

IMF Working Paper

© 2000 International Monetary Fund

This is a *Working Paper* and the author(s) would welcome any comments on the present text. Citations should refer to a *Working Paper of the International Monetary Fund*. The views expressed are those of the author(s) and do not necessarily represent those of the Fund.

WP/00/6

INTERNATIONAL MONETARY FUND

Research Department

The “Soaring Eagle”: Anatomy of the Polish Take-Off in the 1990s

Prepared by Mark De Broeck and Vincent Koen¹

Authorized for distribution by Tamim Bayoumi

January 2000

Abstract

Poland stands out among transition economies as having experienced a relatively short and shallow contraction followed by sustained, vigorous growth. This paper examines various aspects of Poland's growth performance from 1992 through 1998 at the macroeconomic level as well as across sectors and regions. It discusses the sources of Poland's growth, showing that early in the decade, improved resource utilization was the paramount determinant, while factor accumulation, supported by rising foreign direct investment inflows, took on increasing importance in the later 1990s.

JEL Classification Numbers: O47, P24

Keywords: Poland, economic growth, transition

Author's E-Mail Address: MDeBroeck@imf.org; Vincent.Koen@oecd.org

¹ Mr. De Broeck is a staff member in the IMF's Research Department, and Mr. Koen was a visiting scholar to the same department from the OECD. The views in this paper are the authors' alone and should not be taken as representative of the IMF or the OECD. The authors are grateful to Witold Orłowski for sharing regional GDP data, and to Marek Belka, Andrew Berg, Witold Orłowski, and Nancy Wagner for useful comments. All interpretations and remaining errors are the authors' own.

Contents	Page
I. Introduction	4
II. Poland's Growth Performance in Perspective.....	4
III. Sectoral and Regional Variations.....	7
IV. Industrial Output.....	9
V. Investment And Productivity	11
VI. Sustainability	14
VII. Main Conclusions	15
Tables:	
1. Growth of Value Added by Sector.....	16
2. Indicators of Private Sector Dynamism.....	17
3. Regional GDPs: Selected Summary Indicators	18
4. Sales Volume in Industry	19
5. Sources of Growth on the Demand Side	20
6. Indicators of Foreign Direct Investment.....	21
7. Productivity Developments in the Visegrad Countries	22
8. Employment.....	23
Figures:	
1. Actual Versus Projected GDP Growth.....	24
2. Real GDP in Poland and Neighboring Countries.....	25
3. Alternative Real GDP Estimates.....	26
4. GDP and GDP Per Capita in Selected Countries.....	27
5. Contribution of Manufacturing to Overall GDP Growth	28
6. Regional Gravity Shifts	29
7. Long-Run Evolution of Gross Industrial Output ¹	30
8. Gross Industrial Output in Selected Countries.....	31
9. Production of Selected Goods.....	32
10. Regional Industrial Fortunes.....	33
11. Productivity.....	34
References	35

I. INTRODUCTION

Poland's growth record through 1998 stands out on two counts. Following a sizable contraction around the turn of the decade, the expansion has been remarkably vigorous and resilient compared with performance during the 1980s, outstripping even the more optimistic forecasts. It has also been far more impressive than what has been observed in other countries in transition, and on average over twice as rapid as in EU countries or as in OECD countries at large. This economic revival has earned Poland some flattering metaphors, in particular those of "East-European Tiger" and "Soaring Eagle".

More precisely, Poland has enjoyed seven years of uninterrupted growth at an annual rate averaging over 5 percent. The trough of the contraction associated with the stabilization and liberalization of the economy initiated in 1989 was reached in 1991 (Balcerowicz, 1995). While the contraction was deeper than any earlier post-World War II recession in Poland, it was shallower and shorter than in most other transition countries. The recovery started around late 1991, with growth gradually spreading from industry to other sectors and remaining at or above 5 percent per annum between 1994 and 1998, while investment boomed.

This paper first puts Poland's overall growth performance in perspective, asking how remarkable it really is. It then turns to the sectoral and regional physiognomy of growth, with a view to discovering how broad-based the expansion has been. Particular attention is devoted to the performance of industry, which accounts for a large chunk of total value-added. The forces underlying the recovery and take-off are then discussed, to determine to what extent they reflected improved resource use versus factor accumulation. The conclusion looks ahead by asking how sustainable the 1992-98 performance is likely to be over the next few years.

II. POLAND'S GROWTH PERFORMANCE IN PERSPECTIVE

Over the seven years following the transitional contraction, real GDP increased at an average rate of 5.2 percent per annum, and over the five years to 1998, the annual growth rate averaged 6.0 percent. In cumulative terms, the Polish economy thus expanded by 42 percent over those seven years (and by over one third over the last five years).² By several measures, this performance is enviably good.

² In 1998, the Central Statistical Office (GUS) started to publish a new GDP series, running from 1995 onwards, but with only minute changes for the real GDP index (GUS, 1998). Therefore, the aforementioned average and cumulative figures hold both for the old and the new series.

Firstly, these outcomes were consistently better than anticipated. At the onset of the transition in 1989, Poland was considered to be in a deep crisis and to be facing more difficult economic challenges than neighboring central and eastern European countries.³ As illustrated in Figure 1, growth systematically and significantly exceeded the official one-year-ahead projections embedded in the budget laws (save in 1998, when it fell short by 0.8 percentage points). Likewise, growth turned out to be stronger than projected in the 1994-97 *Strategy for Poland* medium-term framework of the government, which ex ante was generally considered as rather optimistic. Growth was also distinctly higher than what most observers foresaw: for instance, in what they described as their optimistic long-run scenario, Czyzewski et al. (1994) showed an average annual growth rate of 4.5 percent; subsequent Fund simulations also pointed to a growth potential on the order of 4½ to 5 percent per annum (IMF, 1996).

Secondly, this growth spell contrasts with the lackluster record of the previous fifteen years.⁴ Poland had not witnessed this long and forceful an expansion since the early 1970s. In this context, the historical peak level of measured real GDP of 1989 was already exceeded by 1995 (Figure 2).⁵ In fact, to the extent that even the revised official series may still understate GDP (Figure 3),⁶ and that composition of output improves under market-based rules, the recovery was actually even swifter.

Thirdly, Poland's growth record over the seven years to 1998 compares very favorably with that of its relatively successful neighbors in central and eastern Europe (Figure 2) and the Baltics, and a fortiori with developments in Romania, Bulgaria and in countries of the Commonwealth of Independent States (De Broeck and Koen, 1999). It is also more impressive than in the Baltics and Slovenia.

³ See, for instance, Kołodko (1989) and Sachs (1993).

⁴ No consistent long-run GDP series are available, but indices of sectoral developments, and in particular industrial output (see below), support this claim.

⁵ The series shown in Figure 2 reflects revisions by GUS around the mid-1990s, including an 8 percent (rather than 11.6 percent) real GDP decline in 1990.

