration for potential foreign investors. Ukraine's human capital and proximity to the EU enhance its attractions as an outsourcing location for EU producers (intra-industry trade is already important in textiles and electronics), but its poor infrastructure and weak logistics capabilities are still seen as drawbacks.[44]

● Certain utilities subsectors are now, in principle, open to private-sector providers. However, very low regulated tariffs, combined with subsidies for communally owned services providers, are often used by local authorities to prevent entry by private firms and thus to prevent real contestability of local markets.[45]

● Opacity, lack of competition and convoluted regulatory arrangements create opportunities for rent-seeking and outright corruption, particularly in sectors like natural gas, which has long been notorious as a field in which insiders used "grey" (and sometimes not-so-grey) schemes to enrich themselves.

● Ukraine has ambitions to develop both electricity exports and international rail freight transit. Yet the commercial potential of these and other network sectors will never be fully realised in the absence of restructuring.

Despite the huge potential gains from thoroughgoing restructuring, the reform of network industries has lagged in Ukraine. Few independent sectoral regulators have been created,[46] and commercial and regulatory functions in most network sectors remain closely integrated, which can create significant conflicts of interest. As noted in Chapter 2, the outlook for further restructuring of the power sector – arguably the most advanced, in terms of reform – is anything but clear. Virtually nothing has been done to liberalise the gas sector or other utilities. However, Ukrgaz-Energo has increasingly occupied an anomalous and under-regulated position in Ukraine's gas market. Among other things, Ukrgaz-Energo has been allowed to market gas to industrial consumers at unregulated prices, but this hardly amounts to liberalisation: the company is a *de facto* monopolist and it has sold gas at unregulated prices far in excess of the initial quotas defined by the regulator. The result is a great deal of arbitrariness in gas pricing, as well as competition-distorting subsidies.[47]

A restructuring plan for the railways has been adopted, but it envisages little more than rationalising the management of the state-owned vertically integrated rail monopolist, Ukrzaliznytsa, and effecting a structural separation between the state's regulatory functions, which will remain with the Ministry of Transport and Communications, and the commercial functions of Ukrzaliznytsa.[48] Despite much

discussion of the issue, no decision has yet been taken on the creation of a rail regulator.[49] As a result, third-party access to the network continues to depend essentially on the monopolist's goodwill, and the tariff structure for rail transport remains extremely complex. It appears to involve considerable elements of cross-subsidy.[50] The telecommunications sector is rather more marketised, but the regulator, which is still relatively new, has exhibited an apparent willingness to favour the state monopolist, Ukrtelekom.[51]

Opening the economy to FDI would help accelerate convergence

In addition to increased domestic competition, greater external openness could also play a critical role in improving competitiveness and fostering diversification. This is particularly true in the case of Ukraine, given the importance of large-scale, capital-intensive industries in its economic structure.[52] A large body of literature has emphasised the positive impact of FDI and foreign-performed R&D on domestic total factor productivity via the import of technology, know-how and managerial expertise.[53] Moreover, the potentially growth-enhancing effects of FDI-induced spillovers seem to be greater in emerging economies,[54] provided that other structural barriers do not impede this process.[55] In the case of Ukraine, Lutz and Talavera (2004) reach the same conclusion: FDI significantly increases both the labour productivity and export performance of Ukrainian manufacturers. Their empirical results also show evidence of positive spillover effects on domestic firms in some industries. The latter effect is apparently stronger for large firms.[56]

The relatively low level of the current FDI stock thus suggests that Ukraine is missing a major opportunity to facilitate industrial modernisation and accelerate productivity growth: despite the massive inflow generated by the privatisation of Kryvorizhstal in 2005,[57] the stock of FDI per capita reached only 372 USD in 2005, just over 16% of the corresponding figure for neighbouring Poland (Figure 3.9). FDI in Ukraine is concentrated in the food and metal industries among tradable sectors and in wholesale and retail trade and banking among non-tradables.[58] The contribution of foreign investment to gross fixed

Figure 3.9. **FDI inward stock**

US$ *per capita*, 2005
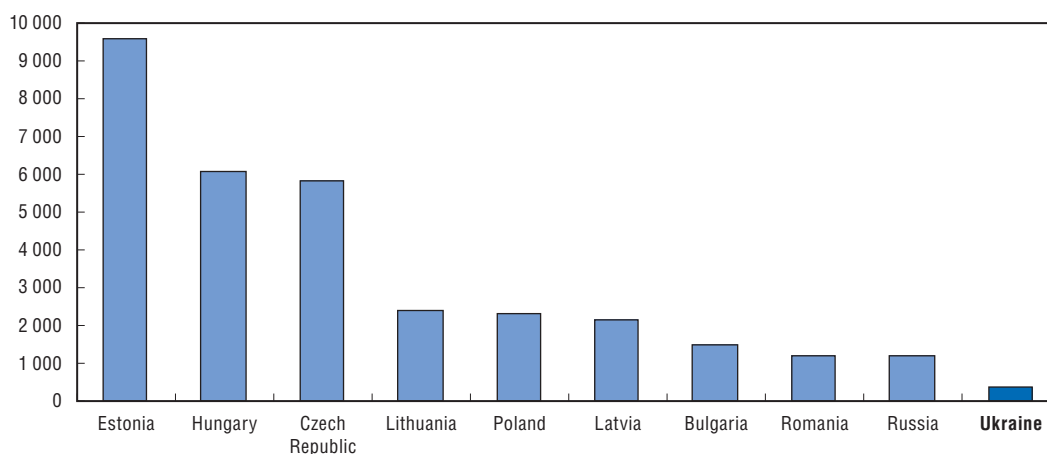
Source: Derived from IMF, IFS database.

StatLink ⟨⟩ *http://dx.doi.org/10.1787/072862254204*

capital formation is thus rather modest: it represented only 5% of total investment financing in 2005. By contrast, the contribution of FDI to gross fixed capital formation averaged 26% in the Czech Republic during 2000-05; the corresponding figures for Hungary and Poland were 22 and 18%, respectively. The potential of Ukraine to attract FDI should be far greater than that, especially given its human capital endowments and the comparative advantages conferred by relatively low wages, proximity to EU markets and the size of the domestic market.

Ukraine's failure to attract more FDI principally reflects the unhealthy business climate described in Chapter 2 and the exceptionally high regulatory barriers to trade and investment (Figure 3.10). As shown by the PMR benchmarking exercise, Ukraine's economy does not appear to be exceptionally restrictive on foreign ownership (though the PMR indicators fail to pick up restrictions on the purchase and leasing of land), but foreign investors face a very difficult regulatory environment and potentially serious discrimination, particularly if they seek redress in response to adverse regulatory decisions.[59] However, one should not exaggerate the degree of discrimination: these problems are symptomatic of the overall institutional framework encountered by all firms, foreign and domestic. Recent empirical work suggests that institutions like the rule of law and the quality of bureaucracy are among the most important determinants of FDI location, together with labour costs and market size.[60] Using a unique and detailed data set on institutions, Bénassy-Quéré *et al.* (2005) find that a large range of institutional indicators, most of which relate to the efficiency of the public administration, have a significant influence on FDI inflows. These include the security of property rights, the level of corruption, the contracting environment, the tax system, and the transparency and the efficiency of the judicial system.

