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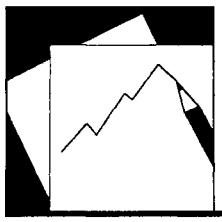

IMF Working Paper

An Interim Assessment of Ukrainian Output Developments, 2000–01

Julian Berengaut, Erik De Vrijer, Katrin Elborgh-Woytek, Mark Lewis, and Bogdan Lissovolik

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An Interim Assessment of Ukrainian Output Developments, 2000–01

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Authorized for distribution by John Odling-Smee

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Abstract

After a long period of steep decline which followed the breakup of the Soviet Union, Ukraine's economy rebounded in 2000, and the recovery accelerated in 2001. The paper examines the timing and the nature of the recovery from a number of different perspectives such as the presence of idle but productive capital, the stance of domestic policies, real wage developments, learning, and foreign factors. The final chapter presents tentative conclusions, which point to an eclectic explanation involving a range of factors rather then any single major cause of the recovery, as well as an agenda for further research.

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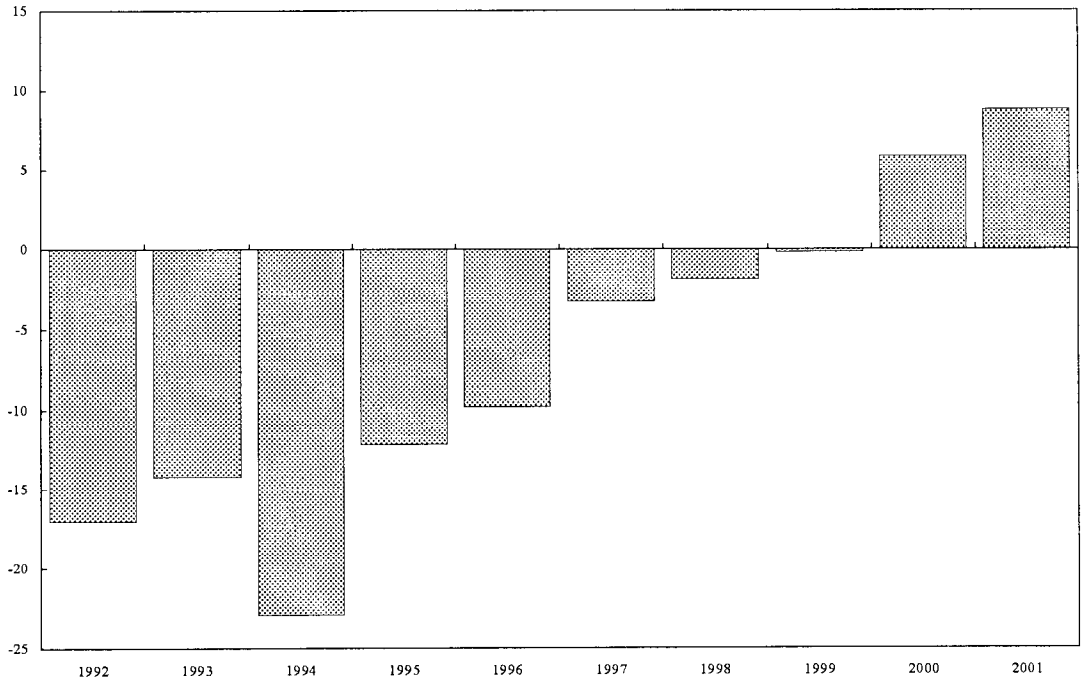
I. INTRODUCTION: PURPOSE AND SCOPE OF PAPER

The year 2000 represented an important watershed in Ukraine's recent economic history. The period of economic decline, which coincided with the transition to a market-based economy from 1992, came to an end in 2000 with real GDP growing by about 6 percent (Figure 1). The rate of growth increased to 9 percent in 2001. The length (eight years) and the magnitude of the contraction in economic activity (about 60 percent) were unprecedented for a country at peace. Thus, the reversal of the decline of the economy starting in 2000 was an event of prime importance.

Figure 1. Ukraine: Growth of Real GDP, 1992–2001
(Percent change over previous year)



Sources: Ukrainian authorities; and IMF staff estimates.

The recovery in Ukraine was fundamentally different from recoveries in market economies. It did not appear to be a result of any growth of production capacity nor was it a business cycle event. More importantly, this recovery appears to be qualitatively different from recoveries in other transition economies such as Poland or the Baltics (Box 1).

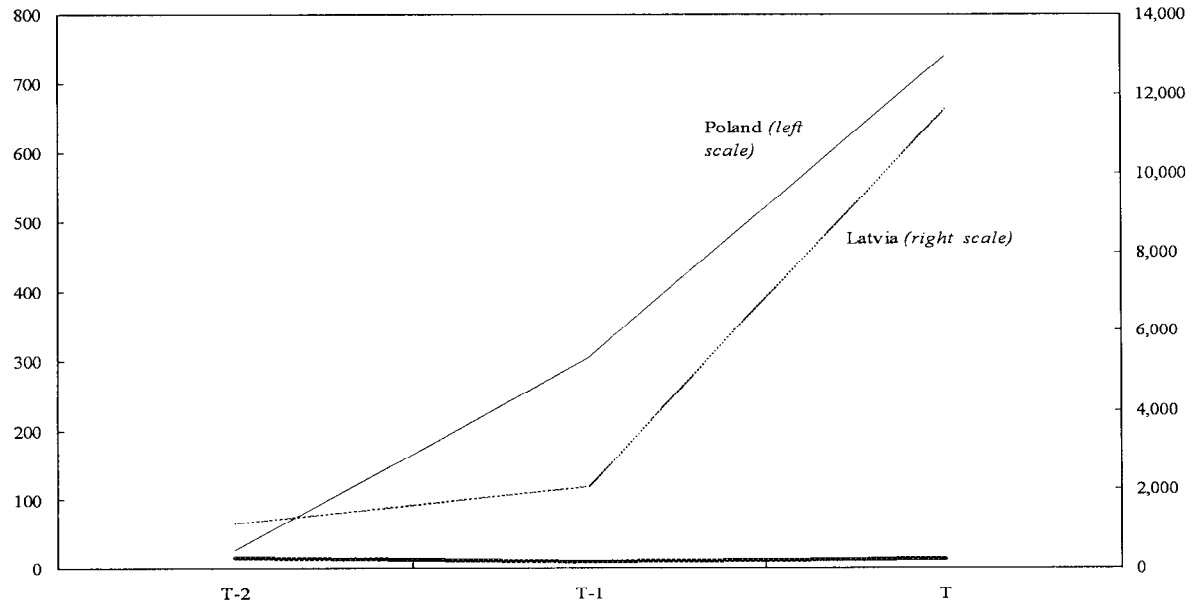
Box 1. Aspects of Three Recoveries

	Ukraine (2000)	Poland (1992)	Latvia (1994)
Selected differences:			
Proceeded by a major policy shift [1/]	No	Yes	Yes
Proceeded by a significant increase in unemployment	No	Yes	Yes
Industrial growth a leading factor	Yes	No	No
Change in structure of output	No	Yes	Yes
Accompanied by a surge in FDI [2/]	No	Yes	Yes
Selected similarities:			
Export growth a leading factor	Yes	Yes	Yes
Change in direction of trade	Yes	Yes	Yes
Preceded by a sharp decline in real wages	Yes	Yes	Yes
Proceeded by a significant real depreciation	Yes	Yes	Yes

[1/] For example, a shift to convertibility, introduction of new currency or elimination of high inflation (within two years preceding the year of recovery).
[2/] See Figure 2.

This paper examines the Ukrainian recovery from a number of different perspectives. The general aim is to try to advance our knowledge about the possible contributory factors, including their timing and relative importance. Given the size and duration of the contraction, the nature and timing of the recovery, as detailed below, raise a number of interesting economic issues. The paper is organized as follows: Section II.A provides background data about the recovery; Section II.B reviews the literature on economic recoveries in transition economies in general, on the recovery in Russia (which preceded Ukraine's recovery by about 12 months), and on the recovery in Ukraine. Section III surveys possible causes of the recovery and its timing. Section III.A examines the issue of how much unutilized, though potentially productive, capacity there was at the onset of the recovery. The extent to which the stance of policies—both macroeconomic and structural—contributed to the recovery is assessed in Section III.B. The role of external factors—foreign demand and international

Figure 2. Foreign Direct Investment Preceeding Economic Growth in Selected Countries
(In U.S. dollars per capita)



Sources: IMF European II Department Centralized Database; and Polish authorities.

competitiveness—is described in Section III.C, while Section III.D presents a model that focuses on real wage adjustment as a key factor in both the decline and the recovery. Section III.E stresses the role of learning in the restructuring at the firm level. Lastly, Section III.F attempts to assess the role of changes in the behavior of business owners (so-called oligarchs' objective function). Section IV draws tentative conclusions while pointing to some directions for further research.

II. Background

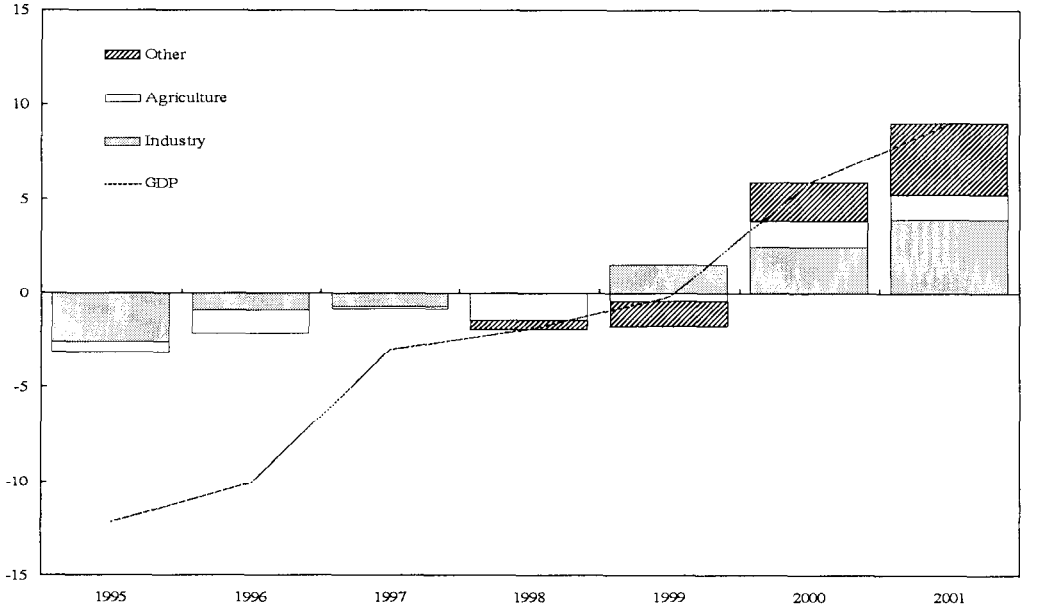
A. Basic Facts About the Recovery

In 2000, the Ukrainian economy rebounded strongly from the continuous decline of the 1990s, with real GDP growing by 6 percent. The extent of the recovery in 2000 significantly exceeded Fund staff projections, which had, as of November 1999, envisaged zero growth for 2000 and were raised to 2.5 percent only by mid-2000.

From the production-side perspective, the recovery was broad-based. Industry's output increased by 9 percent in real terms (Figure 3, Table 1). On the one hand, industrial sectors recording exceptional growth rates included light industry, wood and paper industries, food processing, the production of ferrous and nonferrous metals, and machine building (Table 2). On the other hand, electricity generation declined, partly because of technical difficulties but also owing to stronger enforcement of payments collection and a more aggressive policy of

cut-offs of nonpayers. Output in the fuel industry also declined owing to a sharp contraction in oil processing.

Figure 3. Ukraine: Contributions to Real GDP Growth: Production Side, 1995–2001
(In percent)



Sources: Ukrainian authorities; and IMF staff estimates.

Table 1. Ukraine: Real GDP Growth: Production Side, 1995—2001
(Percentage change from previous year)

	1995	1996	1997	1998	1999	2000	2001 Prel.
Industry	-11.2	-4.0	-3.0	0.0	6.0	9.0	14.2
Construction	-31.9	-34.2	-10.0	-0.4	-6.6	-4.8	7.1
Agriculture	-4.5	-9.8	-1.0	-11.2	-3.9	12.3	10.2
Trade	-18.0	-1.4	0.9	1.7	9.3	10.7	24.0
Transportation	-19.1	-19.3	-7.3	1.1	-7.3	2.8	0.2
Financial services	2.0	3.8	-2.8	-3.3	-4.9	-4.4	-0.8
Other services	-0.1	-5.5	0.7	-1.8	-3.8	-2.0	0.3
Other	3.2	6.1	20.8	-3.4	13.4	3.0	0.2
Net taxes on products and imports	-13.1	-9.7	-6.7	-1.9	0.2	9.6	9.3
GDP	-12.2	-10.0	-3.0	-1.9	-0.2	5.9	9.1

Sources: Ukrainian authorities; and IMF staff estimates.

Table 2. Ukraine: Industrial Growth by Components, 2000—01

(Cumulative growth rate in percent on a monthly basis; gross output)

	2000 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Industry 1/	5.6	10.5	9.8	10.5	10.8	10.9	11.9	12.0	11.6	11.9	12.4	12.9
Fuel	-21.8	-16.2	-14.8	-13.9	-13.4	-12.0	-10.5	-9.6	-8.6	-6.6	-5.6	-4.1
Ferrous metals	9.8	15.7	16.4	17.1	18.1	18.6	19.5	19.7	19.6	19.3	20.2	20.7
Non-ferrous metals	31.6	25.5	23.2	22.3	20.7	20.9	22.1	20.1	18.9	19.2	18.9	18.8
Chemicals	8.8	14.0	8.2	5.6	4.4	4.0	3.8	5.1	5.2	5.5	5.0	5.0
Machine building	4.7	9.0	6.9	9.9	10.2	9.1	10.9	11.7	11.5	13.2	15.3	16.8
Wood and paper industries	26.0	35.3	33.8	35.9	37.3	34.6	35.8	35.9	35.7	38.7	38.8	37.1
Construction materials	0.4	0.7	-0.2	-1.9	-3.3	-4.9	-4.3	-3.4	-3.7	-3.9	-1.9	-0.4
Light industry	26.2	31.3	31.8	30.5	31.4	33.8	38.0	37.2	38.7	39.6	40.0	39.0
Food industry	25.5	32.2	30.8	31.1	31.9	30.6	30.3	30.4	26.8	25.0	26.5	26.1
Electric energy	1.6	4.2	3.2	3.6	3.2	1.7	1.3	0.6	-0.3	-1.4	-2.8	-2.9

	2001 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Industry	19.5	16.7	17.4	18.4	18.8	18.5	17.9	16.9	16.6	16.1	15.4	14.2
Mining industry	8.8	3.7	3.3	4.2	4.9	5.1	4.7	4.3	4.1	4.1	3.8	3.3
Extraction of energy carriers	2.8	0.8	0.7	1.8	3.1	4.1	4.5	4.8	4.8	4.9	4.9	4.8
Extraction of non-energy materials	24.6	10.8	9.3	9.4	8.5	7.2	5.0	2.9	2.4	2.2	1.3	0.2
Manufacturing industry	27.1	23.5	23.8	24.3	24.2	23.3	22.2	20.9	20.4	19.6	18.8	17.2
Production of coke and refined petroleum products	28.2	42.4	50.1	56.5	59.5	54.0	51.3	52.5	55.7	57.1	57.6	54.3
Food and agricultural goods processing	32.3	22.8	22.7	22.9	23.6	22.0	22.2	21.8	21.2	19.8	18.9	18.2
Light industry	40.5	28.8	27.4	25.7	25.4	23.3	20.7	18.9	17.3	15.9	15.1	13.8
Wood production	50.1	33.0	28.2	27.0	27.7	29.1	30.4	31.8	31.1	25.9	27.3	28.0
Pulp and paper industry, publication	43.9	30.0	26.6	26.1	26.7	26.0	24.3	23.1	22.2	20.5	19.5	18.2
Chemicals	14.8	11.3	13.8	15.7	16.0	15.2	14.4	12.4	11.6	11.9	11.7	10.6
Production of non-metal mineral goods (construction materials, etc.)	26.3	19.6	18.4	17.6	18.0	18.7	18.5	17.2	15.9	15.0	13.7	11.4
Metallurgy and processing of metals	27.4	22.7	20.8	18.2	16.3	15.7	14.0	10.8	9.4	8.3	6.7	4.9
Machine building	24.4	24.1	22.6	23.8	24.6	25.4	25.5	24.9	23.0	21.7	20.5	18.8
Production and distribution of electricity, gas and water	-0.2	-0.1	0.1	1.2	2.0	3.5	3.5	2.9	2.8	2.4	2.1	2.6

Sources: Ukrainian State Statistics Committee; and IMF staff estimates.