⁶ Recently, an alternative series was published showing lower growth in the late 1980s and drops on the order of only 5 to 6 percent both in 1990 and in 1991, implying that GDP may have recovered to its 1989 level already in 1994 (RECESS, 1999). This alternative series vindicates early analyses suggesting that the official data vastly exaggerated the magnitude of the contraction (Berg and Sachs, 1992).

Poland's earlier, more sustained, better balanced and stronger growth resulted from a combination of relatively favorable initial conditions and, on the whole, sound policies. More specifically, the ingredients of the Polish success story are:⁷

- An early political window of opportunity opening in 1989 (the so-called period of "extraordinary politics");
- a sizeable private sector at the start of the transition;
- comprehensive upfront price and trade liberalization;
- early and broad dismantling of obstacles to foreign trade, which prompted a swift reorientation of trade toward the West and put pressure on firms to restructure;
- generous external debt relief, which opened the door to large-scale foreign direct investment inflows;
- low entry barriers for new firms, facilitating a redistribution of labor from State-owned to new enterprises;
- the inheritance of a legal system offering significant scope for contract enforcement;
- the imposition of relatively hard budget constraints on public enterprises;
- entrepreneurial dynamism in the private sector;
- a consistently prudent macroeconomic policy stance, including an exchange rate policy geared to avoid overvaluation;
- a relatively liberal social safety net, easing the social strains associated with restructuring.

While Poland's performance clearly stands out vis-à-vis the contemporaneous experience of other transition countries, it has been surpassed in other regions over the 1992-98 period. Among European countries, Ireland has enjoyed far more rapid growth over this period (averaging 7½ percent per annum). More distant "tigers," particularly in Asia, have recorded even faster growth during those years. In fact, most countries in the world have experienced at least one 7-year expansion at 5 percent per annum or higher since the 1970s, including over half of the current OECD member countries. Admittedly,

⁷ For more detailed analyses, see among others Balcerowicz and Gelb (1994), Balcerowicz (1995), Borensztein and Ostry (1992), Gomulka (1998), Johnson et al. (1999), Lane (1992), OECD (1996), Pinto et al. (1993), and World Bank (1994).

however, few among those countries had to cope with as momentous a structural transformation as the transition countries had in the 1990s. Moreover, most of those episodes of rapid growth had a broad regional basis, while Poland's performance did not.

Poland's relative position in Europe has improved considerably during the 1990s (Figure 4). In terms of absolute size gauged at market exchange rates, Poland caught up with the poorer EU member countries (namely, Greece and Portugal). Poland's economic weight also increased compared with its immediate neighbors: while Poland's GDP was 7 percent larger than the combined GDP of Hungary, the Czech Republic and the Slovak Republic in 1991 (at market exchange rates), it had become 21 percent larger by 1998.⁸ In per capita terms, and at purchasing power parity rates, Poland's relative position improved sharply, in contrast to that of its aforementioned neighbors. Thus, per capita income rose from 46 to 54 percent of the level in Greece.⁹ Notwithstanding the dynamism of the catch-up, however, living standards in Poland remain well below those in Hungary, the Czech Republic and even the Slovak Republic.

III. SECTORAL AND REGIONAL VARIATIONS

Disaggregating value-added by sectors or regions allows us to identify the sources of growth, and to assess to what extent sectors or regions have shared in the overall expansion, bearing in mind that the more diversified the growth base, the less vulnerable growth is to sector or region-specific shocks (although, at the same time, large shifts in the composition of output at finer disaggregation levels can be indicative of restructuring). Despite the relatively poor quality of the available sectoral and regional data, the changes over the period under consideration are large enough to allow some broad indicative conclusions.

Growth has been driven first and foremost by industry, and more specifically by manufacturing (Figure 5 and Table 1). More than 60 percent of the cumulative increase in aggregate value-added between 1991 and 1998 is accounted for by manufacturing. Over that same period, mining and agriculture essentially stagnated, notwithstanding some short-run fluctuations. Construction contributed a bit more than proportionately, largely reflecting strong growth of this sector in 1997-98. Somewhat surprisingly, market services,¹⁰ at least as measured in the national accounts, started to grow later and less vigorously, and in cumulative terms contributed much less than proportionately. At the broadest level of

⁸ Or even 27 percent, based on the revised national accounts series, which lifts the level of nominal GDP by around 6 percent.

⁹ Or even 57 percent, based on the revised national accounts series.

¹⁰ Market services include the trade and repair; hotels and restaurants; transport, storage and communication; financial intermediation; real estate and business activities; and other categories, see Table 1.

aggregation, there has thus been less of a shift from industry to services than might have been expected on the basis of the widespread perception of the former regime as being characterized by overindustrialization. The decline of the relative importance of mining, however, is more in line with what could have been anticipated, as is the diminishing weight of agriculture. Also, the broadly defined services sector comprises both activities that were overweight under central planning, freight and certain government administrative functions, for instance, and activities that were underweight, including trade, hotels and restaurants, and financial intermediation. A strong expansion in the provision of such consumer oriented services since 1992 provided a major impetus to overall growth, as had been expected.

Also consistent with expectations was the rapid and sharp increase in the number of firms, starting from a highly concentrated pattern, in industry in particular. At the end of the 1980s, less than 3 percent of the 4,900 firms in industry accounted for half of industrial output, and large firms also accounted for the bulk of industrial employment (Berg, 1994). Between 1991 and 1998, the number of registered commercial law companies increased more than two and a half times, to 136,500, that of joint ventures rose almost eight-fold to around 37,000, while that of individuals entrepreneurs increased by more than 50 percent, to more than 2 million. The increase in the number of firms and entrepreneurs reflects both a correction to the distorted size distribution of firms in industry and the development of a consumer services oriented small business sector (Table 2).

Another stylized feature of growth in the 1990s is the greater dynamism in the private sector. Between 1991 and 1998, the private sector share in output rose at a faster pace than the share in employment, at both the aggregate and the broad sectoral levels, in industry in particular.¹¹ In 1998, the private sector accounted for around 70 percent of aggregate output and employment. The observation that the private sector outperformed its state sector counterpart holds even taking into account the fact that the official statistics in this area do not identify and even less control for output shifts associated with privatization operations (Kennedy, 1997). Given the scope for a serious selection bias, however, this evidence alone is not sufficient to prove that private ownership per se fosters stronger growth.

Turning to the regional dimension,¹² growth appears not to have been uniform. Homogeneous regional GDP data are not available throughout the period under

¹¹ The state sector continues, however, to account for the bulk of both employment and output in the mining sector.