Figure 3.10. **Barriers to trade and investment**
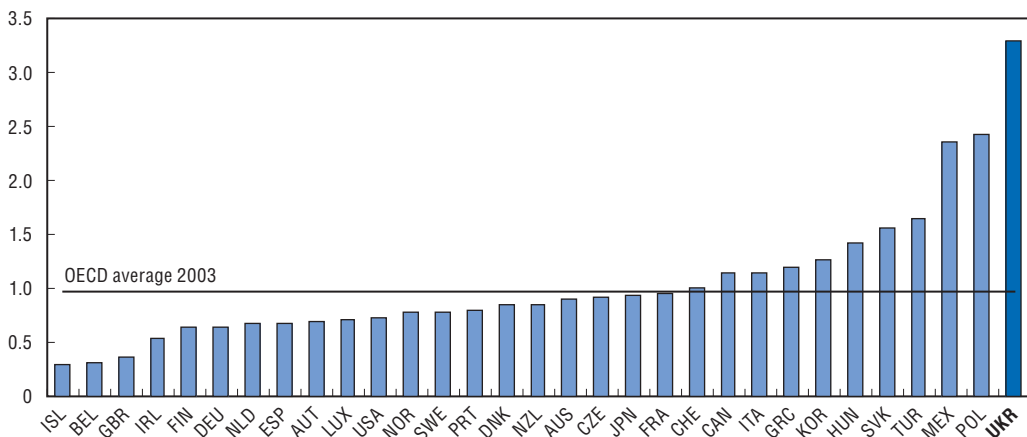
Improving the institutional framework should thus greatly enhance Ukraine's FDI attraction, especially given its market size: agglomeration economies appear to be a major determinant of FDI location in transition countries.[61] However, special economic zones should not be considered even as a second-best solution to this problem: the (re-)creation of special zones would risk introducing yet more market distortions (especially if zone residents enjoyed renewed tax and customs privileges), while postponing the

comprehensive reforms needed to tackle the broader issue. Indeed, special zones, by providing a means of attracting some foreign investment when the overall business climate is poor, may reduce pressure on the government to improve framework conditions for *all* investors.[62] Unfortunately, as noted in Chapter 1, the authorities continue to favour the use of tax and regulatory privileges to stimulate innovation, energy efficiency, investment and other "priority" activities, sectors and regions. This approach is apparent not only in proposals to restore fiscal privileges to free economic zones but also in the government's draft law on stimulating innovation, which provides for subsidised credits, customs privileges and tax breaks to spur innovative activities. The first priority should be to sustain macroeconomic stability and strengthen framework conditions for doing business – policies that will not only facilitate innovation and FDI but will enhance overall economic performance. Indeed, where sound institutions and healthy framework conditions for entrepreneurship are lacking, targeted interventions are less likely to succeed and more likely to generate waste and potentially costly distortions. Whether the issue is FDI, innovation or regional development, it will be important to get the basics right first. Only then would it make sense to consider interventions and programmes aimed at correcting specific bottlenecks and other market failures.

Reducing barriers to trade can also stimulate competition and growth: the empirical analysis reported in Table 3.6 clearly points to the positive impact of import penetration on productivity growth. The trade regime in Ukraine is already relatively liberal, however, which suggests that further trade liberalisation probably matters less than greater openness to FDI. Nevertheless, Ukraine made decisive steps towards WTO membership in 2006, and by year-end it had concluded bilateral market-access protocols with all but two of the 50 countries in the working group. It has also made great progress in harmonising its domestic legislation with WTO norms and standards: 33 bills amending various WTO-sensitive aspects of domestic law were adopted late 2006/early 2007, finally allowing Ukraine to report full closure on that front.[63] Several recent studies conclude that the direct effect of WTO accession – *i.e.* the impact of tariffs changes and improved access to foreign markets – is likely to be positive but limited, and most of the welfare gains arising from WTO membership are expected to result from the reduction in formal and informal barriers to foreign investment, the strengthening of property rights and the overhaul of technical regulation.[64] With respect to direct effects, export-oriented industries will benefit most (particularly steel and chemicals), as well as sectors that consume a high share of intermediate goods imports.[65] The agriculture and food industries might face some loss of market share to imports, but this would represent a gain for Ukrainian consumers and could provide a much-needed spur to restructuring in Ukraine's agricultural sector, which is potentially quite competitive but in need of further reform. Agriculture might also benefit from the more stable agricultural and trade policy framework that WTO membership would entail.

Privatisation enhances efficiency and productivity growth

The size of the state has been identified in this report as another key barrier to growth: the overall fiscal burden is too heavy, substantial public subsidies introduce distortions between sectors and excessive state ownership hampers the process of restructuring and reallocation of resources.[66] In these circumstances, the loss of privatisation momentum is unfortunate: after peaking in 2005 at 5.1% of GDP, privatisation receipts in 2006 were minimal (0.1%). Early 2007 saw signs of increased privatisation activity, but it is not clear

where this might lead. The government's medium-term fiscal plan contains ambitious targets for privatisation income, equivalent to roughly 10 bn UAH (around 1.9% of estimated 2006 GDP) per year over 2007-09, and the authorities have expressed an interest in selling large parts of the fixed-line telephone monopolist Ukrtelekom, a number of regional energy companies (so-called *oblenergos*) and the Odessa Portside Plant, which is among the country's largest producers of ammonia and nitrogen fertilisers. It is far from clear how these plans will work out in practice. Actual privatisation activity remains highly non-transparent,[67] and political turmoil has raised questions about whether or when the next big privatisations will take place.[68] The most recent major privatisation – the long-delayed sale of 76% of Luhanskteplovoz, a producer of locomotives and trams, for $ 57.9 m in March 2007 – was a fairly opaque process that resulted in a sale price that was just 0.17% above the starting price for the stake. The president has ordered an investigation of the sale, which is now being challenged in the courts.[69]

The management of the State Property Fund has in recent years been unenthusiastic about the privatisation of large enterprises and has to some extent shifted its focus from privatisation to the management of state property. This appears to have generated some fiscal benefits, as the consolidated budget's income from dividends on state-owned shares and transfers of SOE profits jumped from 0.37% of GDP in 2004 to 1.0% in 2005.[70] However, there is little indication that this outcome has been connected with either improved SOE performance or a reduction in budgetary support for SOEs. On the contrary, the financial weakness of some of the major SOEs – above all, Naftogaz Ukrainy – implies substantial quasi-fiscal obligations for the budget. While Naftogaz's net foreign liabilities, which exceed 2.5% of GDP, are not subject to explicit state guarantees, there is little doubt that the state will be obliged to support the company, not least via forbearance in respect of tax arrears equal to 1% of GDP.[71] More generally, the governance of SOEs in Ukraine remains highly problematic: they tend to be subject to a high degree of political/bureaucratic interference, they are often pressured (if not required) to sell their output at artificially low prices, and most do not face strong incentives to behave in a commercially efficient manner.[72] Indeed, many of the largest are local or national monopolies, and a large fraction relies chiefly or wholly on sales to state or municipal authorities.

In these circumstances, the mounting evidence that privatisation in Ukraine has improved enterprise productivity and efficiency is hardly surprising.[73] The defects of Ukrainian privatisation *processes* cannot be denied and account for much of the criticism of privatisation within the country, but they should not deflect attention from empirical work pointing to the positive impact of privatisation on sales growth and profitability.[74] Using panel data on Ukrainian firms for 1996-2000, Andreyeva (2003) estimates a production function using random-effects and instrumental variable estimators. She finds evidence that firm performance improves significantly with privatisation, particularly when it results in the concentration of ownership in the hands of a dominant shareholder. A large study conducted in 2004 on behalf of the State Property Fund found that privatised enterprises reduced wage arrears faster, innovated more, invested more efficiently and increased productivity and output more rapidly than did state-owned enterprises.[75] According to Zelenyuk and Zheka (2006), better performance is partly the product of better corporate governance of private companies, which leads in turn to greater technical efficiency. Interestingly, Grygorenko and Lutz (2007) find that there is a non-trivial *positive* relationship between state ownership and enterprise performance in enterprises that are majority privately owned but that the relationship between state ownership and

performance is strongly *negative* where the state share exceeds 50%.[76] This suggests that privatised firms in which the state still holds shares may yet profit from explicit or implicit subsidies and/or regulatory forbearance on the part of the authorities.

While these and other studies converge in their conclusion that privatisation has positive effects on firm performance, quantifying those effects is still on the research agenda. Using a rich longitudinal database on Ukrainian manufacturing firms, Brown and Earle (2007b) provide an assessment of the productivity effects of privatisation over time. The long time series, which extends from 1989 until 2005, enables them to include several years of pre-privatisation data and to control for potential selection bias in the privatisation process. For privatisation to domestic owners, they find that total factor productivity increased between 10 and 25%, depending on the specification used, during the seven years following privatisation. They find the effect of foreign privatisation to be even stronger, but the estimates are less robust owing to the sample size.[77] Positive effects appear within a year of privatisation and continue increasing thereafter (Figure 3.11). Given that the privatisation process was still relatively intense in the late 1990s and even the early 2000s, this implies that the contribution of privatisation to aggregate manufacturing productivity growth in recent years has been substantial – the cumulative contribution reaches 20 to 40%, according to the specification used.