1/ Aggregate numbers for industry refer to cumulative growth rate in percent on a monthly basis; value added.

Most other sectors of the economy also showed strong positive growth. The increase in trade of 11 percent was partly linked to industrial production. In comparison, growth in transportation remained modest, while services, in particular financial services, and construction showed a decline. Agricultural output increased by 12 percent; within the sector the performance was somewhat uneven: while grain production remained roughly at the 1999 level of 24 million tons, the production of sunflower seeds and horticultural products, now almost entirely in private hands, increased significantly. Livestock production, however, continued to decline.

In 2001, the Ukrainian economy demonstrated further strong growth, essentially unaffected by political instability and the slowdown of growth in the world economy. Real GDP grew by 9 percent, supported by 14 percent growth in industrial production, which accounts for about one third of Ukraine's GDP. The break-down into industrial sub-sectors largely demonstrates a continuation of the trends seen in 2000. Agricultural production increased by 10 percent, reflecting a bumper harvest as a result of ownership reform and favorable weather conditions. While growth in trade and construction accelerated, the recovery of other sectors remained slow.

As regards the demand side, the Ukrainian output recovery in 2000 was primarily export-led (Figure 4, Table 3). In 2000, exports increased by 26 percent in U.S. dollar terms.[2] Exports grew at a significantly higher pace than imports, which increased by 15 percent in U.S. dollar terms, in part because higher energy prices in the winter 1999/2000 were offset by continued arrears for Russian gas. While exports increased overall, Ukraine's export growth is largely explained by a few markets: Russia, the United States, Germany, and Italy, which together accounted for about 70 percent of Ukraine's export growth in 2000. These countries showed significant increases in their import markets in 2000 and, moreover, Ukraine's share in these countries import markets increased (albeit, with the exception of Russia, from very low levels).

The Ukrainian economy remains closely linked to Russia, a country of critical importance to Ukraine's export performance. The share of Russia in Ukraine's total exports increased from 19 percent in 1999 to 23 percent in 2000, accounting for almost 40 percent of the overall increase in Ukraine's exports in 2000.[3] Ukrainian exports benefited from Russia's high real GDP growth rate of 9 percent and the expansion of its import market by 12 percent. Moreover, Ukraine increased its market share in Russia by 2 percentage points to 10 percent of Russia's total imports. Of particular relevance to the Russian market were exports of iron,

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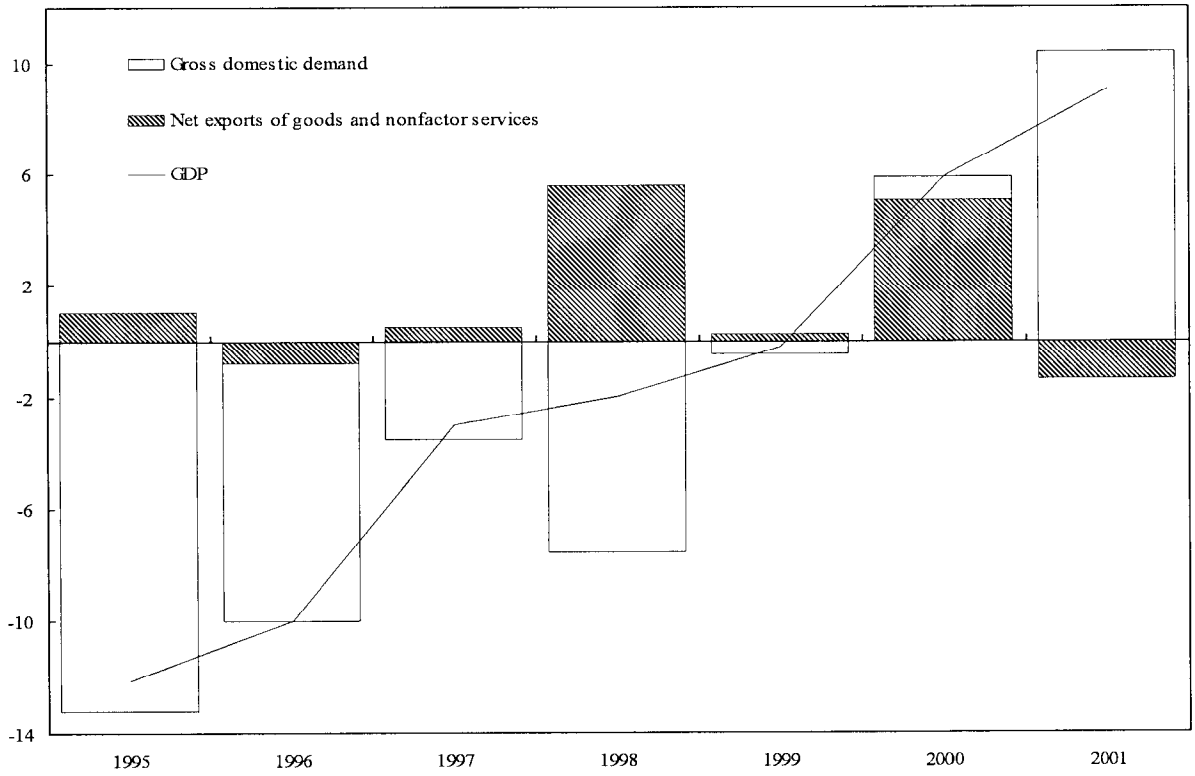
[2] Looking back somewhat further, however, despite the sharp increase in 2000, exports remained 2 percent below the (nominal U.S. dollar) level reached in 1997, following a decline in total Ukrainian exports in dollar terms by 19 percent between 1997 and 1999.

[3] However, between 1997 and 1999, exports to Russia in U.S. dollar terms had declined by 39 percent and even after the impressive recovery in 2000, their level remained 10 percent below that of 1997.

Figure 4. Ukraine: Contributions to Real GDP Growth: Expenditure Side, 1995–2001
(In percent)



Sources: Ukrainian authorities; and IMF staff estimates and projections.

Table 3. Ukraine: Real GDP Growth: Expenditure Side, 1995—2001
(Percentage change from previous year)

	1995	1996	1997	1998	1999	2000	2001 Prel.
Gross domestic demand	-12.3	-8.7	-3.2	-2.0	-0.5	0.8	10.7
Private consumption	-2.7	-3.6	-0.1	2.3	-0.5	-0.3	11.1
Public consumption	-10.7	-15.1	8.6	-5.9	-2.8	-1.1	2.8
Gross investment	-26.5	-16.2	-21.2	-11.0	9.4	5.9	17.0
Changes in inventories	-50.1	110.0	23.3	-30.4	-107.6	-36.6	-30.1
Exports of GNFS	4.8	18.3	-2.7	-1.9	-14.7	24.5	8.0
Imports of GNFS	0.6	16.9	-3.2	-12.6	-14.3	9.8	11.9
GDP	-12.2	-10.0	-3.0	-1.9	-0.2	5.9	9.1

Sources: Ukrainian authorities; and IMF staff estimates.

steel, and rolled metal (partly for re-export), machinery and pipes, aluminum, and food products. Among industrial countries, exports to the United States increased by two-thirds in 2000, accounting for almost 5 percent of total exports. Germany and Turkey were other key export destinations, with about 5 percent each of Ukrainian exports. While exports to other industrialized countries, notably Japan, France, and Belgium, also showed impressive growth rates, the level of Ukraine's exports to these countries remained more modest.

Overall, apart from agricultural products, and fuel and energy, all major categories of exports of goods showed significant growth rates, while exports of services declined by 3 percent. Categories of exports that showed particularly high growth rates were metals and metal products (32 percent in value terms) as Ukraine benefited from the favorable world market for metals and steel in 2000. Exports of food and beverages, light industry products, and wood and paper also increased significantly.

Besides growth in exports as described above, there were strong indications of import substitution. These included significant growth in industrial production for the domestic market in sub-sectors such as the food industry and related industries such as beverages and cigarettes, textiles, wood and pulp production, and light industry. While imports of inputs such as fabrics and textiles increased in 2000, import of finished products such as clothes, shoes, and hats declined.

The pattern of growth in 2001 differed significantly, in terms of the demand side, from that of 2000. Private consumption and gross investment rebounded sharply while net exports were negative. The main factors behind the strong increase in private consumption were, most likely, a recovery in real wages and improvements in payment discipline for wages and pensions. Investment spending responded to the very positive overall output developments while the contribution of net exports fell sharply owing to a recovery of imports from its compressed level of 1998–99.

In 2001, growth of Ukraine's exports slowed to 10 percent in U.S. dollar terms, largely maintaining the pattern seen in 2000 in terms of destinations and composition of major export items. Exports to Russia remained crucial, accounting for a share of 22 percent of Ukraine's total exports. Exports to other European countries also remained strong, with Turkey, Italy, and Germany being the main destinations, while the share of exports to the United States fell to 3 percent. Metals and metal products remained the key category of export products with a share of 41 percent of total exports, despite pending anti-dumping suits and a less favorable world market for steel. Minerals, chemical products, and machinery also remained important with each category accounting for about 10 percent of total exports. Exports of agricultural and food products increased sharply by 36 percent from a very low level, accounting for 11 percent of total exports in 2001.

Foreign direct investment rose from $479 million in 1999 to $748 million in 2001, recovering to the level reached in 1998. While the United States was an important source of FDI to Ukraine, accounting for about one sixth of total FDI in 2001, a significant share of foreign investment likely resulted from the repatriation of Ukrainian flight-capital, as indicated by investment originating from Cyprus, the Virgin Islands, and Switzerland. In the

context of the privatization of large enterprises, Russian investors also played an increasingly important role.

A substantial fall in domestic barter transactions may have contributed somewhat to the officially recorded growth rate.[4] The share of barter in industrial sales declined from about 33 percent in 1999 to about 17 percent in 2000, and further to 8 percent in 2001; exports by barter more than halved to about 1.7 percent of total exports, with an additional sharp decline to 0.34 percent in 2001. At present, the size of the shadow economy is estimated at between 50 and 60 percent of official GDP, with a declining trend.

B. Review of Literature

Economic growth in the countries of the former Soviet Union has been studied from a number of perspectives. First, there is the literature on the drop in output and subsequent economic recovery in transition economies in general, which is comprehensively surveyed in Havrylyshyn (2001). Such analysis has often been based on cross-country and panel regressions that explore the links between economic growth and a number of policy variables.[5] The results suggest that macroeconomic stabilization and structural reforms (proxied by various indices) are essential determinants of output recovery, although it has been difficult to pin down the most significant individual structural reform measures. Countries that embarked at the outset on radical and comprehensive reforms (in Central Europe and the Baltics) saw the beginning of sustained economic growth 2 to 3 years after the start of transition. Conversely, countries where the implementation of economic reforms has been slow and/or inconsistent (CIS and some Central European countries) usually experienced a continual decline of 4 to 7 years before growth resumed,[6] and in a number of cases such growth was not considered sustainable by most authors.

The precarious nature of the initial economic recovery in most CIS countries was brought to the surface by the August 1998 Russian crisis. However, economic activity picked up fairly quickly both in Russia and its neighbors in the aftermath of the crisis, prompting a renewed examination of the reasons for this rebound. Most of these studies focused on the role of the real exchange rate depreciation, which boosted output by contributing both to the surge in exports and increased competitiveness of import-substituting domestic industries (food, textiles, construction materials, etc.). For Russia, such issues have been explored in the IMF's report on Recent Economic Developments (2000), as well as in Breach (1999), Illarionov (2000), and Gavrilenkov (2001). Illarionov even argued that the maintenance of a

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[4] Assuming positive correlation between barter and underreported or unreported activities.

[5] Examples of such studies include Fischer and others (1998), Berg and others (1999), and Havrylyshyn and others (1998).

[6] There have been some exceptions regarding CIS countries whose cumulative output performance was reasonably good despite poor reform record (see, for example, Zettelmeyer (1999) on Uzbekistan).

competitive exchange rate was perhaps Russia's main growth-enhancing policy tool. In addition, Russia's recovery has been attributed to favorable external environment in 1999–2000 (high world energy prices and solid demand for other exports (such as metals)).

There have also been a number of studies on the country-specific circumstances of Ukraine's growth performance. Until recently, the analysis concentrated on the reasons for the protracted output slump in Ukraine, linking it to a combination of unfavorable initial conditions (over-industrialization and energy dependence on Russia) and failure to implement market-oriented reforms quickly and consistently (see Boss (1999) and World Bank (1999)). In particular, a distinct characteristic of Ukraine's performance was its failure to pursue stabilization policies at the very outset, which resulted in very high inflation in the first three years of transition and appeared to have exacerbated the output fall (Lane, and others (1994)). Furthermore, Ukraine's progress in structural reform was, by and large, slower than in the rest of the CIS.

More recently, the focus has shifted toward Ukraine's belated economic recovery since the second half of 1999, although there has been little analytical work to determine the sources of this growth. Generally, this recovery has been linked to a combination of: (i) the lagged effect of hryvnia devaluation (Dabrowski (2001)); (ii) favorable export demand (for metals) (Heyets (2001)); and (iii) the relative improvement in economic policies pursued since the late 1990s, as well as the cumulative effect of market-oriented reforms overall (Åslund (2001) and ICPS (2001)).