¹² Unless specified, the term "regions" henceforth denotes the 49 "voivods" under the system prevailing until 1998 (administrative reform in 1998 reduced the number of regions to 16 and created a new layer of counties ("powiats") between regions and municipalities ("gminas").

consideration, and those that exist suffer from a major structural break in 1992.¹³ Notwithstanding those limitations, it can be noted that the recovery has been pulled by the capital (Warsaw) and a small number of other large regions which have also recorded above-average growth. The Warszawskie (Warsaw) region alone accounted for around one fifth of nationwide growth between 1992 and 1996. The two largest regions (i.e., the capital and Katowice) accounted for over a third of aggregate growth. Close to 60 percent of growth was accounted for by only six of the 49 regions, representing no more than 36 percent of nationwide GDP in 1992.

Although regional and sectoral specificities overlap to some extent, regions burdened with stagnating sectors do not appear to be systematically lagging. For example, there is only an extremely weak correlation between the share of agriculture in regional GDP in 1992 and regional GDP growth since, and the main mining region (Katowice) has recorded above-average GDP growth. This suggests that the local drag from struggling sectors has often been compensated by the development of activity in others, which might constitute indirect evidence of restructuring.

Nonetheless, the uneven speed of the recovery across regions begs the question whether in the process regional per capita GDP has tended to become more or less equal. The top panel in Figure 6 shows that not all regions were equally affected during the great contraction of the late 1980s and early 1990s. The capital in particular was relatively spared, even though it too suffered a large decline. The bottom panel illustrates the unevenness of the recovery through 1996.¹⁴ Table 3 displays a set of summary statistics pointing to a significant increase in regional disparities between 1992 and 1996, and also, albeit less unequivocally, between 1986 and 1996.¹⁵ Cross-regional correlations highlight the magnitude of the shifts that took place, with regional rankings changing both during the second half of the 1980s and during the first half of the 1990s.¹⁶

¹³ See RECESS (1994). The 1986, 1990 and 1991 GDP estimates were kindly provided by Dr. Orłowski of RECESS. They are not based on exactly the same methodology as the subsequent ones, which mainly affects the ranking of the Warszawskie region, the capital's weight being higher, all else equal, under the former than under the new methodology. Moreover, in the absence of regional GDP deflators, inferences about regional developments are drawn on the admittedly problematic assumption that over the pluri-annual spells considered inflation has been relatively uniform across areas.

¹⁴ In order to ensure data comparability, the base is 1992 rather than the 1991 national trough.

¹⁵ Since the capital is most affected by the change in methodology between 1991 and 1992, Table 2 shows results including and excluding it from the sample.

¹⁶ The report of the Task Force for Regional Development in Poland (1996) discusses which regions gained and which ones lost most through 1994.

One could further wonder whether divergent growth performance and prospects have prompted regional migration flows. No such effects could be identified in the demographic data. However, in a context of enduring housing shortages, geographical labor mobility may in some cases involve commuting rather than migrating, at least in the shorter run.

IV. INDUSTRIAL OUTPUT

Given the contribution of industry to overall growth, and the existence of comparatively better data than for the service sector, further disaggregation within industry can provide some relevant insights on the growth process.

Unlike for GDP as a whole, long-run historical series are available for industry, allowing us to put recent developments in a deeper historical perspective. The contraction associated with transition far exceeded any earlier decline, including the large depression of the early 1980s,¹⁷ to the point that the volume of gross industrial output had reverted in 1991 to its level of the mid-1970s (Figure 7). Growth in 1992-98 was about as vigorous as in the 1960s and the first half of the 1970s, and by 1996, output exceeded its historical 1988 peak. Like for GDP as a whole, growth was distinctly stronger in Poland than in neighboring countries following the transitional collapse (Figure 8).

The composition of industrial output shifted considerably over time. At the broadest level, and at constant 1991 prices, the share of mining halved between 1991 and 1998, to 5 percent, whereas that of manufacturing increased by close to 12 percentage points, to some 90 percent. At the same time, the share of the electricity, gas and water supply sector dropped almost as sharply as that of mining. In the case of mining, the drop reflected the fact that the contraction lasted through 1993 and that output fell precipitously in 1998, in a context of weakening coal prices, downscaling of production facilities and rising imports (Table 4). In stark contrast, manufacturing output almost doubled between 1991 and 1998.

At a more disaggregated level as well, important shifts were recorded. Looking at the main 23 manufacturing sectors, output grew by at least 5 percent per annum on average in all but three sectors while it boomed in 11 sectors, where annual growth exceeded 10 percent on average (Table 4). While production increased in all 23 manufacturing sectors, it declined or even collapsed for a number of products (Figure 9).¹⁸ The most spectacular declines were recorded for some categories of electronic consumer goods and heavy

¹⁷ On that episode, see for instance Hanson (1982).

¹⁸ The products shown in Figure 9 are the main items for which GUS monitors output and for which information is available over a long time span. In that sense, they constitute a representative set.

machinery (radios, metal cutting machines), but strikingly other types of electronics consumer goods and heavy machinery recorded among the most impressive surges (color TVs, heavy vehicles). At the level of individual products, the output mix therefore changed considerably. However, and although some heavy industry items registered declines or very limited growth, the share of heavy industry may not have declined significantly.¹⁹

Looking at the behavior over time of the output series for individual products (not shown), it appears that during the period 1992 to 1998 on the whole their degree of synchronization increases with average overall growth, i.e. the dispersion of their growth rates tended to be lower the faster GDP expanded.²⁰ However, the coefficient of variation of the growth rates of individual items was several times lower prior to 1990, consistent with the idea that transition involves significant modifications of the structure of supply (and demand).²¹

The evolution of output has also varied considerably across regions. Between 1991 and 1998, the volume of industrial output had increased everywhere, more than doubling in 19 of the 49 regions (Figure 10). Growth ranged from 9 to 340 percent, with the five most dynamic regions recording an expansion over 8 times as rapid as the bottom five.

V. INVESTMENT AND PRODUCTIVITY

Reverting to a more macroeconomic level of analysis, the question arises of the forces underlying the expansion on the supply side. This section documents the shift, over the 1992-98 period, from an "intensive" to a more "extensive" growth pattern.

Labor was hoarded on a large scale in Poland in the 1980s. Gora and Rutkowski (1990) for example estimate that labor hoarding amounted to around one fourth of total employment at the time (hoarding being defined as labor that would not have been employed had the economy functioned as a market one with the same level of output). Labor hoarding increased during the 1990-91 contraction, as separations were limited by political and social considerations, so that employment declined less than output. Hence, by the time output started to recover, there was a labor "overhang" on the order of 30 percent.

¹⁹ A more precise statement would require us to classify the 23 sectors in two groups, which does not seem appropriate at such a broad level of aggregation, or to gather data on a much larger set of products splitting the latter in two groups. It could be noted, however, that many heavy industry items recorded significant declines in 1998.

²⁰ This is a striking empirical regularity save for 1995.