Figure 3.11. **Multifactor productivity impact of privatisation**
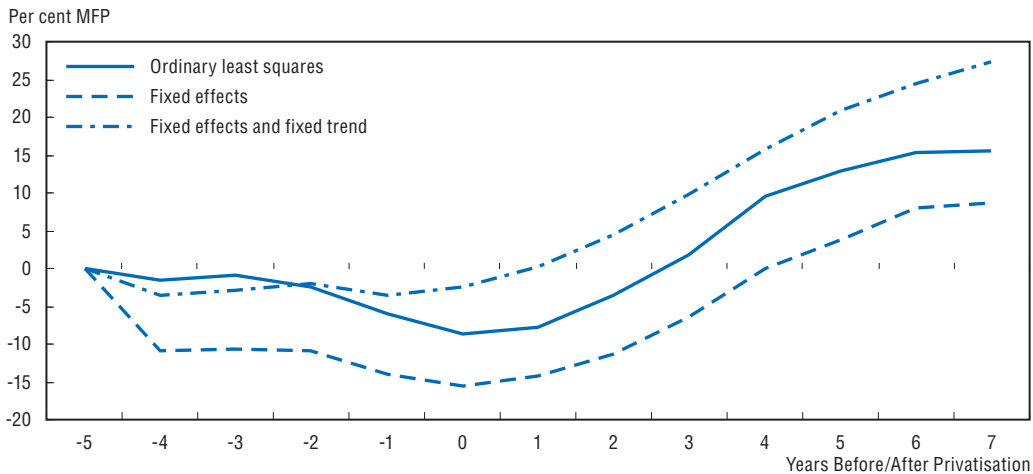
Source: Brown and Earle (2007b).

Despite widespread fears that privatisation would lead to job losses, Brown, Earle and Vakhitov (2006) find that privatisation reduces worker separations (both quits and dismissals) substantially. This comes at a price, however: privatisation is also associated with lower wage levels – ironically, with the largest wage losses coming in worker-controlled firms. Outsider-controlled firms enjoy wage gains. Of course, privatisation has been associated with labour-shedding – employment in Ukrainian industry has fallen by almost half since the transition began, and privatised enterprises account for a large part of the reduction. However, it appears that privatisation and restructuring offer better prospects for preserving more jobs over the medium-to-long term.

These findings clearly point to the potential benefits of further privatisation. However, in some specific sectors or market segments characterised by a substantial degree of natural monopoly, privatisation entails the need to develop new forms of economically efficient regulation, as well as preliminary steps to ensure the development of real competition.[78] This problem is particularly acute for electricity generation. For instance, the privatisation of the *oblenergos*, while probably desirable in the long run, looks highly problematic in the absence of any clear plans for restructuring the power sector.[79] The government unbundled electricity dispatch, generation and distribution at a fairly early stage, but assets have since been "re-bundled" into a large state-owned holding company, and the wholesale power market is so heavily regulated and so distorted by cross-subsidy mechanisms that it is probably best understood as a quasi-market. Thus, while there is a general expectation that many generating assets[80] will be privatised in due course, there is no consensus as to when or how they will be sold, and little work has yet been done on the institutions and regulatory framework needed to govern a power sector in which private entrepreneurship and market forces really operate. In this particular case, premature privatisation could actually complicate power-sector reform.[81] The urgency of such reform is in any case difficult to exaggerate, given rapidly rising fuel prices, the low efficiency of energy transformation described in Chapter 1 and the extremely poor productivity record of the power sector (Figure 3.3A).

It is clear, then, that ownership change does not necessarily achieve much if undertaken without due attention to market structure. However, there is more to the competition-privatisation relationship than simply a pitfall to be avoided in some sectors. There are also potentially beneficial synergies: theory suggests that the benefits of privatisation are likely to be greater if combined with regulatory and other reforms aimed at strengthening competition, and a large and growing body of empirical research suggests that this is indeed the case. Research in developed market economies, developing countries and economies in transition finds that private enterprises generally respond more readily to increasing competitive pressures than do SOEs, and the gains from privatisation tend to be greater where privatised enterprises are subject to competition.[82] Effective private ownership and competition are thus mutually reinforcing devices for disciplining managers and giving them incentives to restructure. In a weak institutional environment, moreover, the complementarity between the two may be all the greater, since competition can sometimes help offset other institutional weaknesses.[83]

Notes

1. See Enright (2006).

2. In the Balassa-Samuelson framework, the real exchange rate appreciates in parallel with productivity gains (see Rogoff, 1996).

3. Exports of semi-finished products have been much more dynamic (growing by 16% per year on average), but they represent only one-sixth of total steel products exports.

4. There is some evidence that this has begun to occur; see Lorentz (2006).

5. These exports have overwhelmingly been to Russia, where rapidly rising demand for rolling stock has outstripped the ability of domestic producers to keep up.

6. Data on the breakdown of employment by branch of industry exclude employees of small business and unincorporated entrepreneurs.

7. During 1999-2006, gross output grew by roughly 85%, while gross value added rose by around 67%. The gap between output and value added appears to have been relatively constant during 1999-2003 but widened noticeably in 2004-06. See Shumylo (2007).

8. See, *e.g.,* Brown and Earle (2004).

9. Ernst *et al.* (1995) compare the USSR, China, Poland, Hungary and the Czech Republic with respect to three indicators of readiness for the market transition – structural misdevelopment, institutional preparedness for a market economy, and macroeconomic disequilibrium – concluded that the Soviet economy was by far the least prepared on all three dimensions.

10. Real wages grew by 17.4% per year if CPI-deflated and around 15% if PPI-deflated.

11. See the comparison of Russian and Ukrainian wage and productivity trends in Ahrend, de Rosa and Tompson (2006). They use a fictional currency unit constructed as a basket composed in equal measure of euros and US dollars. This yields a meaningful measure for the international price competitiveness of Russian and Ukrainian industrial sectors that has the added advantage of being largely independent of swings in the euro-dollar exchange rate.

12. Data on value added per employee are not available by sector; this finding is based on data for all industry in Russia and Ukraine, as well as for Russian industry excluding fuel and electricity.

13. With the exception of food products, which were affected by a Russian ban on meat and dairy imports from Ukraine, imposed in 2006.

14. The rise in the share of Asian countries in Ukrainian imports is particularly impressive given the initially much lower level of import penetration for these countries.

15. Three times greater than those observed in Ukraine (OECD, 2006a).

16. The Balassa-Samuelson framework (Balassa, 1964 and Samuelson, 1964) gives a theoretical foundation for explaining medium-to-long run deviation of exchange rates from the Purchasing Power Parity (PPP) condition in emerging economies. Since productivity gains in manufacturing are generally higher in transition economies than in developed ones, some real appreciation is part of the catching-up process. An economy like Ukraine's could therefore be regarded as suffering from excessively rapid real appreciation if it diverged from the Balassa-Samuelson trajectory to an unusually large extent, with negative consequences for growth and/or employment. For a more detailed discussion of the Balassa-Samuelson effect in transition, see Gianella (2006:24).

17. See Box 1.1.

18. See Annex 3.A2 for details of these estimations.

19. This is true of investment and consumer goods, of course, but also of more complex chemical products.

20. Pindyuk (2006). Given Ukraine's dependence on oil and gas imports, Russia's share in Ukraine's import bill is the largest – about one-third – but Ukraine's non-hydrocarbons imports are essentially from Europe (more than 40% of imports, mostly food products, investment and consumer goods). Asia's share reached 13% in 2005.

21. Both forms of efficiency are important: a monopoly, for example, may be technically efficient (operating at, rather than below, its production function) but not allocatively efficient. Allocative efficiency is best served by robust competition.

22. See, *e.g.,* Aghion and Griffith (2005); or Conway *et al*, (2006).

23. Nicoletti and Scarpetta (2005).

24. See, *e.g.,* EBRD (2002); Carlin *et al.* (2001); Vagliasindi (2001).

25. See OECD (2006a) and Aghion and Bessonova (2006).

26. See, *e.g.,* AMCU (2006); IERPC (2003, 2006); NTK (2006); Stotyka (2004); and Akimova and Shcherbakov (2002).

27. See AMCU (2006) for details. The committee estimates that 9% of sales were in monopoly-dominated sectors and a further 35-36% in sectors characterised by market dominance or oligopolistic competition.

28. Examples include mining (apart from coal and peat), coke production, mobile and terrestrial telephony, brewing, tobacco and motor fuels, as well as some subsectors of chemicals and machine-building.

29. AMCU (2006), esp. at Table 3 and Figure 3.

30. According to NTK (2006), 52% of managers described competition on the markets in which they were operating as "substantial"; 34% called it "moderate" and 14% "weak" or "non-existent".