III. Recovery in Search of Explanations

A. Was There an Overshooting in Output Collapse, and If So, by How Much?

One of the more robust stylized facts about the transition from centrally-planned to market-based economies is the occurrence of an output collapse in the early stages of the process. Indeed, all 25 countries in Central and Eastern Europe (CEE), the Baltics and the CIS that have gone through the transition process have experienced cumulative output losses ranging roughly, on average, from about 23 percent for the CEE group, to 38 percent for the Baltics group, and to 44 percent for the CIS group.[7]

Evidence clearly suggests that the universality of output losses was rooted in the initial conditions, which were specific to developed command-type economies. Among these conditions, the predominating factor was the presence of a large stock of industrial-based capital riddled with serious inefficiencies. Observers of command-type economies have catalogued the inefficiencies: (i) the capital stock was geared towards producing wrong goods (steel vs. pizzas); (ii) it was also geared towards using inputs inefficiently (e.g., energy

[7] See Table 4, which is an update of Table 1 in Havrylyshyn and Wolf (2001). The decline is measured relative to 1990 for CEE countries and relative to 1991 for Baltic and CIS countries.

and labor); and (iii) it was located in a wrong place (locational decisions abstracted from transport costs).[8] The full extent of these distortions was brought to the surface when the economies were liberalized, and they were exposed to world market prices. This, in turn, rendered a large proportion of the capital stock unprofitable.[9]

If an output decline early in transition was inevitable because of initial conditions, the question of what can be said about its duration and depth remains to be considered. The data presented in Table 4 point to a great heterogeneity in output developments among individual transition countries. In particular, the duration of the output decline ranges from as little as two years for Poland to as much as eight years for Ukraine. The depth of the output decline ranges from 7 percent of the initial output level for Poland to 36 percent for Bulgaria among CEE countries and from 30 percent for Estonia to 65 percent for Georgia among the BRO countries.

Explanations of the differences in output outcomes have focused on differences in the timing and content of policies and on idiosyncratic factors of special relevance to individual countries (political/regional instability or trade disruptions).[10] Generally, there have been few claims that differences in output developments under transition could be traced to differences in the degree to which the initial capital stock was distorted. Thus, implicitly, it has been assumed that the extent of distortions was broadly similar, at least within the two main groups of countries—CEE and BRO. Three arguments might be made in support of this assumption. First, the same types of distortions (e.g., allocative and locational) have been reported in all CEE and BRO economies. Second, the process of decision-making about investment (stressing political rather than economic factors) had been broadly the same in all economies, which makes it somewhat reasonable to expect that the outcomes, including distortions, would be similar. Third, the industrial norms, which determined, for example, how much steel should be used to produce rolling stock or how much cement to produce an apartment building were the same throughout the former Soviet Union.

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[8] For example, see Winiecki (1991).

[9] An alternative interpretation by Åslund (2001) is that, measured correctly, output produced subject to these distortions never actually existed.

[10] Annex II of Havrylyshyn and others (1999).

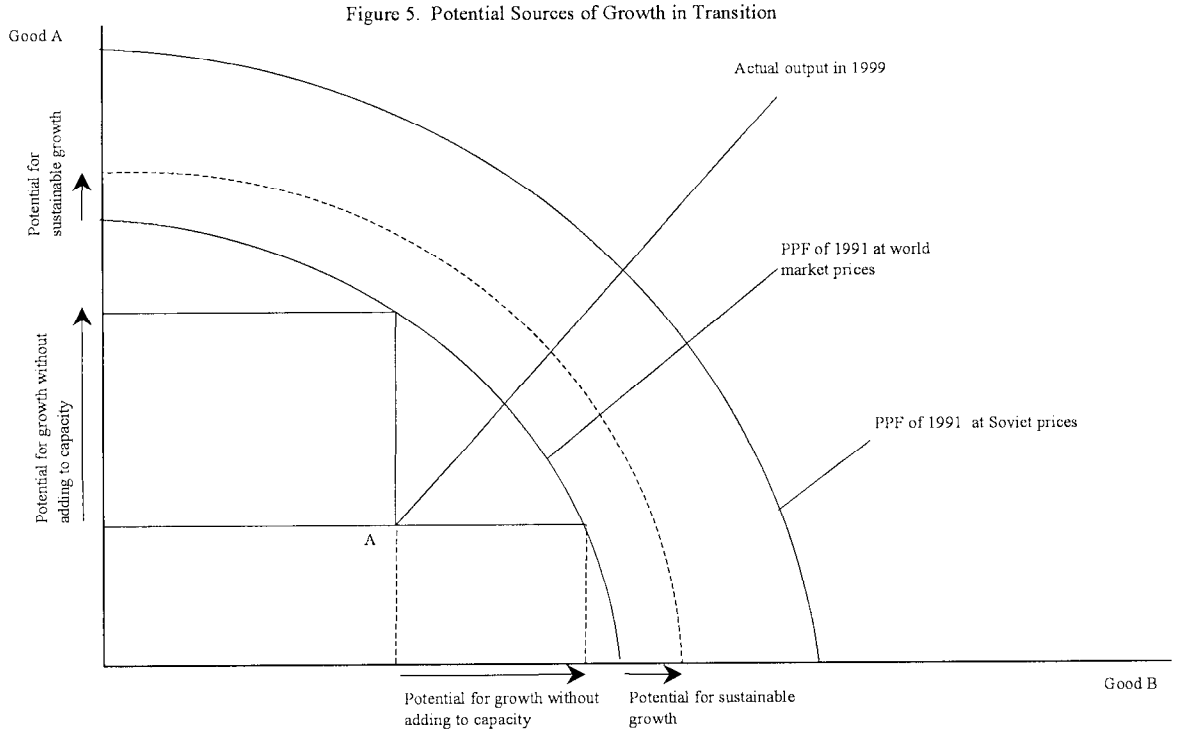
Table 4. Real GDP Growth in Transition Economies, 1991—2001

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
						Index, 1991=100					
Central and Eastern Europe											
Albania	100.0	92.8	101.7	111.3	121.2	132.2	122.9	132.8	142.5	153.6	164.8
Bulgaria	100.0	91.2	80.1	73.9	77.1	68.7	63.9	66.1	67.7	71.6	74.8
Croatia	100.0	88.3	81.2	86.0	91.8	97.3	103.7	106.3	106.0	109.9	114.5
Czech Republic	100.0	99.5	99.5	101.8	107.8	112.4	111.6	110.2	109.8	113.0	116.8
Macedonia	100.0	93.4	86.4	84.8	83.9	84.9	86.1	89.1	92.9	97.2	92.7
Hungary	100.0	96.9	96.4	99.2	100.7	102.0	106.7	111.9	116.9	123.0	127.6
Poland	100.0	102.0	106.4	112.0	119.6	126.7	135.3	141.9	147.7	153.7	156.0
Romania	100.0	91.2	92.6	96.3	103.3	107.4	100.9	95.4	93.3	94.8	99.3
Slovak Republic	100.0	93.3	89.8	94.3	100.6	106.8	113.5	118.1	120.4	123.0	126.8
Slovenia	100.0	94.5	97.2	102.4	106.6	110.3	115.4	119.7	126.0	131.8	135.8
Average	100.0	94.3	93.1	96.2	101.3	104.9	106.0	109.2	112.3	117.2	120.9
Baltics											
Estonia	100.0	78.4	72.0	70.5	73.8	76.7	84.7	89.0	88.4	94.5	99.2
Latvia	100.0	64.8	55.1	55.5	55.1	56.9	61.8	64.2	64.9	69.2	74.0
Lithuania	100.0	78.7	66.0	59.5	61.5	64.4	69.0	72.6	69.7	72.5	75.3
Average	100.0	74.0	64.4	61.9	63.4	66.0	71.9	75.3	74.3	78.7	82.8
CIS											
Armenia	100.0	47.7	40.7	42.9	45.8	48.5	50.1	53.8	55.6	58.9	63.3
Azerbaijan	100.0	81.9	63.0	50.6	44.6	45.2	47.8	52.6	56.5	62.8	68.5
Belarus	100.0	91.2	84.3	74.7	66.9	68.8	76.6	83.1	85.8	90.9	94.6
Georgia	100.0	55.1	39.0	34.9	35.8	39.6	43.8	45.1	46.4	47.3	49.3
Kazakhstan	100.0	94.7	86.0	75.2	69.0	69.3	70.4	69.1	71.0	77.9	88.2
Kyrgyz Republic	100.0	86.1	72.8	58.2	55.0	58.9	64.8	66.1	68.6	72.0	75.6
Moldova	100.0	70.3	69.5	47.9	47.2	44.4	45.1	42.2	40.8	41.6	44.1
Russia	100.0	85.5	78.1	68.1	65.4	63.1	63.7	60.6	63.8	69.1	73.0
Tajikistan	100.0	71.0	63.2	51.3	44.9	42.9	43.6	45.9	47.6	51.6	56.9
Turkmenistan	100.0	94.7	85.2	70.5	65.4	61.0	54.1	56.8	65.9	77.8	93.7
Ukraine	100.0	83.0	71.2	54.9	48.2	43.5	42.0	41.2	41.2	43.6	47.4
Uzbekistan	100.0	89.0	86.9	83.3	82.5	83.8	85.9	89.6	93.4	97.0	101.4
Average	100.0	79.2	70.0	59.4	55.9	55.8	57.3	58.8	61.4	65.9	71.3
						(Percent change over previous year)					
Central and Eastern Europe											
Albania	-28.0	-7.2	9.6	9.4	8.9	9.1	-7.0	8.0	7.3	7.8	7.3
Bulgaria	-10.4	-8.8	-12.1	-7.8	4.3	-10.9	-7.0	3.5	2.4	5.8	4.5
Croatia	-17.0	-11.7	-8.0	5.9	6.8	6.0	6.6	2.5	-0.4	3.7	4.2
Czech Republic	-11.6	-0.5	0.1	2.2	5.9	4.3	-0.8	-1.2	-0.4	2.9	3.3
Hungary	-11.9	-6.6	-7.5	-1.8	-1.1	1.2	1.4	3.4	4.3	4.6	-4.6
Macedonia	-6.2	-3.1	-0.6	2.9	1.5	1.3	4.6	4.9	4.5	5.2	3.7
Poland	-7.0	2.0	4.3	5.2	6.8	6.0	6.8	4.8	4.1	4.1	1.5
Romania	-12.9	-8.8	1.5	3.9	7.3	3.9	-6.1	-5.4	-2.3	1.6	4.8
Slovak Republic	-15.9	-6.7	-3.7	4.9	6.7	6.2	6.2	4.1	1.9	2.2	3.0
Slovenia	-8.9	-5.5	2.8	5.3	4.1	3.5	4.6	3.8	5.2	4.6	3.0
Average	-13.4	-5.7	-1.2	3.3	5.3	3.6	1.1	3.0	2.9	4.3	3.2
Baltics											
Estonia	...	-21.6	-8.2	-2.0	4.6	4.0	10.4	5.0	-0.7	6.9	5.0
Latvia	...	-35.2	-14.9	0.6	-0.8	3.3	8.6	3.9	1.1	6.6	7.0
Lithuania	...	-21.3	-16.2	-9.8	3.3	4.7	7.3	5.1	-3.9	3.9	3.9
Average	...	-26.0	-13.0	-3.9	2.6	4.0	8.9	4.7	-1.2	5.9	5.2
CIS											
Armenia	...	-52.3	-14.8	5.4	6.9	5.9	3.3	7.3	3.3	6.0	7.5
Azerbaijan	...	-18.1	-23.1	-19.7	-11.8	1.3	5.8	10.0	7.4	11.1	9.1
Belarus	...	-8.8	-7.6	-11.4	-10.4	2.8	11.4	8.4	3.4	5.9	4.1
Georgia	...	-44.9	-29.3	-10.4	2.6	10.5	10.7	2.9	2.9	1.9	4.2
Kazakhstan	...	-5.3	-9.2	-12.6	-8.3	0.5	1.6	-1.9	2.7	9.8	13.2
Kyrgyz Republic	...	-13.9	-15.5	-20.1	-5.4	7.1	9.9	2.1	3.7	5.0	5.0
Moldova	...	-29.7	-1.1	-31.1	-1.4	-5.9	1.6	-6.5	-3.4	2.1	6.1
Russia	...	-14.5	-8.7	-12.7	-4.1	-3.4	0.9	-4.9	5.4	8.3	5.5
Tajikistan	...	-29.0	-11.0	-18.9	-12.5	-4.4	1.7	5.3	3.7	8.3	10.3
Turkmenistan	...	-5.3	-10.0	-17.3	-7.2	-6.7	-11.3	5.0	16.0	18.0	20.5
Ukraine	...	-17.0	-14.2	-22.9	-12.2	-9.8	-3.3	-1.9	-0.2	5.9	8.8
Uzbekistan	...	-11.0	-2.3	-4.2	-0.9	1.6	2.5	4.3	4.3	3.8	4.5
Average	...	-20.8	-11.6	-15.2	-5.9	-0.2	2.8	2.6	4.3	7.3	8.3

Sources: IMF/EU2 Centralized Database; and WEO.

If the productive capacity of economies in transition was initially subject to a similar degree of distortion, and if the size of output decline varied mainly on account of the policy framework in place and idiosyncratic factors, then it would follow that, for those countries that have experienced greater-than-average output declines, a type of overshooting, (i.e., the idling of potentially productive capital) had taken place. This is illustrated in Figure 5, which is a simplified version of Figure 1 in Havrylyshyn and Wolf (2001).

Figure 5. Potential Sources of Growth in Transition



The inward movement of the production possibilities frontier (ppf) represents a downward adjustment in the rate of return on the capital stock exposed to world market prices. An actual production point (A), well within the adjusted ppf, reflects the adverse impact of policies and other country-specific factors.

The presence of such idle but potentially profitable capital is one of the factors which could be important in trying to understand output developments. One way to obtain some rough estimates of the extent of such overshooting would be to select a benchmark country and use its output path to gauge the extent of the inward movement of the ppf. The benchmark country would have to meet two criteria: (i) a good overall policy track record; and (ii) not being either especially favored or disfavored by other country-specific factors. If these two criteria are met, then actual output developments in the benchmark country could be interpreted as representing the inward movement of the ppf. On such a basis, an output decline for a given country, which would be steeper than that for the benchmark country,

could be interpreted in terms of a movement inside the ppf, reflecting either worse-than-average policies or adverse idiosyncratic factors.

It should be recognized that a substantial degree of arbitrariness is involved in any choice of the benchmark country. To limit the possibility that errors would be introduced as a result of the arbitrariness, one can create a composite benchmark economy by averaging groups of similar countries (in terms of the above criteria).

Within the group of CIS and Baltic countries, it is proposed that such a composite benchmark could be created by averaging output developments for Latvia, Lithuania, and the Kyrgyz Republic. In terms of the depth of the decline, troughs in output indices for these three countries fall in the interval of between 55 and 60 (1991=100). More specifically, these are: Kyrgyz Republic—55, Latvia—56, and Lithuania—60.