²¹ In this computation, growth rates are expressed as indices with the previous year set equal to 100, in order to preserve the relevance of the coefficient of variation as a measure of dispersion when the mean approaches zero.

This helps explain why employment continued to decline for another two years, and why it expanded so little from 1994 onwards. In fact, by 1998, real GDP had increased by 42 percent compared with its 1991 trough even as employment was no larger than in 1991.

This would be consistent with full dishoarding by 1998 if the ratio of productively employed labor to GDP was to be the same in 1998 as in 1991. However, there is no compelling reason to believe that this should be the case. Investment boomed between 1994 and 1998, rising on average by 16 percent per annum, with a strong foreign contribution (Tables 5 and 6).²² The investment surge contributed to quantitatively but also qualitatively rebuild a rather worn out and largely obsolete capital stock, thus boosting labor productivity, in those manufacturing sectors that received large foreign direct investment inflows in particular.²³ On those grounds, and also given anecdotal evidence of continued overstaffing in some heavy industries, it would seem incorrect to conclude that production factors were fully used by 1998.

Thus, input and output behavior allow us to distinguish two phases in the seven-year expansion. The initial recovery in 1992-93 involved an increase in capacity utilization rates broadly defined, or in other words a move towards the production possibility frontier. Growth took on a more extensive character from around 1994, when factor accumulation picked up, especially as regards capital. Measuring productivity developments in terms of productivity of labor only, at the most aggregate level, labor productivity rose at an annual rate of around 6 percent during the initial recovery, as against 4 percent rate in subsequent years (Table 7).²⁴ In manufacturing as well, labor productivity gains have tended to decline somewhat over time, from over 15 percent per year in 1992-93 to a bit less than 10 percent on average in subsequent years. Those are far more rapid increases than during earlier decades, which in industry averaged 8 percent in the 1950s, 5 percent in the 1960s, 6

²² For a detailed analysis of foreign direct investment flows, see FTRI (1998). In 1995-98, foreign direct investment measured on an accruals basis accounted for about 15 percent of gross fixed capital formation.

²³ Data on cumulative foreign direct investment flows through 1998, as published by the Polish Foreign Investment Agency (PAIZ), show an uneven distribution across the 10 manufacturing sectors for which information is available. Labor productivity gains have been particularly strong in manufacturing sectors with a high contribution of foreign direct investment to overall capital formation, as reflected in a correlation coefficient of 0.71 for the period 1992 through 1998.

²⁴ As illustrated in Figure 11, a similar pattern was recorded in Hungary (where the contribution of foreign direct investment was even more important), whereas productivity improved much less in the Czech Republic and the Slovak Republic.

percent in the 1970s and 4 percent in the 1980s (excluding 1980-81).²⁵ In cumulative terms, manufacturing output per unit of labor more than doubled between 1991 and 1998.²⁶

Similar insights emerge from an analysis that explicitly takes into account the contribution of capital accumulation and computes the rate of growth of total factor productivity (TFP), the component of the rate of output growth that cannot be attributed to increased input of labor or capital accumulation.²⁷ Aggregate TFP growth turned positive again in 1992, in tandem with the return to growth of the overall economy, and averaged somewhat less than 4 percent on an annual basis between 1992-1998. During the initial recovery 1992-93, the combined contribution of changes in capital and labor remained negative,²⁸ and positive TFP growth in excess of overall growth mainly reflected an increase in capacity utilization rates. In the following years, as renewed growth in input of factors, in particular capital, was recorded, the contribution of TFP growth to overall growth fell back to somewhat less than two-thirds.

The productivity gains during the 1992-98 period of renewed growth reflect the response to the increasingly competitive environment faced by Polish industry in the 1990s, as trade expanded rapidly in the wake of the 1990 liberalization. From 1989 to 1998, Polish exports measured in constant prices more than doubled, while imports in constant prices nearly quadrupled. This surge in trade was mainly driven by a rapid expansion in manufacturing trade with the European Union (EU) countries. Manufacturing products were the fastest growing component of total exports between 1989-98. The EU share in total Polish exports rose from less than 38 percent in 1989 to more than 68 percent in 1998, while the share in total imports rose from around 39 percent to more than 65 percent in the same period.

Productivity gains have in part stemmed from the reallocation of inputs of factors across sectors. Employment in agriculture and industry dropped significantly through 1993, even as it was growing in heretofore underdeveloped sectors such as trade (Table 8). Within manufacturing, labor also shifted considerably, as documented by Marchetti (1997). In the process, labor inputs moved out of state-owned enterprises and into de novo firms (Jackson

²⁵ Including that recession in the sample brings down the average productivity increase to 2 percent for the 1980s.

²⁶ An equally impressive surge was recorded in Hungary over the same period. Again, the Czech Republic and the Slovak Republic witnessed more limited productivity gains.

²⁷ In this context, TFP growth should be regarded as truly a residual, reflecting the effect of a variety of factors that influence the efficiency with which factors of production are used, and should not be interpreted as an exogenous rate of technological progress.

²⁸ In these TFP calculations, the weight associated with capital is 0.35 and that with labor 0.65.

et al., 1999). Inputs of capital were also subject to considerable sectoral reallocation in the period 1993 to 1998, reflecting the uneven distribution of the economy-wide investment boom, with investment recording only modest gains in agriculture but expanding rapidly in trade and services activities.

Following Bernard and Jones (1996) and Cameron et al. (1997), the contribution of sectoral reallocation of inputs to overall productivity growth can be measured by decomposing the change in aggregate TFP into a productivity change effect and a reallocation effect. The first effect measures the contribution of productivity changes within each sector, and the second one the contribution of changes in sectoral composition. The reallocation effect is positive if inputs of factors are shifted from lower to higher-productivity sectors. Referring to the aggregate TFP calculations presented in Table 7 and decomposing the economy into six broad sectors (agriculture, industry, construction, transport and communication, trade, and other services), the reallocation effect accounts for around 23 percent of the aggregate gains in TFP during the 1992-98 period of renewed growth. This is almost twice as much as the contribution of the reallocation effect during the 1983-89 period, the last episode of pre-transitional growth.

In industry, TFP growth also exceeded output growth during the first two recovery years, as industrial employment continued to shrink. Thereafter and through 1998, the contribution to output growth from increases in TFP relative to factor accumulation was more important in industry than in the overall economy, reflecting an only modest pick-up in employment in the sector.²⁹

VI. SUSTAINABILITY

The sustainability of Poland's high-growth performance started to be questioned in 1998, as the economy showed signs of deceleration. The slowdown was partly caused by a deliberate tightening of financial policies intended to restrain domestic demand and to contain a widening current account deficit. It also reflected external factors, namely the slowdown in Western Europe and the shock imparted by the sharp decline in demand from Russia and other countries east of Poland, illustrating the sensitivity of growth to exogenous developments in export markets. As a result, real GDP growth was down to 2.9 percent in the last quarter of 1998 compared with a year earlier, slowing further to only 1.5 percent in

²⁹ A comparison with the Czech Republic, Hungary, and the Slovak Republic reveals broadly the same picture. TFP growth initially exceeded output growth, indicating an increase in the rate of capacity utilization, and subsequently made the largest contribution to output growth, especially in industry. The computations are based on the capital stock data published in the national statistical yearbooks, extrapolated using investment data for the most recent years. For Hungary, Darvas and Simon (1999) have derived an alternative set of computations based upon a vintage model to reconstruct the capital stock data.

the first quarter of 1999, with gross industrial output shrinking in those two quarters for the first time since 1991.