31. See, in particular, NTK (2006) and IERPC (2006). Note, however, that IERPC (2006) sees some evidence that the degree of competitive pressure either stabilised or even fell slightly after 2004.

32. See the overview in Stotyka (2004).

33. For one important exception, see Akimova and Shcherbakov (2002), who focus exclusively on *technical* efficiency (x-efficiency). It should be noted that they fail to find strong evidence of the benefits of competition for technical efficiency in Ukraine, but their analysis does not take account of import competition; as will be seen, the impact of trade openness in some Ukrainian sectors is critical. See also Chernenko (2004) for the evidence presented by the AMCU to the OECD's 2004 Global Forum on Competition, and Blue Ribbon (2006:47-8). IERPC (2003) looks closely at a few key sectors but stops short of an empirical analysis of the impact of competition on performance.

34. It may also simply reflect the *outcome* of competition: where local firms respond rapidly and effectively to import competition, they are more likely to retain market share.

35. See IERPC (2003) for an excellent overview.

36. The Free Economic Zones and Priority Development Areas are arguably a case in point, but perhaps the most egregious recent instance was the "economic experiment" conducted in ferrous metallurgy during 1999-2002. Participating metallurgical enterprises (comprising virtually the entire sector) enjoyed exemption from a number of taxes and fees, as well as write-offs of tax arrears and penalties and a profit tax rate of 9% (later raised to 15%) in lieu of the normal 30% rate. Altogether, this is estimated to have cost the budget in excess of 2.5 bn UAH per annum. Eremenko and Lisenkova (2005) observe that the benefits to producers were partly offset by anti-dumping actions abroad.

37. See the survey data in IERPC (2006:5) on the importance of cultivating informal relationships with municipal, provincial and central government officials.

38. See Voigt (2006).

39. In Ukraine, the term "natural monopolies" generally does not bear the meaning it would in any western economics text (minimum efficient scale of production equal to or greater than the size of the market). Rather, it refers specifically to a number of infrastructure monopolies – above all, transmission and distribution of electricity, pipeline transport, rail transport, air traffic control, water supply and supply of some specialised port and airport services. See "About natural monopolies" (2005).

40. See IEA (2006), Chapter 6, for details.

41. According to AMCU officials, in fields such as water supply, there are tens of thousands of tariff-setting "regulators" in Ukraine.

42. Critics argue that such profit rates are in part the result of deliberate efforts to restrict the number of cars on the rails for transporting particularly lucrative freight, like oil products.

43. On the growing evidence that services liberalisation can benefit manufacturing sectors, see Arnold *et al.* (2007); Nicoletti and Scarpetta (2003); Conway *et al.* (2006).

44. Gazizullin (2006a:4).

45. Blue Ribbon (2006:48). It should be noted that fundamental utilities reform will also necessitate changes in forms of social support for vulnerable groups, who will otherwise be hit hard by the sharp increases in utilities tariffs that will be needed to attract investment to these sectors.

46. The oldest and most important is the National Electricity Regulatory Commission, created in 2000; in 2005, the National Commission for Communications Regulation began operating.

47. "Vnutrennii rynok" (2007); Dubien (2007).

48. "Kontseptsiya Derzhavnoi" (2006).

49. Business complaints about rising rail tariffs led not to the creation of a specialist rail regulatory but to the involvement of the Ministry of the Economy, alongside the Ministry of Transport and Communications, in setting rail tariffs.

50. It is, in fact, difficult to be certain, in view of the complexity of the tariff schedules, which often involve large numbers of tariffs for a single commodity, depending on weight, distance, timing, etc.

51. The award of GSM licences to Ukrtelekom may have been prompted by a desire to enhance its value ahead of privatisation.

52. Concentration in such sectors as metallurgy, where the international players are very large, may be more or less inevitable – a degree of consolidation may even be desirable – and need not interfere with competition, provided that markets remain open to international competition.

53. Guellec and Van Pottelsberghe de la Potterie (2001); Hemmings (2005).

54. Ewe-Ghee (2001); Savvides and Zachariadis (2005). Lipsey (2007) makes the important point that the positive impact of FDI inflows appears to be greatest in economies that have opened up to FDI after having been largely or completely closed to it. Ukraine, like all transition economies, is clearly such a case.

55. OECD (2004); Yudaeva *et al.* (2002).

56. Lutz, Talavera and Park (2006).

57. Mittal Steel paid USD 4.8 bn, which was equivalent to 5.5 % of GDP.

58. The development of the banking sector, in particular, demonstrates the potential benefits to be derived from opening important service sectors to foreign investors. Foreign-owned banks' share of total assets reached around 30% by end-2006, up from 15% in 2004; see Dushkevych and Zelenyuk (2007).

59. As mentioned in Chapter 2, the principle of national treatment in respect of regulatory policy is not required by law.

60. See especially Kinoshita and Campos (2003); Lipsey (2007); and Kostevc *et al.* (2007). See also the findings of Bevan and Estrin (2000); Bevan *et al.* (2004); Merlevede and Schoors (2004, 2005); and Anghel (2006). All point, in varying degrees, to a significant role for institutional quality in determining FDI location.

61. Kinoshita and Campos (2003) find agglomeration effects and institutional quality to be the two most important factors in determining FDI flows.

62. See Davis (2005).

63. The legislation in question concerns, *inter alia*, intellectual property, export duties on agricultural products, insurance and banking activities, export duties on scrap metal, and aspects of the tax, customs and regulatory regimes.

64. See Shnyrkov *et al.* (2006); Ministry of Economy (2005); "Overall Impact" (2005); and Pavel *et al.* (2004).

65. Ukraine's textile and leather industry will benefit from tariff reductions for this reason (Pavel *et al.*, 2004). In the non-tradable sector, hotels and restaurants are also likely to profit from WTO accession.

66. The restructuring of SOEs themselves is hampered by the protective legislation on bankruptcy procedures described in Chapter 2 and, in the case of many privatisations, by potentially constraining social clauses, concerning job preservation and other conditions pertaining to the post-privatisation management of the company.

67. The second Kryvorizhstal sale remains an exceptional case in this respect.

68. On 14 May, the government suspended the privatisations of stakes in Ukrtelekom and the Odessa Portside Plant, citing the ongoing political crisis. On 22 May, a court ruling blocked an attempt to sell even a 1% stake in Ukrtelekom in order to test the market.

69. It has been alleged that eligible bidders were excluded from the auction and that the two firms admitted to participate ultimately represented the same beneficial owner.

70. It fell back to 0.6% in 2006. This is a problem for SOEs, as it reflects in part the fact that profit transfer requirements are neither predictable nor stable; the government changes them frequently.

71. See IMF (2007:19) for details.

72. Leonov and Zhuk (2005); IMF (2007).

73. Akimova and Schwödiauer (2003) are the main exception to this rule: they do not report a strong result for private vs. state ownership; however, their study focuses on the structure of ownership of privatised enterprises (insider, outsider Ukrainian, foreign, residual state) rather than on privatisation *per se*.

74. It would, of course, be a mistake to conclude that privatisation processes are not important: the manner in which privatisations are conducted can affect the extent to which, and the speed at which, the benefits of privatisation are realised.

75. See Dubrovskiy *et al.* (2004), especially the conclusions presented at pp. 141ff.

76. Pivovarsky (2003) also finds that majority state ownership has a statistically significant negative effect on total factor productivity. The coefficient for state ownership under 50% is negative but not significant.

77. The effect is found to be twice as high in the short run, but also weakening in the long-run for some specifications of the empirical model used.

78. Paskhaver and Verkhovodova (2006).

79. See Gazizullin (2006) and IEA (2006) for details.

80. Excluding nuclear and hydro.

81. See Tompson (2004) on how premature partial privatisation in Russia created ownership structures that ultimately made electricity reform more difficult.

82. On the complementarities between privatisation and competition, see Megginson and Netter (2001); Commander *et al.* (1999); and the work surveyed in Nellis (1998). In an enterprise-level study covering Bulgaria, Romania and Poland, Angelucci *et al.* (2002) find that competitive pressure has stronger effects on the productivity of privatised firms, as do Earle and Estrin (2003) in Russia. On Mexico, see La Porta and Lopez-de-Silanes (1997).

83. See Commander *et al.* (1999:10). Where shareholder and creditor monitoring is weak and ownership is dispersed, robust product-market competition can increase the external pressure for more efficient management, by increasing the sensitivity of profits to unit costs, while at the same time reducing agency losses within the firm, by compelling managers to pay more attention to profit maximisation.