The remaining countries in the Baltic and CIS grouping can be classified into the following four broad categories:

1. Countries with bad policies, national security problems, or both, which have all experienced steeper declines than the benchmark group (with troughs for Armenia of 41, Azerbaijan—44, Georgia—37, Tajikistan—43, Moldova—43, Turkmenistan—43 and Ukraine—41);

2. Slow reformers with smaller output declines (Uzbekistan—83, Belarus—65), which in terms of Figure 5, could be interpreted as not having exposed their capital stock to world market prices and thus not having completed the inward movement of the ppf;

3. Energy producers with smaller output losses (Russia—61, Kazakhstan—69), which could possibly be explained by two factors: (i) energy production was relatively efficient (see a study by McKinsey Global Institute (1999) described below); and (ii) rents generated in the energy sector could be used to support less efficient industrial activity. Moreover, because of its large size, Russia was less affected than other CIS countries by the trade effects of the breakdown of the U.S.S.R.; and

4. Countries with good policies and better then average idiosyncratic conditions with smaller output losses (Estonia—71).

No anomalous cases appear under the above classification. In this context, an anomaly would be a country with full price liberalization and bad policies which, however, performed better in terms of output than the benchmarked ones. The absence of such anomalies provides some support for the choice of the benchmarked countries.

If the benchmark designation is accepted for the three selected countries (Lithuania, Latvia, and the Krygyz Republic) then the extent of overshooting could be estimated for individual countries. Table 5 indicates that there was substantial overshooting in output collapse in Armenia, Azerbaijan, Georgia, Moldova, Tajikistan, and Ukraine.

Table 5. Overshooting in Output Collapse in BRO Countries, 1991—2000

	Trough level of output 1991=100	Extent of overshooting in percent of base-year output relative to benchmark 1/	Extent of overshooting in percent of trough-year output relative to benchmark 1/
Baltics			
Estonia	70.5	-13.4	-18.9
Latvia	55.1	2.1	3.9
Lithuania	61.5	-4.3	-7.0
CIS			
Armenia	40.7	16.5	40.6
Azerbaijan	44.6	12.6	28.2
Belarus	66.9	-9.7	-14.5
Georgia	34.9	22.3	63.8
Kazakhstan	69.0	-11.8	-17.1
Kyrgyz Republic	55.0	2.2	3.9
Moldova	44.4	12.7	28.7
Russia	63.1	-5.9	-9.4
Tajikistan	42.9	14.3	33.3
Turkmenistan	54.1	3.1	5.7
Ukraine	41.2	16.0	38.9
Uzbekistan	82.5	-25.3	-30.7

Source: Table 4.
1/ Benchmark of 57 calculated as average of total decline in Latvia, Lithuania, and Kyrgyz Republic.

The extent of overshooting could also be illustrated by calculating the number of years these countries could grow at a specific rate before hitting capacity constraints, assuming no net investment (Table 6).

It is instructive to compare these rough estimates of output overshooting, which depend directly on the assumptions about the size of the shock which followed the price liberalization, to estimates of the productivity gap derived in specific industries studies. Such studies were undertaken for Russia by McKinsey Global Institute (1999). The key findings as of 1998 included the following:

- Labor productivity for the ten industries, which were examined in detail averaged 19 percent of the U.S. level; it ranged from 38 percent for software to 7 percent for cement;

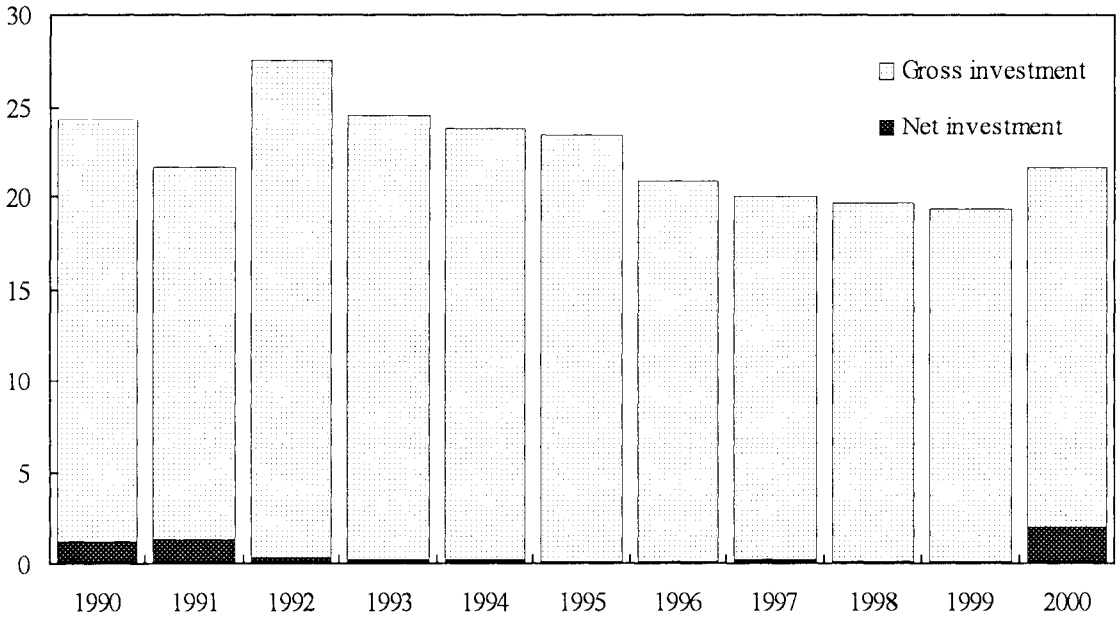
- About 25 percent of Russia's industrial operating capacity was obsolete and should be shut down (e.g., this is equivalent to negative overshooting);

Table 6. Selected CIS Countries: Eliminating Overshooting by Growth
(Number of years of growth before capacity constraints become binding)

Percent of annual growth		3	4	5	6
CIS					
Armenia	1.41	11.5	8.7	7.0	5.9
Azerbaijan	1.28	8.4	6.3	5.1	4.3
Georgia	1.64	16.7	12.6	10.1	8.5
Moldova	1.29	8.5	6.4	5.2	4.3
Tajikistan	1.33	9.7	7.3	5.9	4.9
Turkmenistan	1.06	1.9	1.4	1.1	0.9
Ukraine	1.39	11.1	8.4	6.7	5.6

Source: Table 4.

Figure 6. Ukraine: Gross and Net Investment, 1990–2000
(In percent of GDP)



Sources: Ukrainian State Statistics Committee; and IMF staff estimates.

- On average, 75 percent of Russia's inherited industrial assets would be viable if upgraded and properly managed (these estimates range from 45 percent for the dairy industry to 90 percent for the oil industry);

- With minimal investment, output could expand by 40 percent if these assets were brought into production;

While these conclusions are not directly comparable to the findings in Tables 5 and 6, they paint a broadly similar picture, namely the existence of sizable, potentially viable production capacity.

Additional evidence supporting the hypothesis that output recovery can at least in part be "explained" by earlier overshooting is provided by examining developments at the level of individual Ukrainian industries. Monthly output data were obtained for 74 industries for the period 1995–June 2001 and these were combined with annual data for 1991–95. These data were used to estimate the following model:

$$\Delta^{+}_{yi} = \alpha + \beta \Delta^{-}_{yi} + \in_{i} \qquad (1)$$

Where:

Δ^{+}_{yi} = log (output level in June 2001 –trough)$_i$

Δ^{-}_{yi} = log (average monthly output in 1992 – trough)$_i$

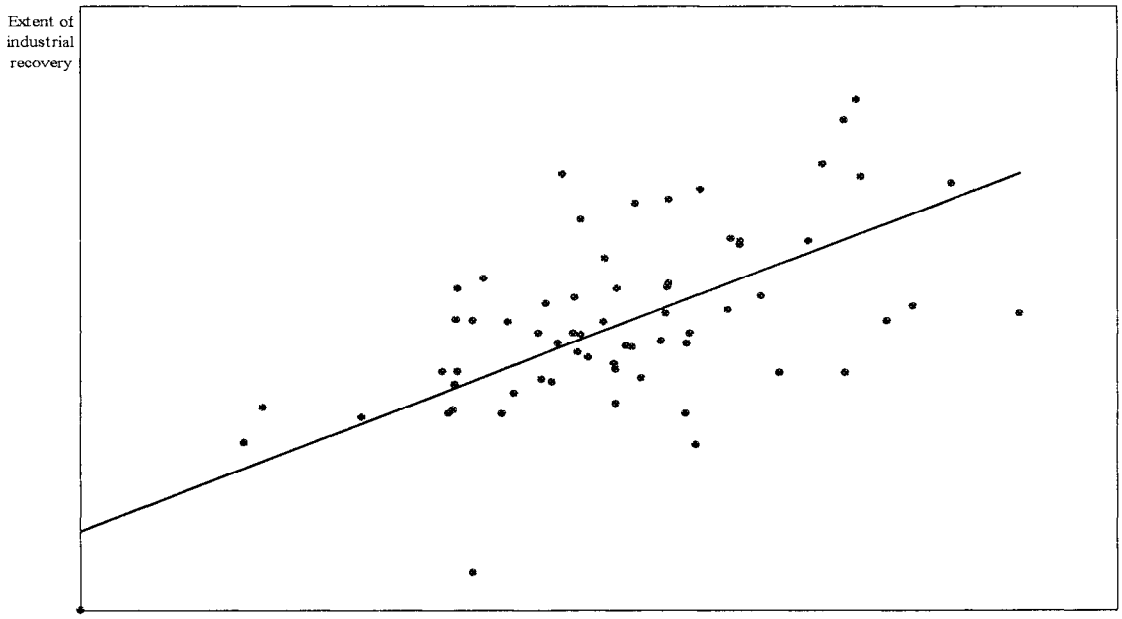
$_i = l,....N$ with N = 64 different industries (10 industries were dropped because of data problems).

The estimated coefficients are as follows:

	Estimated value	t-value
α	1.20	4.86
β	0.41	5.02
Adjusted R^2	0.28	

The results can be summarized by saying that the extent of earlier output collapse is a fairly good predictor for the extent of subsequent recovery (Figure 7).

Figure 7. And the Last Shall Be the First: Industrial Collapse and Recovery in Ukraine 1/



Source: Ukrainian State Statistics Committee.

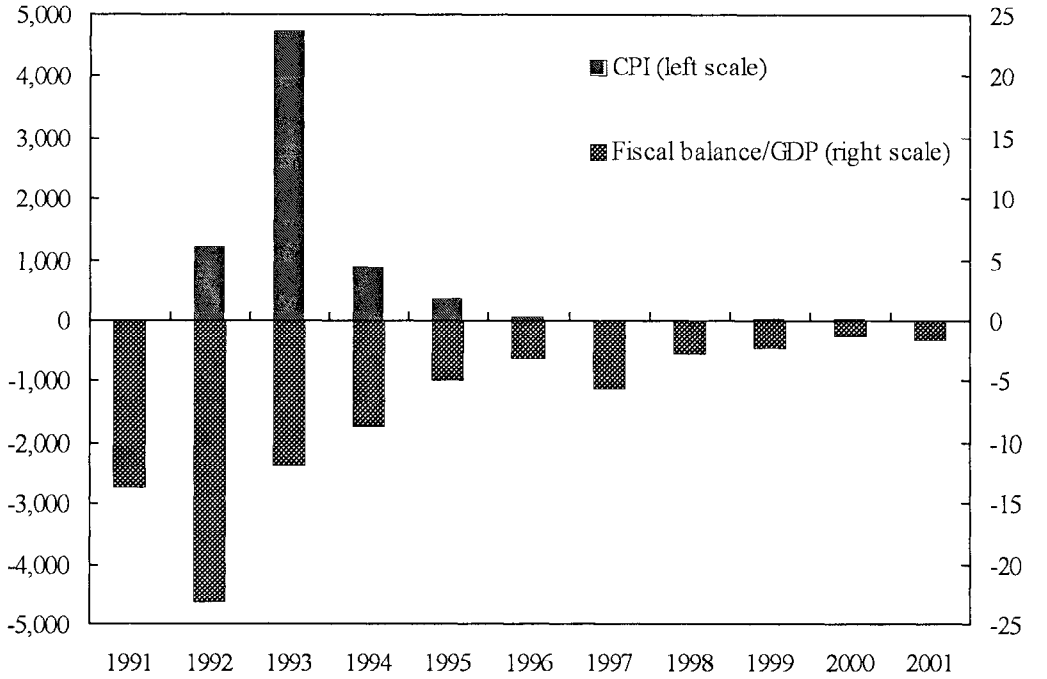
1/ Data are monthly industrial production figures for approximately 70 industries from January 1995–June 2001; monthly data for 1991–94 are calculated from annual data. The X-axis values are the log of the percentage change from 1991 or earliest available data to the trough (the lowest point in output for each industry). The Y-axis values are the log of percentage changes form this trough to the latest available data.

B. Was There a Policy Regime Switch?

The transition process in Ukraine has been marked by slow progress on macroeconomic and structural policy reform. Since 1995, the macroeconomic situation was stabilized, with inflation falling to low double-digits, a reduction in fiscal imbalances, and a continued strengthening of Ukraine's external position (Figure 8). On the structural side, reforms have proceeded incrementally, with gradual liberalization of prices and trade, an expansion of the privatization program, and greater payments discipline (Figure 9). A crucial question explored in this section is the extent to which improvements in the policy environment have accounted for the recent output recovery in Ukraine. A related issue is why the impact of the policy reforms was only seen in 2000.[11] In the same vein, the uneven nature of structural reforms may have affected the profile of the output response, with little impact in areas of the economy where reforms have lagged particularly.

[11] On a quarterly basis, output growth turned positive in the second half of 1999.

Figure 8. Ukraine: Macroeconomic Indicators, 1991–2001



Sources: Ukrainian authorities; and IMF staff estimates.

Macroeconomic policies

Following the hyper-inflationary period of the early 1990s, the Ukrainian authorities made significant progress in lowering inflation, stabilizing the exchange rate, and sharply reducing the budget deficit. Inflation on an end-of-period basis fell from triple-digit levels prior to 1996 to 10 percent in 1997 as the NBU pursued restrained credit policies. On the external side, the current account deficit was reduced to below 3 percent of GDP, and gross reserves stood at more than $2 billion at end-1997, close to six weeks of imports. At the same time, despite earlier progress in stabilizing the fiscal situation, the budget deficit widened in 1997 due to expenditure slippages.

The onset of the Russia crisis in mid-1998 disrupted the favorable external environment that Ukraine had faced. In the context of an initial decision to defend the hryvnia, large capital outflows saw gross reserves fall to only two weeks of imports at end-1998, and the sharp devaluation of the hryvnia during this period led to an upturn in inflation. However, fiscal policies were restrained, and, subsequently, macroeconomic balances were restored. The fiscal deficit dropped to 1.3 percent of GDP in 2000; gross reserves have increased steadily; and, since 1999, the external current account balance has been positive. More recently, the exchange rate has remained broadly stable, and inflation has fallen.