Looking ahead, supply-side factors may also limit growth in the longer run. Despite progress in some areas, such as telecommunications, infrastructure bottlenecks persist, causing congestion which may inhibit growth.³⁰ This is particularly conspicuous in the case of the road network, which is quantitatively and qualitatively lacking (European Commission, 1998), and is also striking as concerns the judiciary system, where the average time for processing court cases has tended to lengthen, and enforcement of court rulings often remains wanting. Those shortcomings slow down or altogether discourage certain business ventures but also facilitate corruption, which has been shown to be growth-inhibiting (Mauro, 1996). Also, the investment boom, which has been largely financed by retained earnings and foreign direct investment, may be hard to sustain when corporate profitability deteriorates, as has been the case since 1998. On the other hand, as the weight of those heavy industries that are doomed to shrink declines, the drag on overall growth from those sectors will diminish. Durable slower growth would complicate the needed adjustments in agriculture and heavy industry as well as the implementation of the ambitious structural reforms launched in 1999 in such areas as devolution, pensions, and health care.

VII. MAIN CONCLUSIONS

This paper has highlighted some of the features of Poland's growth performance in the 1990s, a performance that has been quite commendable compared with neighboring countries. First, growth has been largely pulled by manufacturing, in contrast with the widespread perception that overindustrialisation under central planning implied that services would be the main engine of growth. Second, transition has involved wholesale shifts in the composition of industrial output. These shifts, which have contributed to considerable productivity gains in industry, have been stimulated by a trade reorientation toward Western Europe and large foreign direct investment inflows. Third, even though growth has been broad-based, it has been uneven across regions. In a context of limited geographical labor mobility, this may have implications as regards the speed with which structural reforms can be implemented.

In terms of policies, Poland's performance illustrates the crucial importance of letting the reallocation of capital and labor run its course. This requires sound macroeconomic policies, so as to ensure a modicum of visibility to potential investors, coupled with liberalization on the structural front. Such policies create an environment

³⁰ See Canning (1998) and the references therein for a cross-country approach.

conducive to the necessary redistribution of existing resources and to the attraction of external ones in the form of foreign direct investment.

Prospectively, convergence towards EU per capita income levels is bound to be a drawn out process, even if 1999 were to stand out *ex post* as a mere pause in a longer growth spell, unlike the slowdown witnessed in Poland at the turn of the 1980s. Poland also still has a longer way to go than other, wealthier transition countries to catch up with Western Europe. The distance between Poland and those countries that are currently the poorest EU members is such that on the purely hypothetical assumption that the growth differential would on average remain on the order of 2 percentage points, a full catch-up would require another 30 years.³¹

³¹ A more sophisticated approach, based on growth regressions controlling for initial conditions, leads to qualitatively similar results (Fischer et al., 1998; Berg et al., 1999). It should also be recalled, in this context, that on some estimates, in the mid-1950s, Poland's income per capita far exceeded that of Spain (Balassa and Bertrand, 1970).

Table 1. Growth of Value Added by Sector

(In percent, in real terms)

	Sectoral share in 1992	1992	1993	1994	1995	1996	1997	prel. 1998
Agriculture, forestry	6.7	-9.4	7.0	-15.1	10.4	2.4	1.1	6.3
Fishing	0.1	...	-53.9	10.6	-8.3	7.0	-10.5	...
Industry	34.0	2.6	8.6	10.3	10.4	7.6	10.3	4.4
of which:								
Mining and quarrying	3.4	-5.3	-9.8	-1.9	1.5	4.7	-4.3	-4.6
Manufacturing	26.9	5.1	11.9	11.2	13.7	8.8	14.4	9.8
Electricity, gas and water supply	3.8	...	1.5	16.2	2.1	3.5	0.6	...
Construction	7.8	3.8	1.1	2.7	5.8	2.8	13.6	10.2
Trade and repair of consumer goods	13.1	...	5.8	-1.5	5.0	6.1	8.1	4.0
Hotels and restaurants	0.4	...	2.3	7.3	6.5	16.8	7.3	...
Transport, storage and communication	6.2	...	-5.3	0.5	2.3	5.4	5.6	...
Financial intermediation	0.5	...	29.1	102.1	21.4	11.3	2.9	...
Real estate and business services	6.5	...	1.5	6.9	5.8	0.9	-0.7	...
Public administration and defense	6.1	...	5.2	7.8	4.2	4.4	5.9	...
Education	3.8	...	0.1	10.3	1.5	1.4	0.9	...
Health care and social security	4.2	...	0.5	4.1	1.6	1.5	0.8	...
Other	6.5	...	-18.2	3.4	0.7	6.9	-6.8	...
Memo: GDP		2.6	3.8	5.2	7.0	6.0	6.8	4.8

Source: GUS and authors' calculations.

1. Based on the 1993 system of national accounts starting from 1993. The 1992 figures are based on the former system and therefore incomplete and not directly comparable to subsequent ones.