Bibliography

"About natural monopolies" (2005), "Law of Ukraine 'About Natural Monopolies'", as amended by law No. 2599-IV, 31 May, available at *www.lexadin.nl/wlg/legis/nofr/oeur/lxweukr.htm*

Aghion, P. and R. Griffith (2005), *Competition and Growth. Reconciling Theory and Evidence*, Cambridge, MA, The MIT Press.

Aghion, P., R. Burgess, S. Redding and F. Zilibotti (2005), "Entry Liberalisation and Inequality in Industrial Performance", *Journal of the European Economic Association: Paper and Proceedings,* 3:2-3, April-May.

Aghion, P. and E. Bessonova (2006), "On Entry and Growth: Theory and Evidence", *Revue de l'OFCE* 97 bis 2006/3, June.

Aghion, P., R. Blundell, R. Griffith, P. Howitt and S. Prantl (2006) "The Effects of Entry on Incumbent Innovation and Productivity", *mimeo*, Brown University, 26 January, available at *www.econ.brown.edu/fac/ Peter_Howitt/working/ABGHP.pdf*.

Ahrend, R., D. de Rosa and W. Tompson (2006) "Russian Manufacturing and the Threat of 'Dutch Disease': A Comparison of Competitiveness Developments in Russian and Ukrainian Industry", *OECD Economics Department Working Paper* No. 540, available at *www.olis.oecd.org/olis/2006doc.nsf/ linkto/eco-wkp(2006)68*.

Akimova, I. and A. Shcherbakov (2002), "Competition and Technical Efficiency of Ukrainian Manufacturing Enterprises", *Institute for Economic Research and Policy Consulting Working Paper* No. 17, October, available at *http://ierpc.org/ierpc/wp/WP_17_eng.pdf*.

Akimova, I. and G. Schwödiauer (20003), "Ownership Structure, Corporate Governance and Enterprise Performance: Empirical Results for Ukraine", *Institute for Economic Research and Policy Consulting Working Paper* No. 21, July, available at *www.ier.kiev.ua/English/WP/2003/wp_21_eng.pdf*.

AMCU (2006), "Konkurentsiya v Ukraini: Analitchna dopovid' shchodo stanu, tendentsiy i problem rozvitku ekonomichnoi konkurentsii v Ukraini u 2000-2005 rokakh", Kyiv, Anti-Monopoly Committee of Ukraine, available at *www.amc.gov.ua/amc/doccatalog/document?id=47018*.

Andreyeva, T. (2003), "Company Performance in Ukraine: What Governs Its Success", *EERC Working Paper* 03/01, available at *www.eerc.ru/details/download.aspx?file_id=3726*.

Angelucci, M., S. Estrin, J. Konings and Z. Zolkiewski (2002), "The Effect of Ownership and Competitive Pressure on Firm Performance in Transition Countries: Micro Evidence from Bulgaria, Romania and Poland", *William Davidson Institute Working Paper* No. 434, January, available at *http://wdi.umich.edu/files/Publications/WorkingPapers/wp434.pdf*.

Anghel, B. (2006), "Foreign Direct Investment in Transition Countries: A Dynamic Analysis at Firm Level", Universidad Autonoma de Barcelona, April, available at *http://idea.uab.es/abrindusa/research/paper%20FDI%20transition%20countries.pdf*.

Arnold, J., B. Javorcik and A. Mattoo (2007), "Does Services Liberalization Benefit Manufacturing Firms? Evidence from the Czech Republic", *World Bank Policy Research Working Paper* No. 4109, January, available at *www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2007/01/09/000016406_20070109095012/Rendered/PDF/wps4109.pdf*.

Balassa, B. (1964), "The Purchasing Power Parity: a Reappraisal", *Journal of Political Economy*, 72:6, December.

Bénassy-Quéré, A., M. Coupet and T. Mayer (2005), "Institutional Determinants of Foreign Direct Investment", *CEPII Working Paper* No. 2005-05, April.

Bevan, A. and S. Estrin (2000), "The Determinants of Foreign Direct Investment in Transition Economies", *William Davidson Institute Working Paper* No. 342, October, available at *http://wdi.umich.edu/files/Publications/WorkingPapers/wp342.pdf*.

Bevan, A., S. Estrin and K. Meyer (2004), "Foreign Investment Location and Institutional Development in Transition Economies", *International Business Review* 13:1, February.

Blue Ribbon (2006), *The State and the Citizen: Delivering on Promises*, Kyiv, UNDP Blue Ribbon Commission for Ukraine, 12 December.

Brown, J. and J. Earle (2002), "Gross Job Flows in Russian Industry Before and After Reforms: Has Destruction Become More Creative?", *Journal of Comparative Economics* 30:96-133.

Brown, J. and J. Earle (2004), "Job Reallocation and Productivity Growth in the Ukrainian Transition", *Upjohn Institute Staff Working Paper* 04-104, November, available at *www.upjohninst.org/publications/wp/04-107.pdf*.

Brown, J., J. Earle and A. Telegdy (2005) "The Productivity Effects of Privatisation: Longitudinal Estimates from Hungary, Romania, Russia and Ukraine", *Upjohn Institute Working Paper* 05-121, October, available at *www.upjohninst.org/publications/wp/05-121.pdf*.

Brown, D., J. Earle and V. Vakhitov (2006), "Wages, Layoffs and Privatization: Evidence from Ukraine", *Upjohn Institute Working Paper* 06-126, February, available at *www.upjohninstitute.org/publications/wp/06-126.pdf*.

Brown D. and J. Earle (2007a), "Competitive Pressure and productivity Growth in Ukraine", *mimeo*.

Brown, J. and J. Earle (2007b), "The Productivity Effects of Privatization in Ukraine: Estimates from comprehensive Manufacturing Firm Panel Data, 1989-2005", *mimeo*.

Carlin, W., S. Fries, M. Schaffer and P. Seabright (2001), "Competition and Enterprise Performance in Transition Economies: Evidence from a Cross-Country Survey", *EBRD Working Paper* No. 63, June, available at *www.ebrd.com/pubs/econo/wp0063.pdf*.

Chernenko, S. (2004), "How Enforcement against Private Anticompetitive Conduct has Contributed to Economic Development", contribution from Ukraine to the OECD Global Forum on Competition, 27 January.

Commander, S., M. Dutz and N. Stern (1999), "Restructuring in Transition Economies: Ownership, Competition and Regulation", Paper prepared for the Annual World Bank Conference on Development Economics, Washington, DC, 28-30 April, available at *http://siteresources.worldbank.org/INTABCDEWASHINGTON1999/Resources/stern.pdf*.

Conway, P., D. de Rosa, G. Nicoletti and F. Steiner (2006), "Regulation, Competition and Productivity Convergences", *OECD Economics Department Working Paper* No. 509, September, available at *www.olis.oecd.org/olis/2006doc.nsf/linkto/ECO-WKP(2006)37*.

Davis, M. (2005), "The debate on the elimination of free enterprise zones in Ukraine", Kyiv, The World Bank, 12 December, available at *http://siteresources.worldbank.org/INTUKRAINE/147271-1089983407712/20757196/FreezonesEng.pdf*.

Dubien, A. (2007), "The Opacity of Russian-Ukrainian Energy Relations", *Russie.Nei.Visions, No.* 19, May, available at *www.ifri.org/files/Russie/ifri_dubien_Russie_Ukraine_gaz_ANG_mai2007.pdf*.

Dubrovskiy, V., T. Shygaeva, A. Belotserkovets, R. Bondarenko and N. Golovanenko (2004), "Zvit po rezul'taty doslizhden' po proektu 'Sotisal'no-ekonomichni naslidky pryvatizatsii derzhavnogo mayna v Ukraini: pershi desyat' rokiv'", Kyiv, CASE Ukraine.

Dushkevych, N. and V. Zelenyuk (2007), "Banking in Ukraine: Changes Looming?", *Beyond Transition* 18:1, January-March, available at *www.cefir.ru/index.php?l=eng&id=262*.

Earle, J. and S. Estrin (2003), "Privatization, Competition and Budget Constraints: Disciplining Enterprises in Russia", *Economics of Planning* 36:1.

Ernst, M., M. Alexeev and P. Marer (1995), *Transforming the Core: Restructuring Industrial Enterprises in Russia and Central Europe*, Boulder, CO, Westview Press.