Ukraine's macroeconomic performance since 1996 has been characterized by periods of stability, interspersed with crises, reflecting in part the poor policy environment and in part adverse shocks. Fiscal and monetary policies were inconsistent, and Ukraine's initial defense of its exchange rate in mid-1998 proved counterproductive. The confluence of generally sound macroeconomic policies since 1999 raises the issue of whether such policies have been in part responsible for the turnaround in output growth that started in the latter part of that year. However, Ukraine's earlier episode of stabilization in the mid-1990s did not lead to or coincide with a reversal of the drop in output. In this respect, there were no exceptional changes to macroeconomic policy that would have precipitated the turnaround,[12] nor had a certain length of time passed of stabilization with sustained disinflation that some (e.g., Cottarelli and Doyle (1999)) have argued is a necessary precursor for growth.

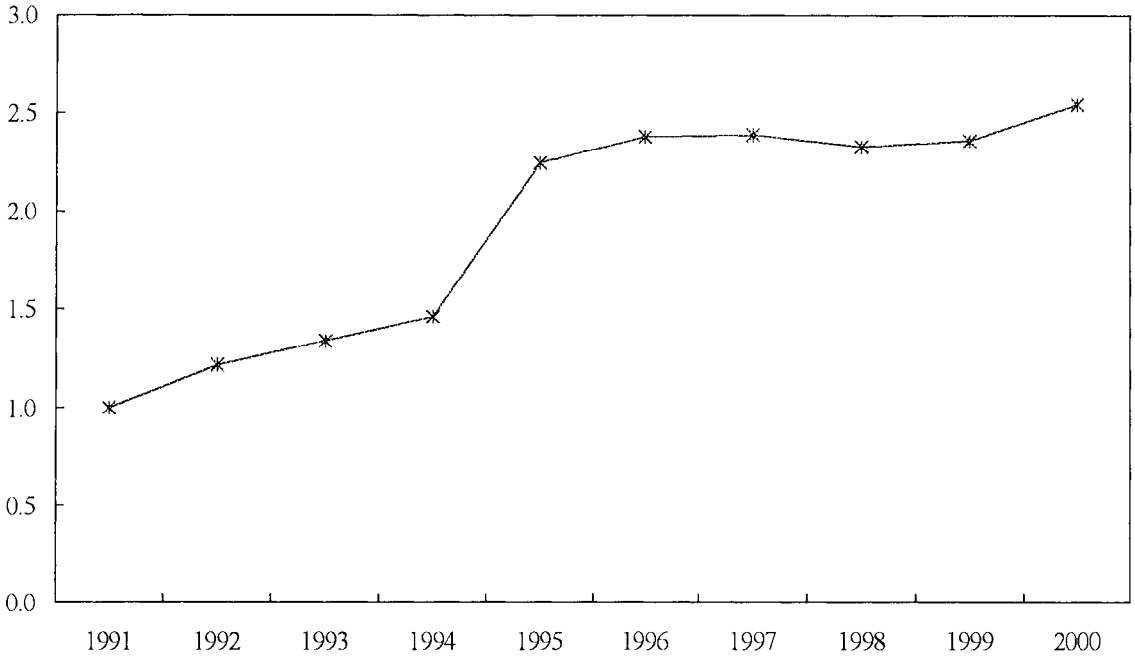
On this basis, the more likely account is that while stabilization is a necessary condition for the recovery of output (Fischer, and others, (1998)), it is not sufficient. More importantly, in the case of Ukraine, the causality may not be unidirectional: the recent stabilization gains—supported in part by appropriate policies of the Ukrainian authorities—were buttressed by the growing economy, thus creating a virtuous cycle. The key channel is through the boost in economic activity and improved financial position of enterprises, which rendered much easier the task of further fiscal consolidation. At the same time, the expansion in exports coupled with an increased demand for hryvnia holdings has led to strong capital inflows, resulting in a sizable accumulation of reserves. In this context, as the demand for hryvnia recovered, sharp increases in monetary aggregates have not been accompanied by inflationary pressures.

Structural policies

Ukraine has progressively introduced a range of structural reforms since the mid-1990s. Although progress has been halting, the policy environment in the structural areas has improved significantly from where it was 5 to 6 years ago. Most prices have been liberalized; significant progress has been made in privatization; improvements have been made to the regulatory and legal environment for enterprises and financial institutions; and perhaps most significantly, payments discipline of the government and in the energy sector has been strengthened substantially.

[12] The impact of the real exchange rate depreciation is discussed in Section II.C.

Figure 9. Ukraine: Average of EBRD Structural Reform Indices, 1991–2000 1/



Source: EBRD Transition Report, 2001.
1/ The index scores progress in transition on a scale from 1 to 4, with 1 meaning no reforms and 4 meaning full transition to a market economy.

A number of steps forward in the structural areas cited above took place in 2000, with particular gains in the area of enhanced payments discipline. In the fiscal area, netting operations were virtually eliminated. In the energy sector, cash collection ratios for electricity increased from about 10 percent in 1999 and early 2000 to about 65 percent by end-2001. For gas, cash collection ratios increased from 15 percent to above 85 percent over the same period.

In addition, 2000 was the first year in which substantial reforms were carried out in the agriculture sector. Property rights were clarified to a greater extent through the distribution of collective farm land, the issuance of land certificates, and the registration of land share leases. However, domestic and external trade in agriculture products is less liberal de facto than de jure due to registration requirements, local government intervention in markets, and occasional confiscation of agricultural produce; the severity of these restrictions has varied inversely with the size of the harvest, which was poor in 2000 and very good in 2001.

Despite the gains in structural reform noted above, Ukraine's scores on the transition indicators remain below the average for transition countries. Further progress is still needed in a number of key areas, perhaps most urgently in trade liberalization which, it is hoped, would happen in the context of accession discussions with the WTO. More broadly, despite the policy reforms and gains on paper, the overall environment for private sector activity—which in other transition countries has been the driving force for the economic turnaround—remains extremely difficult. For example, the Heritage Foundation's Index of Economic Freedom has remained relatively unchanged over the last five years. Similarly,

Ukraine ranks 83 out of 91 countries in Transparency International's 2001 Corruption Perceptions Index, a ranking which has varied very little in recent years.

On this basis, it is difficult to argue that major changes in the structural policy environment in Ukraine precipitated the return of economic growth. Nonetheless, it should be stressed that the incremental progress in structural reforms made over the years contributed to an environment where growth could take place.

The basic argument is that Ukraine could be reaping in 2000–01 the benefits of structural reforms that were implemented in the period 1994–95 (which increased EBRD's scores from between 1 and 1.5 to between 2 and 2.5). The effect of the reforms was delayed since progress was so incremental, but, nevertheless, was felt since the direction of reforms has not been reverted since 1995.

On a related point, evidence from the literature suggests that in light of the complementarity of reforms, no single structural reform is sufficient for promoting growth, but rather that progress in a wide number of areas is important, plus an expectation that reversals are less likely. While this conclusion appears to be borne out by empirical work, the recent experience in Ukraine also suggests that policy reform in a few key areas may have facilitated the output expansion that was already picking up. In particular, the improved payments discipline which started in 2000 supported the growing monetization of the economy, improved transparency in fiscal and quasi-fiscal operations, and likely contributed to a better payments record in the private sector. Similarly, in the context of good weather conditions and a financial sector interested in lending opportunities, the deepening of agriculture reforms in 2000 was followed by a boom in agricultural output.

C. Role of External Factors: Export Performance, Export Market Growth, and Real Exchange Rate

As was noted above in Section II. A, the outstanding characteristic of Ukraine's economic recovery is the strong export performance in 2000. Exports of goods jumped upwards by more than 26 percent, while in volume terms the increase was 21 percent (excluding incidental shipments of airplanes and nuclear fuel). This upsurge followed a cumulative export decline by 24 percent in volume terms during 1997–99. The key factors behind the strong export expansion are the behavior of Ukraine's export markets and changes in Ukraine's competitiveness. Given the lack of quantitative studies on export behavior for Ukraine and, because of data problems in general, the difficulties involved in estimating an export equation, the following discussion takes a more narrow approach based on the examination of selected time series.

Developments in the terms of trade do not appear to have played a major role in the improvement of Ukraine's external current account balance and the growth recovery. Over the 1996–99 period as a whole, the terms of trade are estimated to have changed very little. A deterioration of 11 percent in 1996–97 was reversed by an improvement of 14 percent in 1998–99. In 2000, the terms of trade worsened by more than 8 percent, reflecting higher

energy import prices; in 2001, the terms of trade are estimated to have improved again by some 1½ percent.

In this paper, changes in the size of the total export market are measured as a weighted average of the import volume growth of 11 of Ukraine's main trading partners and the rest of the world (Table 7). The shares of trading partners in the value of Ukraine's exports of the previous year are used as moving weights. In this way, the changing geographical orientation of exports is captured. For example, the share of Russia in Ukrainian exports almost halved, from close to 40 percent in 1994–95 to just below 20 percent in 1999 before rebounding to 23 percent in 2000. On this basis, Ukraine's geographically weighted export market growth averaged just over 9 percent in 1995–97. In 1998–99, the size of Ukraine's export market actually shrunk, before sharply rebounding by 16 percent in 2000. In 2001, export market growth fell back again to about 4 percent.

The literature distinguishes between the external and the internal real exchange rate as measures of a country's competitiveness. The external real exchange rate is defined as the ratio of a weighted average price or cost index in foreign countries to the corresponding index in the home country. The internal real exchange rate is defined as the ratio of the price of tradable goods to the price of nontradable goods in the home country. As a measure of the external real exchange rate, the IMF's Information Notice System (INS) calculates a CPI-based real effective exchange rate (REER) on a monthly basis for Ukraine. A serious shortcoming of the REER as calculated by the INS is that the foreign-country weights used differ starkly from the relevant country shares in Ukraine's exports.

The problem with measuring the internal real exchange rate is that it is difficult to make the concepts of tradable and nontradable goods operational. The measure of the internal real exchange rate we use is the one proposed by Harberger (1989). It is constructed on an annual basis by taking world market producer prices as a measure for the price of tradables and the domestic CPI as a proxy for the price of nontradables (Table 8).[13] The index for the world market price of tradables is calculated as a weighted average of the producer price indices of the five major industrial economies (the United States, Germany, France, the United Kingdom, and Japan), using the weights that were used in the calculation of the SDR during 1996–98.

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[13] The CPI is a weighted average of prices of tradables and nontradables. By making an assumption on the weight of tradables in the CPI basket, the internal real exchange rate can be calculated. However, because the weight of tradables in the CPI basket is not known, this would lead to an arbitrary amplification of the movements in the real exchange rate as calculated by using the CPI as a proxy for the price of nontradables.

Table 7. Ukraine: Directions of Export Trade and Export Market Growth, 1994–2001

	1994	1995	1996	1997	1998	1999	2000	2001
Directions of export trade				(In millions of U.S. dollars)				
FSU TOTAL	6,628	8,103	8,841	6,841	5,273	4,092	5,483	5,748
Russia	4,328	5,698	5,528	3,913	2,906	2,396	3,516	3,680
Belarus	561	546	733	858	548	346	272	244
Moldova	178	152	236	251	180	123	176	274
China	850	755	769	1,115	737	730	629	542
Turkey	283	453	411	668	696	673	869	1,009
Germany	228	339	419	580	639	560	741	711
Italy	256	425	345	419	550	459	639	832
Poland	182	275	363	393	313	301	418	498
Hungary	154	298	374	364	263	278	327	469
Slovakia	139	216	232	282	245	199	231	243
USA	192	273	364	303	502	436	725	569
Rest of the world	4,144	4,814	5,773	6,272	6,120	5,962	6,905	8,020
Other FSU	*1,562*	*1,707*	*2,344*	*1,819*	*1,639*	*1,227*	*1,519*	*1,550*
Other ROW	*2,582*	*3,107*	*3,429*	*4,453*	*4,481*	*4,735*	5,386	6,470
World total	11,494	14,244	15,547	15,418	13,699	12,463	15,448	17,091
Share in total				(In percent)				
Russia	37.7	40.0	35.6	25.4	21.2	19.2	22.8	21.5
Belarus	4.9	3.8	4.7	5.6	4.0	2.8	1.8	1.4
Moldova	1.5	1.1	1.5	1.6	1.3	1.0	1.1	1.6
China	7.4	5.3	4.9	7.2	5.4	5.9	4.1	3.2
Turkey	2.5	3.2	2.6	4.3	5.1	5.4	5.6	5.9
Germany	2.0	2.4	2.7	3.8	4.7	4.5	4.8	4.2
Italy	2.2	3.0	2.2	2.7	4.0	3.7	4.1	4.9
Poland	1.6	1.9	2.3	2.5	2.3	2.4	2.7	2.9
Hungary	1.3	2.1	2.4	2.4	1.9	2.2	2.1	2.7
Slovakia	1.2	1.5	1.5	1.8	1.8	1.6	1.5	1.4
USA	1.7	1.9	2.3	2.0	3.7	3.5	4.7	3.3
Rest of the world	36.1	33.8	37.1	40.7	44.7	47.8	44.7	46.9
World total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Import volume of goods				(Percentage change)				
Russia	9.4	8.1	-2.3	3.1	-17.8	-30.6	19.6	20.6
Belarus	-36.6	39.1	27.9	44.3	-12.7	5.6	26.9	-1.7
Moldova	-31.7	11.5	11.2	1.0	2.6	-2.6	5.9	9.4
China	7.0	4.7	22.2	12.1	5.0	15.9	37.1	13.3
Turkey	-25.3	41.6	20.7	19.7	0.7	-14.3	33.4	-22.9
Germany	8.1	5.6	2.8	8.7	10.3	8.0	10.6	1.9
Italy	12.5	10.3	-1.8	11.4	8.8	7.2	8.7	1.1
Poland	10.4	23.0	32.1	29.0	17.2	-0.6	4.6	4.1
Hungary	-3.1	22.4	4.8	38.0	25.2	14.8	19.5	9.8
Slovakia	-3.4	9.2	14.3	15.9	19.9	-6.1	10.2	10.5
USA	13.3	9.0	9.4	14.2	11.7	12.4	13.5	-2.5
Rest of the world	10.5	12.5	6.2	9.0	2.3	5.5	11.8	-0.4
World total	10.3	11.3	6.6	10.1	4.6	6.4	12.8	-0.1
Geographically-weighted export market growth	...	12.3	5.3	10.3	-1.6	-2.5	16.2	4.3

Sources: 1994-99 export data from *Ukraine: Recent Economic Developments, 2000*; 2000-01 data from International Financial Statistics Database. Import volume of goods data from World Economic Outlook Database.