Table 2. Indicators of Private Sector Dynamism

	1989	1990	1991	1992	1993	1993 1/	1994	1995	1996	1997	1998
Number of enterprises											
Commercial law companies	16905	36267	53771	69907	83283	83283	95017	104922	115739	126465	136497
of which with foreign capital	429	1645	4796	10131	15167	15167	19737	24086	28622	32942	36850
of which in:											
Industry	4083	9073	11735	15315	18338	19862	22726	25077	27379	29532	31426
Construction	3406	5946	9632	12063	13775	11667	12821	13634	14646	15589	16565
Trade	2175	9043	17768	24199	29381	30444	34639	38001	41991	45896	49195
Hotels and restaurants	...	...	...	...	...	971	1230	1483	1771	2045	2328
Transport and communication	...	...	...	1672	2081	3284	3950	4454	5003	5550	6064
Financial intermediation	...	...	...	...	...	603	851	1118	1377	1706	2012
State enterprises	7337	8453	8228	7245	5924	5924	4955	4357	3847	3369	2906
Memo item											
Started privatizations	—	107	1297	2056	2635	2635	3132	3582	3953	4178	4648
Completed privatizations	—	6	228	612	989	989	1380	1930	2503	2837	3081
Private sector share in output (in percent)											
Gross value added	...	30.9	42.1	47.1	52.0	52.2	53.3	57.9	60.1	67.2	...
Agriculture	...	77.5	80.0	84.6	86.5	86.5	87.9	89.1	88.7	88.7	89.5
Industry 2/	16.2	18.3	24.8	28.2	34.6	34.6	39.4	46.9	52.4	63.5	69.1
Mining	...	...	...	...	...	...	2.3	2.6	2.6	5.5	7.6
Manufacturing	...	...	...	...	...	...	47.0	53.5	62.1	75.2	80.6
Construction 2/	25.5	33.8	58.8	74.3	82.3	82.3	84.9	87.6	87.9	93.2	93.9
Retail sales	59.5	63.7	82.8	86.4	89.1	89.1	90.8	92.4	92.9	94.7	95.0
Transport and communication 2/	...	...	...	35.1	37.3	37.3	38.5	40.1	42.2	44.7	...
Exports	...	4.9	21.9	38.4	44.0	44.0	53.2	56.8	62.9	74.3	78.8
Imports	...	14.6	49.9	54.5	59.8	59.8	66.9	69.7	75.6	82.5	86.5
Private sector share in employment (in percent)											
Total	46.2	48.9	54.1	56.0	58.9	58.9	60.6	62.4	65.1	68.2	70.7
Agriculture	84.9	86.5	89.2	91.4	93.7	94.6	95.9	96.6	97.6	97.8	98.0
Industry	29.1	31.2	35.8	40.5	42.7	40.7	46.1	50.5	55.2	63.7	70.1
Mining	...	...	...	...	...	1.9	3.0	3.1	3.3	4.5	6.9
Manufacturing	...	...	...	...	...	49.2	55.1	60.0	64.9	74.5	81.5
Construction	37.4	42.1	59.5	71.9	74.8	69.6	78.2	80.9	84.5	87.7	91.3
Trade and repair	72.7	82.2	88.3	90.7	93.2	92.7	93.4	94.1	94.9	96.1	97.3
Transport, and communication	...	...	...	20.1	21.0	27.6	25.4	26.7	28.8	32.9	34.9
Financial intermediation	...	...	32.0	27.6	33.1	33.9	33.3	36.4	38.6	42.0	49.9
Real estate	...	...	...	...	...	57.9	60.0	63.3	65.4	69.8	73.3
Source: GUS and authors' calculations											

1/ New classification.

2/ Share in sales.

Table 3. Regional GDPs: Selected Summary Indicators

(Summary statistics based on nominal regional GDP per capita relative to the nationwide average)

	Including Warsaw						Excluding Warsaw					
	1986	1990	1991	1992	1995	1996	1986	1990	1991	1992	1995	1996
Coefficient of variation	0.32	0.36	0.34	0.23	0.32	0.34	0.24	0.26	0.26	0.21	0.29	0.30
Maximum	2.15	2.35	2.27	1.58	2.10	2.13	1.55	1.67	1.61	1.49	2.10	2.13
Minimum	0.60	0.52	0.54	0.65	0.60	0.59	0.60	0.52	0.54	0.65	0.60	0.59
Max/min	3.6	4.6	4.2	2.5	3.5	3.6	2.6	3.2	3.0	2.3	3.5	3.6
Average of top 5 over average of bottom 5	2.19	2.53	2.35	2.03	2.22	2.30	1.79	2.00	1.88	1.92	1.95	1.97
Average of top 10 over average of bottom 10	1.83	2.08	2.01	1.80	1.89	1.91	1.64	1.84	1.79	1.73	1.75	1.77
Correlation matrix												
	Including Warsaw						Excluding Warsaw					
	1986	1990	1991	1992	1995	1996	1986	1990	1991	1992	1995	1996
1986	1.00	0.94	0.93	0.79	0.86	0.84	1.00	0.88	0.86	0.73	0.83	0.78
1990		1.00	0.97	0.86	0.90	0.89		1.00	0.94	0.87	0.91	0.87
1991			1.00	0.85	0.91	0.90			1.00	0.84	0.92	0.88
1992				1.00	0.87	0.87				1.00	0.83	0.83
1995					1.00	0.98					1.00	0.98
1996						1.00						1.00

Sources: GUS, RECESS, and authors' calculations.

Table 4. Sales Volume in Industry

(Rate of change in real terms)

	1991	1992	1993	1994	1995	1996	1997	1998	Cumulative 1991-98
Total	-8.0	2.8	6.4	12.1	9.7	8.3	11.5	4.6	70
Mining and quarrying	-2.6	-5.3	-4.1	4.6	-0.6	2.5	0.5	-13.0	-15
Manufacturing	-10.3	5.1	10.4	13.7	11.6	9.8	13.4	6.4	95
Food products and beverages	0.6	1.7	8.6	12.8	9.3	9.6	9.6	7.1	75
Tobacco products	-15.9	6.0	16.6	10.0	-0.5	-5.4	4.1	6.2	41
Textiles	-13.6	3.4	9.9	14.6	-1.0	2.8	6.9	-2.9	38
Clothing	-5.2	15.7	8.3	11.0	2.2	4.8	12.7	6.9	79
Leather and leather products	-7.7	-5.7	-1.2	12.6	8.2	12.5	4.2	-15.5	12
Wood and wood products	-2.6	15.4	3.7	10.6	10.0	12.7	12.0	9.1	100
Pulp and paper	-3.9	12.0	6.6	24.7	18.2	9.8	18.8	8.8	150
Publishing and printing	-15.5	28.4	39.0	6.9	17.3	14.4	15.6	14.7	239
Coke, refined petroleum products and derivatives	-14.9	12.8	12.3	7.2	5.6	2.8	1.7	-13.0	30
Chemicals and chemical products	-9.9	-2.0	6.1	17.3	13.1	4.9	11.9	-2.6	58
Rubber and plastic products	3.0	29.9	19.9	16.1	17.0	17.2	21.1	15.4	247
Other non-metallic mineral products	-3.3	-1.4	9.8	14.6	4.8	9.5	11.9	10.7	76
Basic metals	-23.8	-2.3	1.8	16.7	15.2	0.0	13.2	-4.8	44
Metal products (except machinery and equipment)	1.0	19.8	7.1	15.6	15.8	20.4	14.1	19.0	181
Machinery and equipment	-24.7	-7.7	9.4	15.5	20.9	9.8	8.7	-1.0	67
Office equipment and computers	-35.1	-16.0	51.4	-1.6	52.2	44.2	24.3	20.4	311
Electrical machinery and apparatus	-6.7	2.1	10.9	9.7	16.1	11.8	15.9	7.7	101
Radio, TV and communication equipment	-23.5	14.9	27.0	26.8	17.4	19.2	29.0	17.6	293
Medical, precision and optical instruments	-9.6	3.4	16.1	11.7	25.7	14.7	19.7	1.9	136
Motor vehicles and trailers	-22.9	11.0	27.4	13.7	14.1	34.0	31.1	18.3	281
Other transport equipment	-23.4	7.2	9.6	22.6	3.9	-4.8	11.2	10.2	75
Furniture and other manufacturing	-6.0	13.0	11.4	14.5	24.2	14.2	25.4	18.9	205
Scrap recycling	-15.3	26.8	-9.8	8.0	23.5	-10.0	17.2	8.1	74
Electricity, gas and water supply	3.5	-4.6	-11.2	4.7	0.9	0.3	3.4	1.0	-6
Electricity, gas, steam and hot water supply	3.3	-5.2	-12.0	4.5	0.8	0.4	3.5	0.6	-8
Collection, purification and distribution of water	6.1	0.5	-2.9	7.0	1.4	-0.4	3.0	5.9	15

Source: GUS.