EBRD (2002), *Transition Report 2002*, London, European Bank for Reconstruction and Development.

Égert, B. (2005) "Equilibrium Exchange Rates in South-Eastern Europe, Russia, Ukraine and Turkey: Healthy or Dutch-Diseased?", *Economic Systems*, 29:2, June.

Enright, M. (2006), "Improving Competitiveness through Private Sector Dynamism", University of Hong Kong, May, available at *http://siteresources.worldbank.org/PAKISTANEXTN/Resources/293051-1147261112833/Session-2-1.pdf*.

Eremenko, I. and K. Lisenkova (2005), "Impact of Joining the WTO on Ukrainian Metallurgy", *EERC Working Paper* No. 05-02e, available at *www.eerc.ru/details/download.aspx?file_id=4012*.

Ewe-Ghee, L. (2001), "Determinants of, and the Relationship Between, Foreign Direct Investment and Growth: A Summary of the Recent Literature", *IMF Working Paper* No. 2001/175, November, available at *www.imf.org/external/pubs/ft/wp/2001/wp01175.pdf*.

Gazizullin, I. (2006a), "Back to the Drawing Board: Restructuring Ukraine's Network Industries", *INDEUNIS Papers*, March, available at *http://indeunis.wiiw.ac.at/index.php?action=content&id=wp2*.

Gazizullin, I. (2006b), "State Aid in Ukraine: Practice and Challenges", *INDEUNIS Papers*, September, available at *http://indeunis.wiiw.ac.at/index.php?action=filedownload&id=115*.

Gianella, C. (2006), "A Golden Rule for Russia? How a Rule-Based Fiscal Policy Can Allow a Smooth Adjustment to the New Terms of Trade", *OECD Economics Department Working Paper* No. 537, 23 January, available at *www.olis.oecd.org/olis/2006doc.nsf/linkto/eco-wkp(2006)65*.

Goldstein, M. and M.S. Khan (1985), "Income and Price Effects in Foreign Trade", in R.W. Jones and P.B. Kenen (eds), *Handbook of International Economics II*, Amsterdam, Elsevier Science Publishers.

Grygorenko, G. and S. Lutz (2007), "Firm Performance and Privatization in Ukraine", *Economics Discussion Paper* EDP0704, University of Manchester, February, available at *www.socialsciencesmanchester.ac.uk/economics/research/discuss.htm*.

Guellec, D. and B. van Pottelsberghe de la Potterie (2001), "R&D and Productivity Growth: Panel Data Analysis of 16 OECD Countries", *OECD STI Working Papers*, 2000/4, June, available at *www.olis.oecd.org/olis/2001doc.nsf/LinkTo/DSTI-DOC(2001)3*.

Hausmann R., J. Hwang and D. Rodrik (2005), "What you Export Matters", *NBER Working Paper* 11905, December.

Hemmings, P. (2005), "Hungarian Innovation Policy: What is the Best Way Forward?", *OECD Economics Department Working Papers, No. 445*, September, available at *www.olis.oecd.org/olis/2005doc.nsf/linkto/ECO-WKP(2005)32*.

Hooper P., K. Johnson and J. Marquez (2000), "Trade Elasticities for G7 Countries", Princeton, NJ, International Economics Section, Department of Economics, Princeton University.

IEA (2006), *Ukraine: Energy Policy Review 2006*, Paris, International Energy Agency.

IERPC (2003), "Development of Domestic Markets in Ukraine: Welfare through Competition", Kyiv, Institute for Economic Research and Policy Consulting, May, available at *www.ier.kiev.ua/English/books/dev_of_dom_eng.pdf*.

IERPC (2006), "Quarterly Enterprise Survey", Special Issue No 3(6), Kyiv, Institute for Economic Research and Policy Consulting, October, available at *www.ier.kiev.ua/English/qes/special_qes6_eng.pdf*.

IMF (2007), "Ukraine: Selected Issues", *IMF Country Report No. 07/47*, Washington, DC, International Monetary Fund, January, available at *www.imf.org/external/pubs/cat/longres.cfm?sk=20408.0*.

"Kontseptsiya Derzhavnoi" (2006), "Kontseptsiya Derzhavnoi programy reformuvannya zaliznychnogo transportu Ukrainy", confirmed by Cabinet of Ministers order No. 651-r, 27 December, available at *www.uz.gov.ua/?m=info.menu_koncepc&lng=uk*.

Kinoshita, Y. and N. Campos (2003), "Why Does FDI Go Where It Goes? New Evidence from the Transition Economies", *IMF Working Paper* 03/228, November, available at *www.imf.org/external/pubs/ft/wp/2003/wp03228.pdf*.

Kostevc, Č., T. Redek and A. Sušjan (2007), "Foreign Direct Investment and Institutional Environment in Transition Economies", *Transition Studies Review* 14:1, May, available at *www.springerlink.com/content/j39027vm76317035/fulltext.pdf*.

La Porta, R. and F. Lopez-de-Silanes, (1997), "The Benefits of Privatization: Evidence from Mexico", *NBER Working Paper* No. 6215, October.

Leonov, D. and R. Zhuk (2005), "Study on Management of State-Owned Enterprises in Ukraine," Kyiv, Ukrainian Stock Market Development Institute.

Lipsey, R. (2007), "Measuring the Impacts of FDI in Central and Eastern Europe", *NBER Working Paper* No. 12808, December.

Lorentz, H. (2006), "Food Supply Chains in Ukraine and Kazakhstan", Electronic Publications of Pan-European Institute 11/2006, available at *http://www.tukkk.fi/pei/verkkojulkaisut/Lorentz_112006.pdf*.

Lutz, S. and O. Talavera (2004), "Do Ukrainian Firms Benefit from FDI?", *Economics of Planning* 37:2, June.

Lutz, S., O. Talavera and S. Park (2006), "Effects of Foreign Presence in a Transition Economy: Regional and Industry-Wide Investments and Firm-Level Exports in Ukrainian Manufacturing", *DIW Discussion Paper* 594, Berlin, German Institute for Economic Research, May, available at *www.diw.de/deutsch/produkte/publikationen/diskussionspapiere/docs/papers/dp594.pdf*.

Megginson, W. and J. Netter (2001), "From State to Market: A Survey of Empirical Studies on Privatization", *Journal of Economic Literature* 39:2, June, available at *http://faculty-staff.ou.edu/M/William.L.Megginson-1/prvsvpapJLE.pdf*.

Merlevede, B. and K. Schoors (2004), "Determinants of Foreign Direct Investment in Transition Economies", Ghent University Department of Economics, January, available at *www.iue.it/ECO/Conferences/accession_countries/papers/EUIconferenceMay2004_paperMerlevede.pdf*.

Merlevede, B. and K. Schoors (2005), "How to Catch Foreign Fish? FDI and Privatization in EU Accession Countries", *William Davidson Institute Working Paper* 785, August, available at *www.wdi.umich.edu/files/Publications/WorkingPapers/wp785.pdf*.

Ministry of the Economy (2005), "Vstup Ukrainy do Svitovoi organizatsii torgivli: znachennya i naslidky dlya ekonomiky ta ii galuzey", available at *http://me.kmu.gov.ua/file/link/38848/file/WTO_galuz.doc*.

Nellis, J. (1998), "Time to Rethink Privatization in Transition Economies?", *International Finance Corporation Discussion Paper* No. 38, available at *http://ifcln1.ifc.org/ifcext/economics.nsf/AttachmentsByTitle/dp38/$FILE/dp38.pdf*.

Nicoletti, G. and S. Scarpetta (2005) "Regulation and Economic Performance: Product Market Reforms and Productivity in the OECD", *OECD Working Papers* No. 460, available at *www.olis.oecd.org/olis/2005doc.nsf/linkto/ECO-WKP(2005)47*.

NTK (2006), "Stan dilovoi aktyvnosti promyslovykh pidpriemstv Ukrainy u III kb. 2006r.", Kyiv, Scientific and Technical Complex for Statistical Research of the State Committee for Statistics, available at *www.ntkstat.kiev.ua/nedos3.06.htm*

OECD (2004), *OECD Economic Survey, Russian Federation*, OECD, Paris.

OECD (2006a), *OECD Economic Survey, Russian Federation*, OECD, Paris.

OECD (2006b), "Roundtable on Enterprise Development and Investment Climate in Ukraine", OECD, Paris, 13 June, available at *www.oecd.org/dataoecd/26/16/37051201.pdf*.