Table 8. Ukraine: Internal Real Exchange Rates, 1994—2001

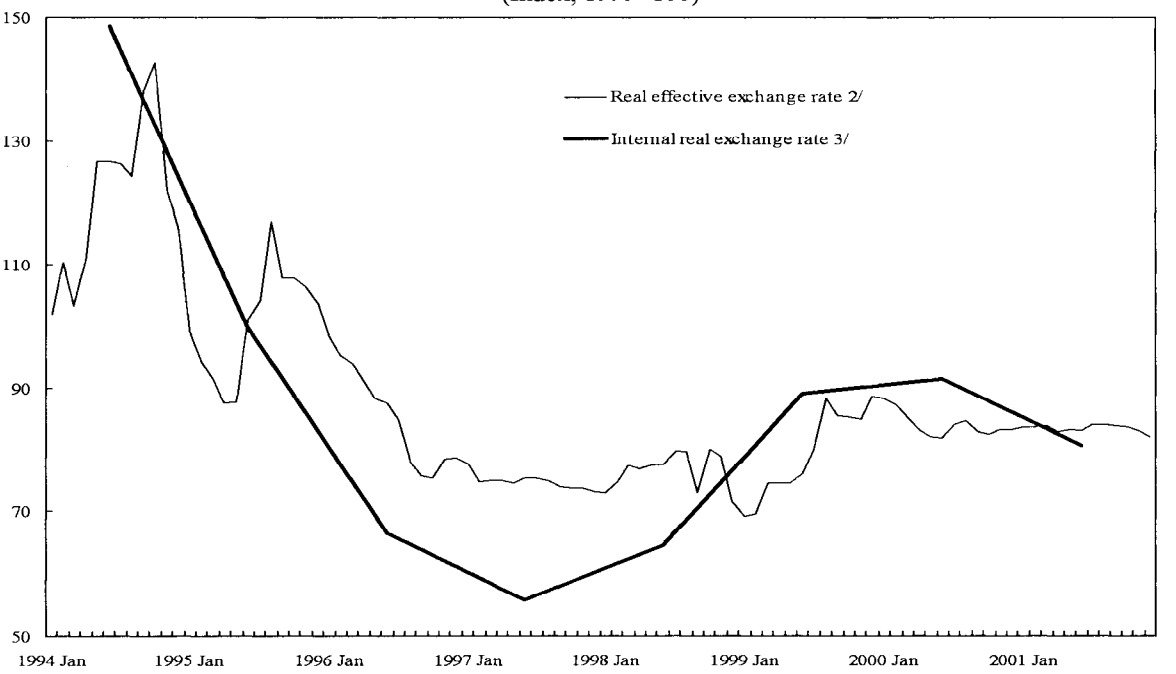
	Producer Prices (Index, 1995=100)					Exchange Rates per U.S. Dollar (Period average)					Exchange Rates per U.S. Dollar (Index, 1995=100)						Dollar Producer Prices (Index, 1995=100)					SDR-weighted	Hryvnia/$ (Index,	UKR CPI	**Internal Real Exchange**
	FRA	GER	JAP	UK	US	FRA	GER	JAP	UK	US	FRA	GER	JAP	UK	US	**UKR**	FRA	GER	JAP	UK	US	avg. 1/	1995=100)	average	**Rate**
1994	94.2	98.3	100.8	96.1	96.5	5.6	1.6	102.2	0.7	1.0	111.2	113.2	108.7	103.1	100.0	33.9	84.7	86.8	92.8	93.2	96.5	92.1	33.9	21.0	**148.6**
1995	100.0	100.0	100.0	100.0	100.0	5.0	1.4	94.1	0.6	1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	**100.0**
1996	97.4	98.8	98.4	102.6	102.3	5.1	1.5	108.8	0.6	1.0	102.5	105.0	115.6	101.2	100.0	124.2	95.0	94.1	85.1	101.4	102.3	96.6	124.2	180.2	**66.6**
1997	96.7	99.9	99.0	103.5	102.3	5.8	1.7	121.0	0.6	1.0	116.9	121.0	128.6	96.4	100.0	126.4	82.7	82.6	77.0	107.4	102.3	92.0	126.4	208.9	**55.7**
1998	95.9	99.5	97.5	104.1	99.7	5.9	1.8	130.9	0.6	1.0	118.2	122.8	139.2	95.3	100.0	166.7	81.2	81.1	70.1	109.3	99.7	89.5	166.7	231.0	**64.6**
1999	94.6	98.5	96.0	105.3	100.6	6.2	1.8	113.9	0.6	1.0	123.3	128.1	121.1	97.5	100.0	281.1	76.7	76.9	79.3	108.0	100.6	90.0	281.1	283.5	**89.2**
2000	98.8	101.8	96.1	108.0	106.4	7.1	2.1	107.8	0.7	1.0	142.6	148.1	114.6	104.3	100.0	369.7	69.3	68.7	83.9	103.5	106.4	90.0	369.7	363.4	**91.6**
2001	100.5	105.1	95.3	108.2	107.6	7.3	2.2	121.5	0.7	1.0	146.9	152.5	129.2	109.6	100.0	373.2	68.4	68.9	73.8	98.7	107.6	88.1	373.2	406.9	**80.8**

Sources: Ukrainian authorities; Fund staff estimates; and International Financial Statistics database.

1/ During the period January 1, 1996 - January 1, 1999, the weights in the SDR basket were: 39 percent for the U.S. dollar, 21 percent for the German mark, 18 percent for the Japanese yen, and 11 percent each for the French franc and the pound sterling.

The evolution of the monthly REER and the annual internal real exchange rate for Ukraine over the period 1994–2001 is shown in Figure 10.[14] Overall, the behavior of both measures of the real exchange rate is broadly similar, with swings in the internal real exchange rate being more pronounced than those of the REER. For 1994–97, both real exchange rates show a substantial appreciation. The REER fell somewhat further during 1998, before depreciating rather sharply (by 23 percent) in the course of 1999. During 2000, the REER decreased again, reflecting relative price effects and partly offsetting the earlier real depreciation.

Figure 10. Ukraine: Real Exchange Rates, 1994–2001 1/
(Index, 1999=100)



Sources: Real effective exchange rate: IMF Information Notice System; Internal real exchange rate: Table 5
1/ A decrease in the real exchange rate indicates a real appreciation and vice-versa.
2/ CPI-based monthly data.
3/ Annual data.

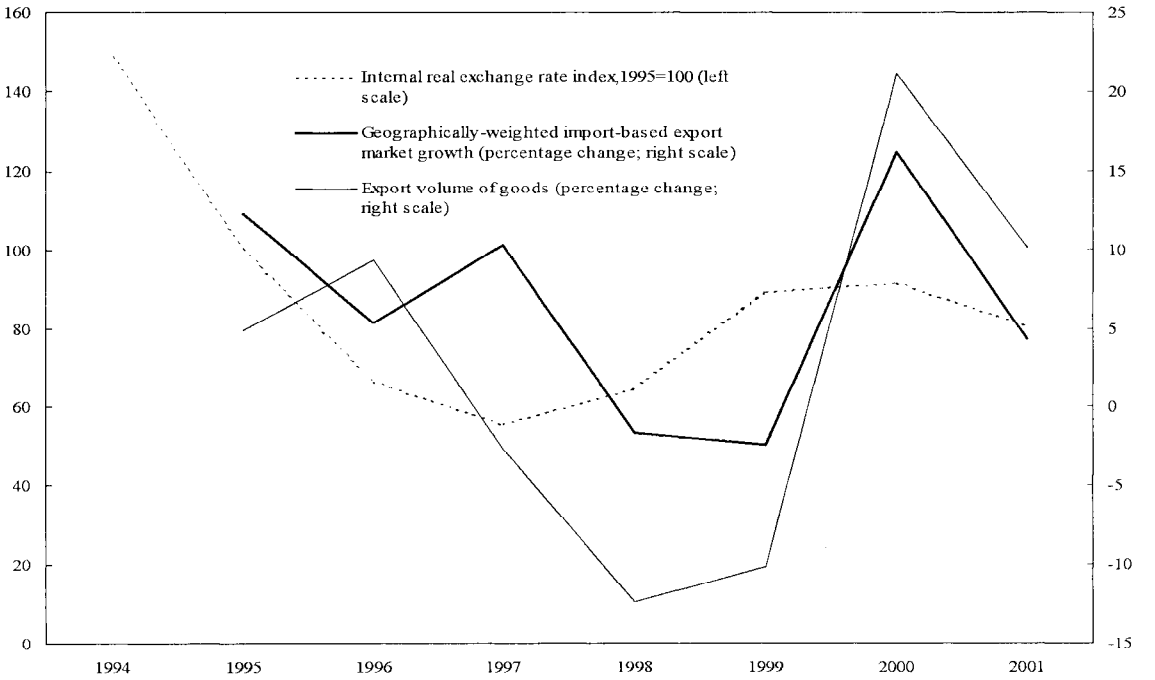
The internal real exchange rate reached its lowest level in 1997. In 1998–99, following the crisis in Russia, the depreciation of the period-average nominal exchange rate of the hryvnia against the U.S. dollar of 122 percent resulted in a cumulative depreciation of the internal real exchange rate of 60 percent. The internal real exchange rate increased somewhat further in 2000, as average CPI-inflation was less than the average nominal depreciation of the hryvnia against the U.S. dollar. The internal real exchange rate decreased again by almost 12 percent in 2001, in view of the stability of the nominal exchange rate of the hryvnia

[14] A decrease of the real exchange rate means a real appreciation, and vice versa.

against the U.S. dollar since April 2000 and average CPI-inflation at a rate of about 12 percent.

Figure 11 shows for the period 1994/95–2001 the volume growth rates of goods exports, together with the constructed measures for Ukraine's export market growth and the internal real exchange rate. Assuming that the annual fluctuations in export market growth impact on export performance in the same year and that changes in competitiveness take some time before they make themselves felt in terms of Ukrainian exporters' share on foreign markets, the following plausible interpretation emerges. Average export volume growth in 1995–96 of some 7 percent was broadly in line with the expansion of Ukraine's export markets, despite the strong cumulative real appreciation of 55 percent in this period. However, by 1997, the sharply deteriorated competitiveness of the economy caused Ukraine to significantly lose foreign market share and export volume fell by almost 3 percent. Moreover, the internal real exchange rate fell a further 16 percent in 1997. In 1998–99, Ukraine's export market suffered a contraction, notably as a result of the crisis in Russia, and export volume dropped by more than 21 percent in total. At the same time, there was a significant real depreciation, bringing the real exchange rate back in the neighborhood of its 1995 level. The improved competitiveness enabled Ukrainian industry in 2000 to take advantage of the strong expansion of its export markets, in particular, Russia. Since export volume growth (excluding incidental exports: 21 percent) exceeded the expansion of Ukraine's export market, it seems likely that Ukraine was also able to recapture some foreign market share in 2000.

Figure 11. Ukraine: Export Market Growth, Internal Real Exchange Rate, and Export Growth, 1994–2001



Sources: Tables 4 and 5.

In 2001, Ukraine's export market grew by 4 percent. As the real appreciation and weakening of Ukraine's competitive position only partially affected export performance in 2001, export volume growth (excluding incidental exports) is estimated at about 10 percent.

D. Adjustment by Reducing Real Wages

From the outset of the transition, it was recognized that the movement to a market-based economy would have to involve a radical restructuring at the level of the firm. This judgment was based on the commonly accepted assessment that enterprises operating in centrally-planned economies were inefficient and that their inefficiencies were related to weak financial constraints, utilizing (and hoarding) excessive amounts of inputs (especially energy), and relying on obsolete technology. Accordingly, the restructuring that was thought to be necessary stressed introducing hard budget constraints, shedding excess labor, reducing energy intensity, and modernizing technology. Thus, the implementation of macroeconomic reforms, which would be supportive of these adjustments at the level of the firm, (e.g., tight monetary and budgetary policies with price and trade liberalization) was thought necessary for ensuring output recovery. Havrylyshyn and Wolf refer to this analysis as the Kornai-Blanchard approach.[15]

Implicit in the Kornai-Blanchard approach was the assumption that restructuring, once successfully completed, would make ex-Soviet firms resemble firms in advanced market economies. These changes would be mirrored at the macro level: the former communist economies would, upon implementing reforms, approach the level of productivity found in the advanced market economies.

However, there are also other ways in which Soviet-type enterprises could adjust to market conditions. One possibility is that, instead of turning themselves into firms similar to those in developed market economies, Soviet-type enterprises, faced with market conditions, could try to mimic the behavior of low-wage, low-productivity Third World firms. More specifically, the adjustment would take the form of reducing real wages to the level at which the inefficiencies stemming from obsolete and labor/energy intensive technology would be offset sufficiently to make production competitive in international markets. The products would be the same as those produced during the Soviet period but with prices low enough to offset their relative obsolescence and lack of quality. In the case of Ukraine, such products could range from steel pipes to rocket engines produced using the technology of the Soviet Union in the 1980s. However, low selling prices would ensure competitiveness, while profitability would be maintained based on low wages.[16]

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[15] Havrylyshyn and Wolf (2001), pp. 86.

[16] This would be true even if we were to use the *lowest* estimate of labor productivity from the McKinsey study (see Section III.A above) of 7 percent of the U.S. level (Russian cement industry), since the current level of industrial wages in Ukraine is probably less than 7 percent of those in the U.S.

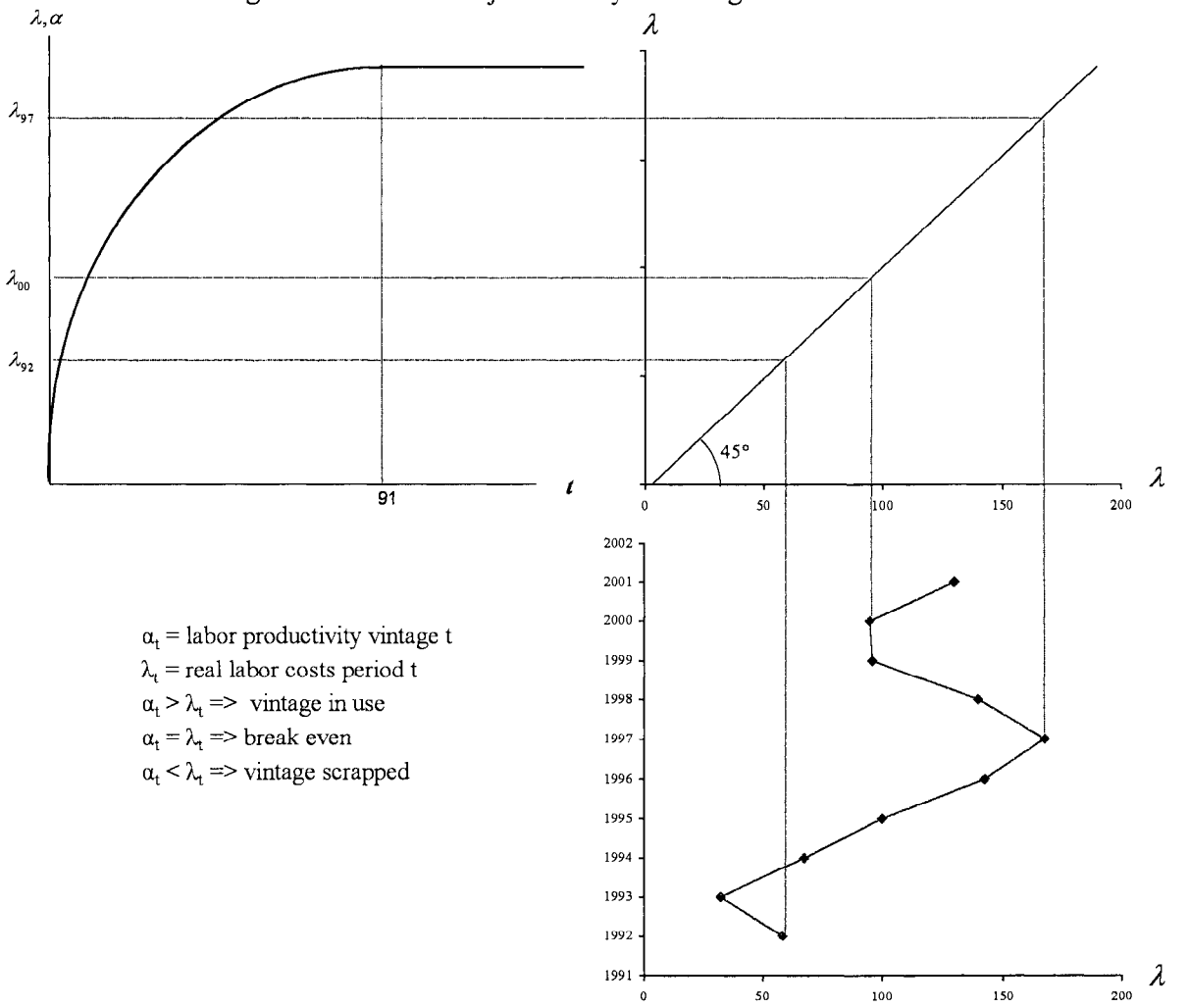
The basic mechanism of adjustment through reducing real wages is shown in Figure 12:

Panel 1 illustrates the process of capital accumulation during the Soviet period. Using a simple vintage model of capital, labor productivity of each year's investment can be indexed by that year's technology, which improves over time. To capture something of late Soviet-era conditions, productivity growth is shown to be declining. In a vintage capital framework, the real cost of labor, defined as the ratio of the nominal wage rate index and the producer price index, is a key variable. The economy-wide prevailing level of real labor costs determines whether or not each vintage is profitable. In case the labor productivity level associated with a particular vintage exceeds the level of real labor costs, the vintage may be profitable. In case of the reverse, the capital goods of the particular vintage will be mothballed or scrapped. Panel 3 shows real labor cost developments in Ukraine derived from Table 9. Following the initial price shock in 1993, the hyperinflation period 1992–97 was characterized by a strong wage-price spiral, leaving real wages relatively stable. During this episode, wage inflation exceeded the nominal depreciation of the national currency vis-à-vis the U.S. dollar, resulting in a sharp increase in the wage rate in U.S. dollar terms. This vicious circle was broken from 1997 when more moderate wage setting also led to some decline of the real wage. The measure for the real cost of labor is calculated by deflating the nominal wage rate index by the hryvnia world market price for tradables. To the extent that the nominal wage rate index is representative for wages in the tradables sector, this measure can be taken as proxy for the real labor cost of producing tradables. As depicted in Table 9 and Figure 12, real labor costs in Ukraine more than trebled between 1992 and 1997, before falling again by 40 percent during 1998–2000. Real wages rebounded in 2001, partly undoing the earlier adjustment.

In terms of the model, the sharp increase in the real cost of labor between 1993 and 1997 rendered a large part of the existing capital stock unprofitable and led it to being mothballed/scrapped, resulting in a large output decline. The subsequent decline in real labor costs between 1997 and 2000 brought part of this mothballed capacity back into production, resulting in a strong increase of industrial output.[17]

[17] The underlying model is similar to the one used by a number of researchers to explain the Great Depression. The main channel for the contraction in output they explored was a real wage disequilibrium, which arose as a result of nominal wage stickiness in the face of a large monetary shock in the initial stages of the Depression. (See Bordo and others (1997)) and the references cited therein). In our model, the real wage disequilibrium is caused by a price shock in 1993.

Figure 12. Ukraine: Adjustment by Reducing Real Labor Costs



This story would also fit with the hypothesis of overshooting in Ukraine's output decline between 1991 and 1998, when the lowest output level was reached. Bad policies in this period, i.e., leading to hyper-inflation and sharply increasing real labor costs, led to a large part of the initial capital stock being taken out of production and a sharp drop in output. After the Russian crisis and with the hryvnia depreciation starting in 1998, these policies were reversed. As a result, the real cost of labor fell and part of the physically still existing Soviet-era capital stock became profitable again, thus allowing output to recover. The increase of the U.S. dollar wage rate and real labor costs during 1994–97 is reflected in the strong real appreciation over the same period. Equally, the real depreciation during 1998–2000 mirrors the decrease in the U.S. dollar wage rate and real labor costs.

Table 9. Ukraine: Real Wages and Real Labor Costs, 1992—2001

	Nominal Wage Index 1995=100	CPI 1995=100	Real Wage Index 1995=100 1/	Real Labor Costs Index 1995=100 2/
1992	0.09	0.04	198.61	58.28
1993	2.10	2.12	99.15	32.40
1994	21.00	20.99	100.03	67.30
1995	100.00	100.00	100.00	100.00
1996	171.50	180.23	95.16	142.33
1997	195.90	208.86	93.79	167.55
1998	209.30	230.97	90.62	139.64
1999	242.90	283.45	85.69	95.80
2000	316.30	363.39	87.04	94.85
2001	426.70	406.85	104.88	129.81

Sources: Ukrainian authorities; and Fund staff estimates.
1/ Nominal wage rate index deflated by the CPI.
2/ Nominal wage rate index deflated by the hryvnia world market price for tradables (Table 8).

One caveat which needs to be emphasized is that this simple model cannot say much about the direction of causality. For instance, it is possible that other factors were responsible for the recovery and it is these other factors which, either directly or indirectly, governed the behavior of real wages. Some possible channels could include the firms' demand for labor (not likely, given stable unemployment) or an improvement in the liquidity position of the industrial sector (more likely, as indicated by the decrease in barter).

E. Restructuring by Learning by Doing

Another way to model the process of adjustment of ex-Soviet firms to operating under market conditions would be to treat this transition as a learning process. Two possible mechanisms are considered below. Under the first mechanism, the process of learning to produce for market is treated as a technological innovation which requires time to spread throughout the economy. Under the second mechanism—the reverse Blanchard effect—firms, having lost the coordination with suppliers and customers inherent under central planning (i.e., the original Blanchard effect), need time to learn how to establish market links.

Production for market as a technological innovation

One very simple way to model the production technology of a Soviet firm would be to specify a production function with three distinct inputs: fixed capital (e.g., an assembly line),

labor which is complementary to fixed capital (e.g. workers operating the assembly line) and another type of labor which is required to obtain scarce inputs (i.e., "fixers).[18]

$$Q = f(K, La, Lf)$$

where K is fixed capital, La is labor complementary to K, and Lf is the other type of labor. Inherent in this analysis is an assumption (quite realistic for Soviet times) that the firm is faced with a shortage for its product and thus can effortlessly (i.e., without any salesmen) sell all its output. Given these conditions, one can ask what the minimum change is (i.e., changes which do not require altering basic production processes) that the firm has to make in order to attempt to be competitive under market conditions. The answer is to hire (or retrain Lf as) salesmen since, once prices are liberalized, shortages of commodities disappear rendering "fixers" redundant but, at the same time, making salesmen necessary. Thus, the transition at the level of the firm requires a shift to a different technology:

$$Q = f(K, La, Ls)$$

where Ls is another type of labor, namely, salesmen. Note that the basic production technology (K and La) remains the same and the only change is the replacement of fixers by salesmen. It is also possible to think of Ls as other "inputs," which are necessary to make Q salable under market conditions. For example, the firm may produce the same product but it now has to package it attractively or advertise it. In such cases, Ls could be thought of as labor engaged in packaging or advertising. Another possibility is a shift from obtaining inputs by barter (with a high probability of theft) to purchasing them with cash (with a lower probability of theft).[19]

In a market economy, firms constantly change their production technology. Typically, an innovation appears on the market and is gradually adopted by firms. This process of technology diffusion has been studied extensively and the relevant literature has been summarized in Mansfield (1968) and Palgrave (1987). Some of the main conclusions from this literature are as follows:

- The rate of innovation varies widely among firms;
- It takes on average about 5 to 10 years for one-half of the major firms in an industry to begin to use an important innovation;

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[18] The Soviet term was *tolkachi* (*pushers*).

[19] See a New York Times report (Tavernise, 2001) on the restructuring of the GAZ plant in Nizhny-Novgorod, which discusses the various kinds of changes being considered to make output profitable without changing what the plant produces. This case is of some interest since the product in case is the Volga (a Soviet product par excellence) and the investor involved is Mr. Deripaska (Siberian Aluminium, Mikolaev, etc).

- The probability that a non-user will use the innovation depends on the proportion of firms already using the innovation (and the profitability of the innovation and the investment required to install it);[20]

- Larger firms tend to introduce innovations before smaller firms;

- Firms with younger and better educated managers tend to adopt innovations at an earlier stage; and

- Firms that lag behind in using an innovation end up substituting it for older techniques more rapidly.

From the above perspective, one could interpret output developments in Ukraine in terms of the length of time period it took firms to turn *Lf* into *Ls*. The time period (5–10 years counting from 1991) was comparable to other examples of technology diffusion. The process could have been shortened had *Ls* been imported (e.g., via FDI as in Poland and the Baltics) rather than being mostly homegrown.

Empirically, however, it is difficult to gauge the importance of this mechanism for Ukraine owing to the lack of data about innovations and type of employment at the level of different industries.

Reverse Blanchard effect

Blanchard and Kremer (1997) have argued that the fall in output during the transition period was related to "disorganization," or breakdown of traditional supply chains. To substantiate this hypothesis, they provided some evidence that the output fall was especially severe in sectors with "complex production processes."

Disorganization may have played some role in Ukraine. Table 10 presents approximate evidence on the depth of the output fall in industry. From the examination of industrial sectors, it can be seen that machine-building (which is the sector with the most elaborate pattern of specialization) had a deeper and more protracted fall than most other, "less complex," sectors.[21] With respect to individual products, the effects of disorganization may have been manifest in the dramatic decline in the production of tractors, automobiles, TV sets, excavators, etc, which was much larger than in other industrial sectors.

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[20] Because of the dependence of the probability of using an innovation on the proportion of firms that are already using it, the process of diffusion of technology is usually modeled by a logistic stochastic process.

[21] While fuels and chemicals sectors also had similar declines, these were more or less direct consequence of the large exogenous shock in energy supply and prices.

Table 10. Ukraine: Evolution of Industrial Output by Sector, 1999—2000
(1990 = 100)

	1999	2000
Total Industrial Output	51	58
Primary sectors		
Electricity	67	65
Fuel	43	41
Semi-processed sectors		
Ferrous metals	49	60
Chemicals and petrochemicals	38	40
Wood-pulp	59	81
Construction materials	23	23
Consumer goods		
Textiles	28	38
Food	41	52
Pharmaceuticals	140	180
Manufacturing		
Machinery	35	41

Source: Ukrainian State Statistics Committee.

However, disorganization may not have been the only factor behind the sharp fall in output in those products, as there was also a precipitous decline in demand given the poor quality and a surge in import competition. In fact, it can be argued that the larger fall in more "complex" products was caused by their relative "shoddiness" at least as much as by disruptions on the supply side.[22]

One way to test for the shoddiness hypothesis would be to look at the evolution of relative prices of complex versus other products. To the extent that the complex sectors experienced a fall in relative prices, it would signal that the decline was also caused by the falling demand. By contrast, "disorganization only" would have led to a rise in the relative prices of complex products. Indeed, there is evidence that prices for machinery products have been lagging behind the general price indices, lending credence to the shoddiness hypothesis, although these indices have to be interpreted with caution due to methodological problems. In addition, the fall in the share of machinery in total industrial output measured in current

[22] This reflects the fact that there are vastly more ways to make a shoddy tractor than a shoddy hammer (an inherent weakness of the Blanchard thesis).

prices was significantly larger than the cumulative real decline in output, which also suggests that relative prices of these manufacturing products have declined.

An interesting question is whether there was a reversal of some of the overshooting caused by the disorganization in Ukraine. If so, industries with complex production processes should have recovered more than others, perhaps as a consequence of learning and institutional development. Indeed, at a sectoral level, it appears that the recovery in machine building has been somewhat more rapid than in industry on average. In 2000, the sector grew by 17 percent in real terms, compared to 12 percent for the industry as a whole. However, machine building did not grow as fast as other key sectors like food processing or metals. Still, it was comparable to growth in most other recovering sectors, while the average growth rate of industrial production was dragged down by flat output in energy-producing sectors. Thus, these facts hardly suggest that machine building grew faster than other key industries and hence the role of the "reverse Blanchard effect" appears insignificant.

The examination of output of individual products also offers an ambiguous picture. While, as can be seen from Table 11, for some "complex" individual products there was a sharp recovery in output in percentage terms in 2000 (automobiles, electric motors), other such products experienced very sharp declines (tractors, excavators). Table 11 crudely groups products into "complex" and "non-complex" ones, and it appears (on the basis of unweighted averages) that during 2000 the latter grew significantly faster than the "complex" activities, thereby arguing against the reverse Blanchard effect. In the first five months of 2001, the situation appeared to change as growth in the sample of "complex" products picked up to an average of 50 percent, higher than in the sample of other industries.

While this is suggestive of the "reverse Blanchard effect," this conclusion may be far-fetched. First, it is difficult to distinguish the factors related to learning/restructuring, and of other (e.g., demand-side) factors. Further, the sharp percentage increases apply to a very small base, making it unlikely that these sectors could be a significant driving force in the general output recovery. Finally, the examination of Table 11 does not provide evidence of across-the-board output increases for complex products. Rather, the 15 percent average was largely influenced by several triple-digit increases for selected products, while in a number of other sectors output continued to decline significantly. By contrast, output increases for "noncomplex" consumer goods in the lower part of the table have been pretty much across-the-board over 2000–01. Based on these considerations, neither the original Blanchard effect nor its reverse appear to have had an important role in explaining Ukrainian output developments.