Table 5. Sources of Growth on the Demand Side

(In percent and in real terms)

	Share in 1991 GDP	1992	1993	1994	1995	1996	1997	1998
GDP	100.0	2.6	3.8	5.2	7.0	6.0	6.8	4.8
Consumption	82.0	3.5	4.8	3.9	3.2	7.2	6.1	4.2
Gross fixed investment	19.5	2.3	2.9	9.2	16.5	19.7	21.7	13.2
Exports	23.5	10.8	3.2	13.1	22.8	12.0	12.2	10.3
Imports	25.4	1.7	13.2	11.3	24.3	28.0	21.4	13.7

Source: GUS.

Table 6. Indicators of Foreign Direct Investment

(Flows and stocks)

	1994	1995	1996	1997	1998
<i>Flows (in \$ millions)</i>					
Inward					
PAIZ statistics					
Projects of over \$1 million	1493	2512	5196	5678	9574
Estimated total projects	...	...	...	6600	10100
Balance of payments statistics					
Cash-based, gross	542	1132	2768	3077	5129
Accruals-based, gross	1875	3659	4498	4908	6365
<i>of which:</i>					
purchased shares	884	1807	2845	2663	4323
reinvested earnings	382	888	244	25	-264
loans from foreign shareholders	397	666	1095	1767	2025
in-kind contributions	212	298	314	453	281
<i>End-period stocks (in \$ billions)</i>					
Foreign direct investment in Poland					
PAIZ statistics					
Projects of over \$1 million	4.3	6.8	12.0	17.7	27.3
Estimated total projects	...	...	14.0	20.6	30.7
Commitments	4.9	5.3	7.9	10.8	13.3
NBP statistics	3.8	7.8	11.5	...	...
<i>Of which: equity and reinvested earnings</i> ²	2.8	6.1	8.7	...	...
<i>Memorandum item: \$ GDP</i> ³	92.6	126.3	143.0	143.1	157.7

Sources: Polish Agency for Foreign Investment (PAIZ); National Bank of Poland (NBP).

¹Cash based balance of payments data.

²Includes contributions in kind and excludes loans.

³Revised GDP series from 1995 onwards.

Table 7. Productivity Developments in the Visegrad Countries
(annual percentage change 1/, 2/)

Czech Republic									Hungary										
Whole Economy					Industry				Whole Economy				Industry						
	Y	K	L	TFP		Y	K	L	TFP		Y	K	L	TFP		Y	K	L	TFP
1980	2.4	4.8	0.7	0.3		1.8	5.3	0.2	-0.1		0.2	5.0	-0.7	-1.1		-1.1	6.2	-2.4	-1.7
1981	-0.7	5.2	0.4	-2.9		-0.7	6.3	0.1	-3.0		2.9	4.1	-0.7	1.9		4.9	5.1	-2.3	4.6
1982	-0.8	4.3	0.3	-2.5		-1.5	5.0	0.3	-3.4		2.8	4.2	-0.4	1.6		4.6	4.8	-2.4	4.4
1983	1.2	4.0	0.1	-0.3		0.8	4.0	0.4	-0.9		0.7	4.2	-0.6	-0.4		1.8	5.5	-2.4	1.4
1984	2.6	4.3	0.7	0.7		3.9	4.6	0.1	2.2		2.7	4.0	-0.6	1.7		2.5	5.3	-1.2	1.4
1985	0.6	4.3	0.8	-1.4		2.2	5.2	0.4	0.2		-0.3	3.3	-0.5	-1.1		-2.1	3.3	-0.3	-3.1
1986	2.1	4.2	1.1	-0.1		2.6	5.0	1.2	0.0		1.5	3.7	-0.3	0.3		-0.5	5.6	-0.4	-2.2
1987	0.6	3.5	0.4	-0.9		3.2	4.3	0.5	1.4		4.0	3.1	-0.5	3.2		3.2	3.7	-1.3	2.7
1988	2.0	3.7	0.5	0.4		3.2	4.3	0.1	1.6		-0.1	3.5	-0.6	-0.9		-1.5	3.8	-2.0	-1.5
1989	4.4	3.1	0.6	3.0		3.2	3.7	0.4	1.6		0.7	6.4	-0.5	-1.2		-2.0	4.3	-2.1	-2.2
1990	-1.2	2.5	-1.0	-1.5		-1.4	2.3	-4.3	0.5		-3.6	4.3	-1.6	-4.1		-8.0	3.7	-2.7	-7.6
1991	-12.2	2.4	-5.6	-9.4		-23.8	2.5	-3.8	-22.2		-12.7	3.6	-6.0	-10.0		-19.6	3.5	-7.7	-15.9
1992	-3.4	2.3	-2.6	-2.4		-8.2	3.0	-8.1	-4.1		-3.1	3.4	-9.4	1.8		-6.9	3.6	-10.9	-1.1
1993	0.6	2.3	-1.6	0.8		-5.4	2.8	-5.0	-3.2		-0.6	3.4	-6.5	2.4		3.0	3.2	-11.2	9.1
1994	3.1	1.9	0.8	2.0		2.1	3.3	-5.5	4.5		2.9	3.7	-2.0	2.9		5.8	3.5	-4.6	7.6
1995	6.2	3.0	2.6	3.5		5.7	4.0	0.6	3.9		1.5	3.4	-2.0	1.6		6.7	3.5	-5.5	9.0
1996	3.8	4.1	0.7	1.9		9.6	3.9	-0.8	8.8		1.3	3.4	-0.8	0.6		3.1	3.6	-0.9	2.4
1997	0.3	3.8	-1.0	-0.3		7.7	3.6	-1.0	7.1		4.5	3.6	0.0	3.3		14.0	3.8	1.7	11.6
1998	-2.4	3.5	1.2	-2.0		-1.6	0.2	1.3	-2.7		5.0	3.9	1.4	2.7		11.2	4.5	4.5	6.6