"Overall Impact" (2005), *Analysis of Economic Impacts of Ukraine's Accession to the WTO: Overall Impact Assessment*, Kyiv, Copenhagen and Munich, Osteuropa-Institut München, Copenhagen Economics and Institute for Economic Research and Policy Consulting, December, available at *www.oei-muenchen.de/ext_dateien/dutchgrant_analysis.pdf*.

Pavel, F., I. Borakovsky, N. Selitska and V. Movhcan (2004), "Economic Impact of Ukraine's WTO Accession: First Results from a Computable General Equilibrium Model", *Institute for Economic Research and Policy Consulting Working Paper No. 30*, December, available at *www.ier.kiev.ua/English/WP/2005/wp_30_eng.pdf*.

Pindyuk, O. (2006),"Ukraine: Foreign Trade and Industrial Restructuring", *INDEUNIS Papers*, February, available at *http://indeunis.wiiw.ac.at/index.php?action=content&id=publications*.

Paskhaver, A. and L. Verkhovodova (2005), "Privatizatsiya do i posle oranzhevoi revolyutsii", *CASE Studies and Analyses* No. 319, March.

Pivovarsky, A. (2003), "Ownership Concentration and Performance in Ukraine's Privatized Enterprises", *IMF Staff Papers* 50:1, April, available at *www.imf.org/External/Pubs/FT/staffp/2003/01/PDF/Pivov.pdf*.

Rogoff, K. (1996), "The Purchasing Power Parity Puzzle", *Journal of Economic Literature*, (No.) 34, pp. 647-668.

Samuelson, P. (1964), "Theoretical Notes on Trade Problems", *Review of Economics and Statistics*, 46:2.

Savvides, A. and M. Zachariadis (2005), "International Technology Diffusion and the Growth of TFP in the Manufacturing Sector of Developing Economies", *Review of Development Economics* 9:4, November.

Shnyrkov, A., A. Rogach and A. Kopystyra (2006), "Ukraine's Joining the WTO: Realities and Challenges", *Transition Studies Review* 13:3.

Shumylo, I. (2007), "Kakova pravda ob ekonomicheskom roste v Ukraine?", *Zerkalo nedeli*, 19:648, 19-25 May.

Stotyka, Y. (2004), "The Role of the Anti-Monopoly Committee in the Development of Competition in Ukraine", Amsterdam, Tinbergen Institute, August, available at *http://ssrn.com/abstract=613262*.

Svechkar, I. (2006), "Competition Law in Ukraine: *Quo Vadis?*", *The Ukrainian Journal of Business Law*, July, available at *www.shevdid.com/publication/ivs_061.pdf*.

Tompson, W. (2004), "Restructuring Russia's Electricity Sector: Towards Effective Competition or Faux Liberalisation?", *Economics Department Working Paper, No.* 403, OECD, Paris, available at *http://www.olis.oecd.org/olis/2004doc.nsf/linkto/eco-wkp(2004)26*.

Vagliasindi, M. (2001), "Competition across Transition Economies: An Enterprise-Level Analysis of the Main Policy and Structural Determinants", *EBRD Working Paper* No. 68, December.

"Vnutrennii rynok" (2007), "Vnutrennii rynok gaza na Ukraine: politika, ekonomika, kriminal", Agentstvo regional'nogo razvitiya, March, available at *www.regnum.ru/news/802954.html*.

Voigt, S. (2006), "The Economic Effects of Competition Policy: Cross-Country Evidence Using Four New Indicators", *ICER Working Paper* No. 20/06, available at *www.icer.it/docs/wp2006/ICERwp20-06.pdf*.

Yudaeva, K., E. Bessonova, K. Kozlov, N. Ivanova, D. Sokolov and B. Belov (2002), "Sektoral'nyi i regional'nyi analiz posledstvii vstuplenii Rossii v VTO: otsenka izderzhek i vygod", CEFIR, Moscow.

Zelenyuk, V. and V. Zheka (2006), "Corporate Governance and Firm's Efficiency: The Case of a Transitional Country, Ukraine", *Journal of Productivity Analysis* 25:1.

ANNEX 3.A1

Foreign trade data

Table 3.A1.1. **Exports of goods**
As a percentage of total goods exported to

	CIS				Europe				Asia				Total			
	2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006
Food products and raw materials for their production	20.2	17.9	17.0	12.7	8.7	7.4	8.8	10.1	8.3	8.8	11.4	16.3	11.5	10.4	12.3	12.1
Mineral products	2.8	3.4	4.6	3.5	27.9	25.1	27.4	17.6	6.1	5.7	8.0	6.9	13.9	12.2	12.5	8.9
Products of chemical industry and related branches	10.8	9.9	10.9	11.9	9.0	10.4	9.7	11.3	8.0	10.0	10.9	13.0	10.6	10.4	11.1	11.8
Timber and woodwork	4.6	3.9	3.8	4.5	3.7	3.7	4.2	3.8	1.4	1.2	1.1	1.5	3.0	2.7	2.8	3.1
Industrial goods	2.5	2.4	2.5	2.8	9.1	8.0	7.9	6.9	0.4	0.4	0.5	0.3	4.6	3.8	3.5	3.3
Ferrous and non-ferrous metals and products made of them	23.7	26.2	27.3	30.3	24.0	29.0	31.1	37.8	67.2	64.1	60.3	53.9	35.8	39.0	40.1	42.2
Machinery and equipment, transportation facilities, instruments	25.8	28.7	27.5	29.9	14.5	13.6	7.7	8.2	5.9	7.9	5.7	5.1	15.3	16.9	13.2	14.3
Others[1]	9.5	7.7	6.5	4.4	3.1	2.8	3.1	4.2	2.6	1.9	2.1	3.1	5.3	4.5	4.4	4.3
Total exports (US$ millions)	6 539	9 045	11 232	12 996	9 156	11 764	10 893	12 629	5 401	8 035	8 404	8 135	23 739	33 432	35 024	38 949

1. Including informal trade.
Source: State Statistics Committee of Ukraine.

Table 3.A1.2. **Imports of goods**

As a percentage of total goods imported from

	CIS				Europe				Asia				Total			
	2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006
Food products and raw materials for their production	6.0	3.0	3.8	3.5	8.5	7.5	8.7	8.4	12.2	10.9	9.1	8.3	9.4	6.4	7.4	7.2
Mineral products	63.1	62.0	58.0	54.7	3.7	4.2	2.1	3.9	2.3	2.3	2.3	3.1	33.4	33.8	29.0	26.3
Products of chemical industry and related branches	5.7	6.0	7.6	7.9	21.9	22.9	23.8	23.1	18.6	21.0	18.0	18.7	12.7	12.9	14.6	15.1
Timber and woodwork	1.8	1.8	2.1	2.1	8.6	6.5	6.3	5.8	1.7	1.3	1.0	1.0	4.1	3.2	3.3	3.3
Industrial goods	1.8	1.9	2.2	2.3	8.7	8.8	7.9	6.7	12.7	9.0	17.8	13.3	5.2	4.8	6.1	5.4
Ferrous and non-ferrous metals and products made of them	5.6	6.6	8.2	9.7	5.5	5.5	6.1	6.4	3.8	7.8	6.6	6.1	5.2	5.9	6.8	7.5
Machinery and equipment, transportation facilities, instruments	12.2	13.9	14.3	16.2	39.1	41.9	42.1	44.1	44.4	47.0	43.3	47.6	24.6	26.2	27.8	31.0
Others[1]	3.8	5.0	3.7	3.6	4.0	2.7	3.1	1.6	4.3	0.8	1.9	1.9	5.4	6.8	5.0	4.2
Total imports (US$ millions)	11 314	14 891	16 629	19 029	8 166	9 824	12 541	16 466	1 971	2 485	4 526	5 916	23 221	29 691	36 159	44 143

1. Including informal trade.

Source: State Statistics Committee of Ukraine.