F. Changes in the Oligarchs' Objective Function

One significant output determinant in transition countries could be related to the trade-off between engaging in productive activity or re-distribution of assets. In particular, at the early stages of transition some of the productive effort may be diverted towards fighting for or securing property rights. Over time, as the market-based rules of the game take hold and property claims are legalized through privatization and/or legitimization of de-facto control,

Table 11. Ukraine: Industrial Output Growth by Subsector, 2000—01
(year-on-year changes in percent)

	2000	2001
Complex production processes.		
Huge electro-machinery (unit)	-1	51.3
Variable-current electric motor (thous. pcs.)	87	12.4
Electric cranes (unit)	-48	37
Excavators (unit)	-33	-22
Cars (thous. pcs.)	58	-11.1
Tractors (thous. pcs.)	-21	-9.7
Sowing tractors (unit)	46	89.8
Cultivator tractors (unit)	-34	19.6
Refrigerators (thous. pcs.)	6	12.8
Residential washing machines (thous. pcs.)	-9	24.3
Electric vacuum cleaners (thous. pcs.)	-4	2.4
Stereos (thous. pcs.)	-52	n.a.
Radios (thous. pcs.)	12	-29.6
Average (unweighted)	**1**	**15**
Other production		
Saw timber (thous. m3)	1	-1.5
Wood planks (thous. std. m3)	20	20.4
Wood planks, hand-cut (thous. std. m3)	13	42.8
Paper (thous. ton)	21	22.8
Cardboard (thous. ton)	31	13.2
Synthetic ammonia (thous. ton)	-5	3.4
Sulphuric acid (thous. ton)	-18	0.3
Calcinated soda (thous. ton)	24	13.2
Caustic soda (thous. ton)	34	-0.1
Mineral fertilizer (thous. ton)	0	-3.3
Pesticides (ton)	-34	165.4
Synthetic tar and plastic pulp (thous. ton)	24	59.2
Chemical fibers and threads (thous. ton)	31	-12.6
Tires (thous. pcs.)	-15	6.3
Cement (thous. ton)	-10	8.9
Building bricks (thous. std. block pcs.)	-16	-0.7
Reinforced concrete (thous. m3)	-19	5
Slate (mill. std. sheets)	1	9.4
Glazed ceramic for inside wall resurfacing (thous. m3)	7	4.7
Building glass (mill. m3)	-6	12
Steel (thous. ton)	14	5.5
Rolled steel (thous. ton)	23	12.4
Steel tubing (thous. ton)	39	-4
Meat (thous. ton) 3/	12	-19.6
Sausage (thous. ton)	27	-0.5
Animal-derived oils (thous. ton)	47	16.3
Milk and dairy products (thous. ton)	16	46.2
Whole cheese (thous. ton) 4/	40	55.4
Vegetable oils (thous. ton)	86	-3.5
Confectionary products (thous. ton)	36	8.4
Jams (mill. std. jars)	16	21.9
Fabric (thous. m3)	24	10.8
Hosiery (thous. pair)	76	-14
Knitted products (thous. pcs.)	104	28
Coats, jackets (thous. pcs.)	23	-4.7
Suits (thous. pcs.)	23	26.8
Jackets (thous. pcs.)	20	19.4
Trousers (thous. pcs.)	60	37
Dresses (thous. pcs.)	43	-28.2
Shirts (thous. pcs.)	12	43.1
Footwear (thous. pair)	37	5.3
Average (unweighted)	**21**	**15**

Source: Ukrainian State Statistics Committee.

this conflict could become less intense. In the theoretical literature, this problem has been studied within the more general context of security of property rights in any economy (Grossman (2001)), as well as with reference to some special cases (developing countries, natural resource wealth) for which the problem of securing property rights is especially controversial (Tornell and Velasco (1992), Dabla-Norris and Freeman (1999)).

A simple theoretical model captures the output implications of this trade-off.[23] Assume that the economy consists of identical economic agents ("enterprises"), which are endowed with labor and capital and have the standard Cobb-Douglas production technology:

$$y_i = k_i^{\alpha} l_i^{1-\alpha} \tag{4}$$

In addition, however, there is a competing claim on the amount of labor devoted to production, as each economic agent would also devote some "effort" to securing property rights to some set of productive assets. Assume that each agent devotes some fraction $\beta \geq 0$ of his time to the fight for property rights, which comes at the expense of his labor input in production. Then equation (4) transforms into:

$$y_i = k_i^{\alpha} (l_i (1 - \beta_i))^{1-\alpha} \tag{5}$$

Equation (4) would thus correspond to the special case of equation (5), with $\beta = 0$, whereby the fight for property rights does not distract agents from their productive activities. In practice, the agents choose this fraction based on their opportunities for deriving utility. For simplicity, assume that they would maximize consumption, given by:

$$c_i = e_i + y_i \tag{6}$$

where e denotes the amount of resources that a given agent can appropriate from a common pool and would abide by:

$$e_i = \frac{\beta_i}{\beta_i + \sum_{j \neq i} \beta_j} E \tag{7}$$

where E is a given amount of wealth-to-be-appropriated in the pool and β is the amount of time and effort devoted by each agent to appropriative competition.

A symmetric equilibrium in this simple model can be derived by substituting (5) and (7) into (6) and maximizing the latter subject to β, assuming that agent i takes other agents' choices as given. It can be shown that, in such equilibrium: (a) the share of resources devoted to

[23] Grossman (2001) pp. 347–52.

expropriation is always positive and would positively depend on the pool of resources E that are subject to appropriative competition; as a corollary, this would mean that, in the aggregate, the level of actual production would always be below potential as long as E is positive; (b) the share of resources devoted to expropriation would depend negatively on the amount and productivity of the capital stock and labor used in production.

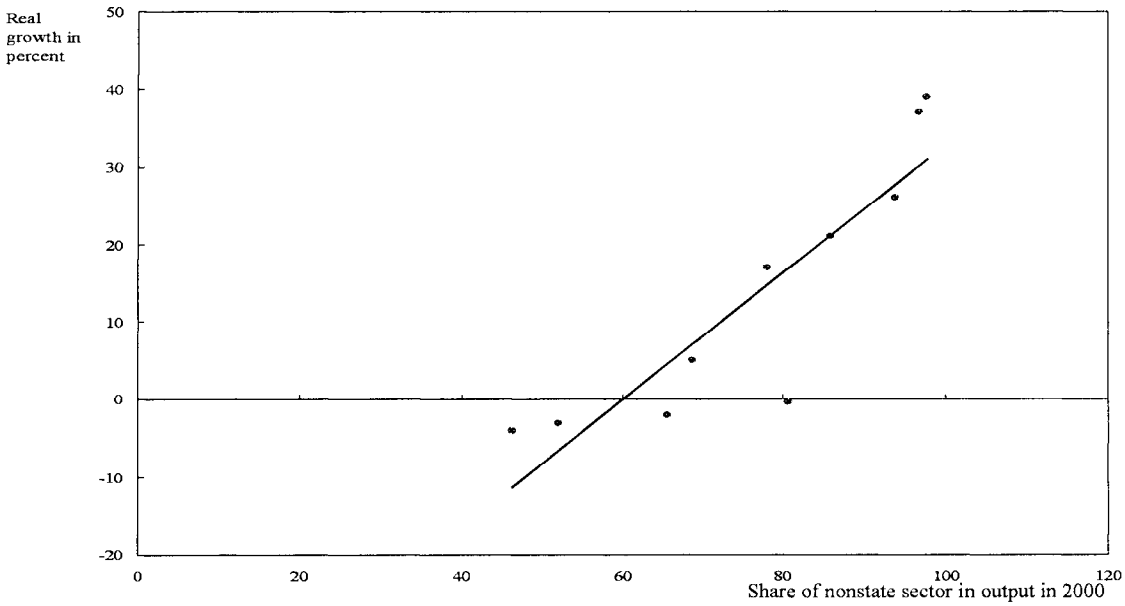
In the context of transition economies, the framework would have to account for a number of real-world complications. First, the quality of the capital stock is widely differentiated among the economic agents, so that for some of the agents it could be virtually useless, and hence these agents would be even more biased toward appropriative competition. This, in turn, would affect the equilibrium outcome. Second, the actual payoffs to "fighting" and producing in equation (3) might depend on each other directly because of the uneven distribution of the capital stock between the economic agents, and there would be no symmetry in appropriative competition (agents who have operational control over certain assets are in a better position to eventually appropriate this capital stock than others). Third, there could be some outside authority that would attempt to enforce certain rules (Dabla-Norris and Freeman (1999)). This authority could be weak or strong, fair or selective. Still, in most circumstances these complications would not eliminate the basic trade-off between production and wealth appropriation. Given that there has been ample evidence of the struggle over control of assets, uncertainty over property rights has sometimes been cited as a prominent explanation for the depth of the output fall and the slowness of the recovery (see Cornia and others (1998)).

While this explanation is plausible, linking changes in property rights to output developments is tricky. On the one hand, it has been virtually impossible to determine "potential output" (i.e., output when all time and effort are devoted to production), given the other reasons for the output fall. On the other hand, it has been extremely difficult to measure to what extent property rights are enforced. One simple proxy for the latter could be the extent of formal privatization, although it could overestimate or underestimate effective property rights.[24] Still, it is reasonable to posit that the degree of formal privatization would, ceteris paribus, be correlated (perhaps with some lag) with effective control over enterprises. Furthermore, it is clear that de-facto privatization has made substantial progress during the transition period.

Figure 13 shows that the sectoral relationship between privatization and real industrial output has been highly positive in 2000. Figure 14 shows that the same relationship holds in 1999–2000 across regions, although the correlation is substantially weaker. Interestingly, the positive relationship appeared to strengthen over time: the contemporaneous correlation coefficient for 1999 was 0.08, and increased to 0.2 in 2000.

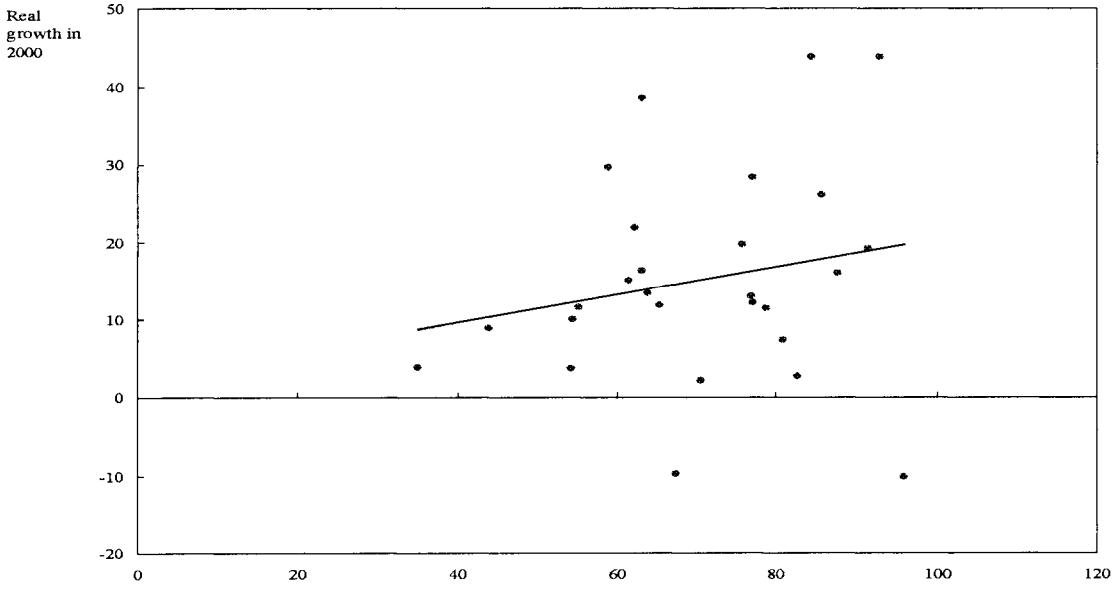
[24] There could still be fierce struggle for control of the privatized enterprises, while non-privatized enterprises could be de-facto controlled by managers or the oligarchs.

Figure 13. Ukraine: Privatization and Growth by Sector, 2000



Sources: Ukrainina State Statistics Committee; Ukrainian State Property Fund; and Fund staff estimates.

Figure 14. Ukraine: Privatization and Growth by Region, 1999–2000



Sources: Ukrainian State Statistics Committee; Ukrainian State Property Fund; and Fund staff estimates

IV. TENTATIVE CONCLUSIONS

Section III presented a range of possible explanations for Ukraine's economic recovery. Notably, while the overall policy environment has gradually improved since the mid-1990s, there was no major advance on either macroeconomic or structural reforms that would have sparked the positive growth response which began in late 1999. Similarly, there is scant evidence that Ukrainian enterprises have undergone the substantive restructuring—especially in terms of new technology—that has characterized successful transitions elsewhere, particularly in Eastern Europe. Flows of foreign direct investment also remained insignificant in Ukraine.

Rather, it appears that a confluence of factors specific to Ukraine created a situation whereby economic activity in a number of sectors finally became profitable. Foreign demand picked up noticeably in 2000, particularly in Russia, which proved a ready market for Ukrainian goods. By this time, Ukraine's real wages had fallen and the exchange rate had depreciated considerably, leading to a significant boost in the competitiveness of Ukrainian firms. These developments coincided with the presence of substantial idle capacity in the industrial sector, which remained from the Soviet period, as a result of the enormous output collapse experienced earlier. When relative prices shifted sufficiently, a range of economic activities was finally profitable without requiring large new investments. At the same time, while there is no sound evidence of restructuring in terms of labor shedding and introducing modern technology, there was undoubtedly a lot of learning going on of how to make traditional industrial products marketable (e.g., marketing, packaging, advertising). These developments rendered output growth possible and produced a surge in exports.

At the same time, on the macroeconomic side, the presence of reasonably prudent fiscal and monetary policies ensured a stable environment that was at least not inimical to output growth. And at the firm level, the improved payments discipline and diminishing recourse to noncash transactions in the economy likely boosted efficiency through the use of better payment methods. Another possible interpretation is that the policy environment had stabilized somewhere around 1995–97 (in the sense of not deteriorating anymore) and, in selected areas, it has improved since then. Thus, it has become a factor to which firms could have adjusted by learning to operate within it. In such a situation, policy improvements, even if not pervasive, could have had significant impact.

A number of questions remain and would warrant further study.

- The surge in exports in 2000 only brought exports back to 1997 levels. The missing factor at that time would appear to be an exchange rate that was overvalued relative to the more recent period, but nonetheless, this anomaly could benefit from closer scrutiny.

- The measure for the terms of trade used in the study is a somewhat crude index and a closer examination of price movements for key products might provide some useful insights.

- Regarding policy developments, the issue of causality should be looked at in greater detail—the recent stabilization gains may in fact have been a result of increased economic activity rather than serving as a contributing factor.

- The issue of distinguishing between the post-Soviet shocks and the policy framework components in the collapse of output becomes more complicated if it is accepted (in line with Section III.D) that cuts of real wages can offset, at least in part, a reduction in the rate of return to capital.

- The relative contributions of the various factors discussed in this paper could be looked at in a more general industry-level model, which would incorporate, as a special case, the simpler models discussed in Section III.A (overshooting) and III.F (property rights).

$$
\begin{aligned}
\Delta_{yi} = \alpha + \beta_1 \quad & (output\ collapse)_i \\
+ \beta_2 \quad & (extent\ of\ privatization)_i \\
+ \beta_3 \quad & (FDI)_i \\
+ \beta_4 \quad & (employment\ decreases)_i \\
+ \beta_5 \quad & (REER)_i \\
+ \beta_6 \quad & (real\ wages)_i \\
+ \beta_7 \quad & (industrial\ complexity)_i \\
+ \beta_8 \quad & (industrial\ property\ structure)_i \\
+ \quad & (other\ factors\ and\ error\ term)_i
\end{aligned}
$$

When β_2, β_3, and β_4 would measure the contribution of restructuring variables (Section III.B), β_5 would measure the effects of the real effective exchange rate for the given industry, (Section III. C), β_6 would measure the effects of real wage, (Section III. D), β_7 would be an indication of the reverse Blanchard effect (Section III. E) and, lastly, β_8 would indicate the role of the industrial property structure (Section III. F.)

There are very serious data problems in trying to estimate such a general model but some effort in this direction would seem to be worthwhile.

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