ANNEX 3.A2

Trade elasticity estimates

The model

Traditional trade equations are based on the imperfect substitution model between differentiated consumer goods, which means that finite price elasticities can be estimated for the demand and supply of these goods (see Goldstein and Kahn, 1985 or Hooper, Johnson and Marquez, 2000). Empirical studies of trade usually focus on the demand side only, where export and import growth is explained by changes in foreign and domestic demand and by an indicator of competitiveness. If it is assumed that price elasticity on the supply side is infinite, the relationship between quantity of exports (or imports) and relative prices is indeed determined exclusively by the demand equations.[1]

Given the absence of long time series for price deflators, the strategy used for these estimations consisted of running regressions on panel data for different sectors from Ukraine's major trading partners. Assuming export and import prices do not differ too much between trading partners, this method allows us to control for the absence of appropriate deflators.[2] The elasticities of exports with respect to external demand (η_x) and competitiveness (ε_x) are assumed to be constant and symmetrical, as are ε_M and η_M, the elasticities of imports with respect to price competitiveness and final domestic demand.

The trade elasticities are estimated for a range of different sectors (j) using the following equations:

Export volumes

$$\ln(X_{j,Ukraine \rightarrow country(i)\, t}) = \varepsilon_X . \ln(Compet_{(Ukraine \leftrightarrow i,t)}) + \eta_X . \ln(GDP_{i,t}) + u_i + v_t + \mu_t \tag{1}$$

where the indicator of competitiveness $Compet_{(Ukraine \leftrightarrow i)}$ is simply the bilateral real exchange rate between Ukraine and each country (i); (t) is an index for the date; $X_{j,Ukraine \rightarrow country(i)\, t}$ denotes Ukrainian exports of goods belonging to sector (j) to country (i); and $GDP_{i,t}$ is the real GDP index for the country (i) at date (t). For the error terms, u_i are country-specific effects, v_t are time dummies, and μ_{it} is an error term assumed to be uncorrelated through time.

Import volumes

$$\ln(M_{j,Ukraine \leftarrow country(i)\, t}) = \varepsilon_M . \ln(Compet_{(Ukraine \leftrightarrow i,t)}) + \eta_M . \ln(FinalD_{Ukraine,t}) + u_i + v_t + \mu_t \tag{2}$$

where $M_{j,Ukraine \leftarrow country(i)\, t}$ denotes Ukrainian imports of (j)-type goods from country (i). As the variable of final demand $FinalD_{Ukraine,t}$ is independent of the country which exports to

Ukraine, this term disappears when time dummies are added. The structure of the error term is assumed to be similar to that for the export equation.

Data

The empirical work has been undertaken using annual data covering 1996-2005 inclusive. Data on bilateral imports and exports for different sectors are available from COMTRADE. It is important to note that imports declared by Ukrainian trade partners have been used for data on Ukrainian exports, rather than the exports declared by Ukraine. The discrepancies between the two indicators are substantial, for reasons explained in Chapter 1, and the use of the export data from Ukraine does not deliver any significant result. Bilateral exchange rates are calculated using consumer-price indexes. Finally, it is worth noting that the 22 countries used to run the regressions cover approximately two thirds of Ukrainian trade.

Notes

1. If supply-price elasticity is not infinite, which is likely to be the case, specific econometric methods need to be used in order to correct for potential simultaneity bias (see Gianella and Chanteloup, 2006).

2. The following countries were considered: Austria, Bulgaria, the Czech Republic, Finland, France, Germany, Hungary, India, Italy, Japan, Korea, Latvia, the Netherlands, Poland, Romania, the Russian Federation, the Slovak Republic, Spain, Sweden, Turkey, the United Kingdom and the United States. Among the major trade partners, China, Turkmenistan and Belarus are missing, due to the lack of available data.

ANNEX 3.A3

Competition and productivity dynamics at the firm level

This annex presents a brief overview of the methodology used to assess the impact of greater competition on labour productivity at firm level. The theoretical framework underlying this analysis is developed in Aghion *et al.* (2005) and Aghion *et al.* (2004). These studies find, first, that reducing barriers to entry, particular to foreign products, has a positive effect on economic performance and, secondly, that the effect is particularly strong for firms and industries that are initially closer to the technology frontier. In contrast, performance in firms and industries that are initially far from the frontier may actually be damaged by liberalisation and greater competition.

Data

The database has been drawn from the official register of industrial enterprises for 2000-05 and contains 350 000 observations. After elimination of observations with missing data or extreme values – as well as observations which correspond for a given year to a migration of a firm from one sector to another – the dataset contains around 180 000 observations, 155 000 in industry and 25 000 in market services (transport, telecommunications, wholesale and retail trade, hotels and restaurants, business services, real estate and finance). In the absence of reliable measures of the capital stock, the productivity variable used in the regressions is labour productivity and not total factor productivity. The real growth of labour productivity is estimated using sales volumes, total employment and, as a deflator, the producer price index at a two-digit level. The NACE classification code is used as the basis for computing Herfindahl- Hirschmann Indexes (HHIs) at five-digit level. The database was supplemented with data on imports and exports at six-digit level of the HS6 classification, converted into ISIC with standard matrix tables.[1] Export-oriented sectors are defined as those for which the share of exports exceeds 30% of sales. The same threshold is used for import-competing industries (these conditions are not mutually exclusive).

The empirical model

The effect of the degree of concentration and of the technology gap between industrial firms on their efficiency gains is estimated according to the following specification:

$$\Delta RLP_{i,t+1} = \beta_1 HHI_{j,t} + \beta_2 \left(Dist_{i,t}\right) \times HHI_{j,t} + \beta_3 \left(Dist_{i,t}\right) + X_{i,t}\,\gamma + \nu_{t+1} + u_i + \varepsilon_{i,t+1} \tag{1}$$

where ΔRLP_{it} is the real labour productivity growth of firm (i) in sector (j) at date (t); HH_{jt} is the Herfindahl-Hirschman Index of industry j, calculated at the *regional* level at date (t); ($Dist_{it}$) is the firm's distance to the production possibility frontier in sector (j); and X_{it} is

a vector of firms and industry characteristics (essentially the level of employment and the import penetration ratio). Concerning the error components, v_{t+1} are time dummies; u_i are firm-specific effects; and ε_{it+1} is an error term assumed to be uncorrelated through time (typically, "white noise"). Fixed assets, when available, were also included as a control variable to check the robustness of the results: its inclusion did not alter significantly the order of magnitude of the coefficients.[2]

Notes

1. More details on the construction of the data set are available on request.

2. The coefficient for HHI was only slightly lower.

Table of contents

This book has...

StatLinks

A service that delivers Excel® files from the printed page!

Look for the *StatLinks* at the bottom right-hand corner of the tables or graphs in this book.
To download the matching Excel® spreadsheet, just type the link into your Internet browser, starting with the *http://dx.doi.org* prefix.
If you're reading the PDF e-book edition, and your PC is connected to the Internet, simply click on the link. You'll find *StatLinks* appearing in more OECD books.

BASIC STATISTICS OF UKRAINE

(2005, unless otherwise noted)

THE LAND

Area (thousand sq. km)	603.5
Agricultural area (thousand sq. km)	417.2

THE PEOPLE

Population (millions, end-year)	46.9
Inhabitants per sq. km (end-year)	78
Average annual population growth (per cent, 1995-2005)	−0.9
Employment (millions)	20.7
By branch (per cent of total)	
Industry	19.7
Agriculture	19.2
Construction	4.6
Services	56.5
Unemployment rate (ILO, 15-70, 2006)	6.8
Inhabitants in major cities (millions)	
Kyiv	2.7
Kharkiv	1.5
Dnipropetrovsk	1.0
Odesa	1.0
Donetsk	1.0

GOVERNMENT/ADMINISTRATION

Head of state: President, popularly elected for a 5-year term	
Head of government: Prime Minister heads Cabinet accountable to parliament	
Parliament: unicameral Supreme Council (Verhovna Rada)	450 seats

PRODUCTION

GDP (UAH billion, current prices, 2006)	537.7
Gross value added by branch (per cent of total, 2006)	
Industry	28.5
Agriculture	8.4
Construction	4.9
Services	58.1
GDP per capita (USD, market exchange rate, 2006)	2 284

PUBLIC FINANCE

General government revenue (per cent of GDP)	42.2
General government expenditure (per cent of GDP)	43.6
Public sector debt (per cent of GDP, end-year)	15.0

FOREIGN TRADE AND FINANCE

Exports of goods and services (USD billion, 2006)	50.2
Imports of goods and services (USD billion, 2006)	53.3
Central bank gross foreign exchange reserves (USD billion, end-year, 2006)	22.3
Gross external public debt (per cent of GDP, end-year, 2006)	12.1

THE CURRENCY

Monetary unit: Hryvnia	
Currency units per USD (period average):	
Year 2006	5.05