Poland 3/									Slovak Republic										
Whole Economy					Industry				Whole Economy				Industry						
	Y	K	L	TFP		Y	K	L	TFP		Y	K	L	TFP		Y	K	L	TFP
1980	-6.2	4.3	4.6	-10.7		-4.2	4.5	0.2	-5.9		3.1	6.4	0.7	0.4		4.0	6.9	1.2	0.8
1981	-10.5	3.3	0.5	-12.0		-14.7	3.4	-0.2	-15.8		-0.1	6.0	1.1	-2.9		1.5	7.0	1.9	-2.2
1982	-4.9	1.9	-2.5	-4.0		-3.9	2.1	-4.9	-1.4		-0.2	5.2	0.6	-2.4		-1.7	5.3	0.7	-4.0
1983	5.4	2.5	-0.3	4.8		5.4	2.8	-0.3	4.6		3.2	5.2	1.1	0.7		3.8	5.7	1.2	1.0
1984	5.4	2.4	0.3	4.4		5.0	3.1	0.5	3.6		4.5	5.5	1.4	1.6		6.8	6.3	1.3	3.8
1985	3.5	2.6	0.9	2.1		3.7	3.4	0.1	2.5		3.8	5.2	1.3	1.2		5.9	6.5	1.3	2.8
1986	4.1	1.9	0.3	3.3		4.2	2.4	-1.9	4.6		4.0	4.5	1.8	1.3		4.4	3.9	1.7	1.9
1987	2.0	3.8	-0.3	0.8		3.1	3.7	0.2	1.7		2.5	4.0	1.1	0.5		4.7	4.1	1.1	2.6
1988	4.0	2.5	-0.7	3.6		4.5	2.6	-0.4	3.9		1.9	3.9	1.0	-0.1		3.5	3.9	0.9	1.6
1989	0.2	3.7	-1.0	-0.4		-2.1	3.2	0.0	-3.3		1.1	3.8	-0.2	-0.1		1.9	3.7	-0.8	1.2
1990	-12.3	1.1	-3.5	-10.5		-24.8	2.3	-5.8	-21.9		-2.5	3.3	-0.8	-3.1		-2.8	3.8	-2.1	-2.8
1991	-7.9	1.2	-6.0	-4.4		-18.8	0.9	-8.3	-13.6		-15.8	2.7	-8.3	-11.3		-21.6	3.0	-8.3	-17.2
1992	1.5	1.3	-4.3	3.8		2.6	1.2	-9.1	8.0		-6.7	2.9	0.2	-7.9		-9.8	3.2	-13.0	-2.4
1993	3.7	1.9	-2.4	4.6		8.3	1.7	-5.6	11.3		-3.8	2.9	0.0	-4.7		-3.9	3.1	-5.2	-1.6
1994	5.1	2.6	1.0	3.5		9.8	2.8	-0.8	9.4		4.8	2.8	-1.8	4.9		4.7	3.1	-5.6	7.3
1995	6.8	2.1	1.8	4.9		9.9	0.3	3.1	7.7		6.7	3.0	2.2	4.2		8.0	3.3	1.0	6.2
1996	5.8	4.7	1.9	2.9		7.3	5.9	-0.7	5.7		6.4	4.0	0.8	4.5		0.4	4.4	-1.5	-0.1
1997	6.6	3.4	2.7	3.6		9.8	3.5	0.3	8.4		6.3	4.3	0.2	4.6		2.3	4.7	-3.4	2.9
1998	4.7	4.0	0.3	3.1		4.3	2.1	-3.0	4.8		4.3	4.4	1.2	3.0		0.9	0.2	1.5	0.9

Source: National statistical authorities, and authors' calculations.

1/ Based on logarithmic growth rates.

2/ Y stands for output, K for Capital, L for Labor, and TFP for Total Factor Productivity

3/ Unrevised GUS series.

Table 8. Employment

(In percent)

	Shares 1989 ¹	1992 ¹	1992 ²	1993 ²	1998 ²	Change 1989-93 ¹	1993-98 ²
Agriculture and forestry	26.7	26.2	25.8	25.7	25.7	-17.4	8.0
Industry	28.8	26.5	25.8	25.6	23.4	-25.8	-1.1
Mining	2.9	3.1	3.1	2.9	2.0	-16.4	-27.3
Manufacturing	25.3	22.9	21.0	20.8	20.7	-26.9	7.5
Construction	7.8	7.3	7.0	6.0	5.8	-34.7	4.6
Services	36.7	40.1	41.6	42.7	45.1	-2.5	14.2
Trade	8.6	10.9	12.3	13.1	13.6	33.5	12.3
Transport and communication	5.8	5.3	6.2	6.1	5.6	-24.6	-0.5
Finances	1.0	1.4	1.3	1.5	2.0	29.8	41.3
Public administration	1.5	2.0	2.2	2.4	2.7	26.8	25.3
Health and education	11.5	13.0	12.2	12.5	12.2	-3.5	5.6
Total	100.0	100.0	100.0	100.0	100.0	-15.7	8.1

Sources: GUS, and authors' computations.

¹ Former classification.

² SNA classification.

Figure 1. Actual Versus Projected GDP Growth
(In percent)

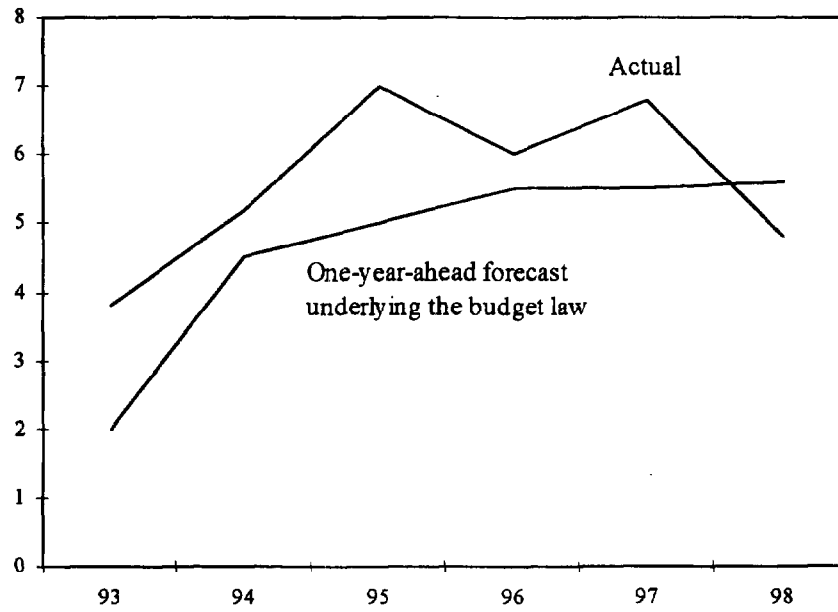
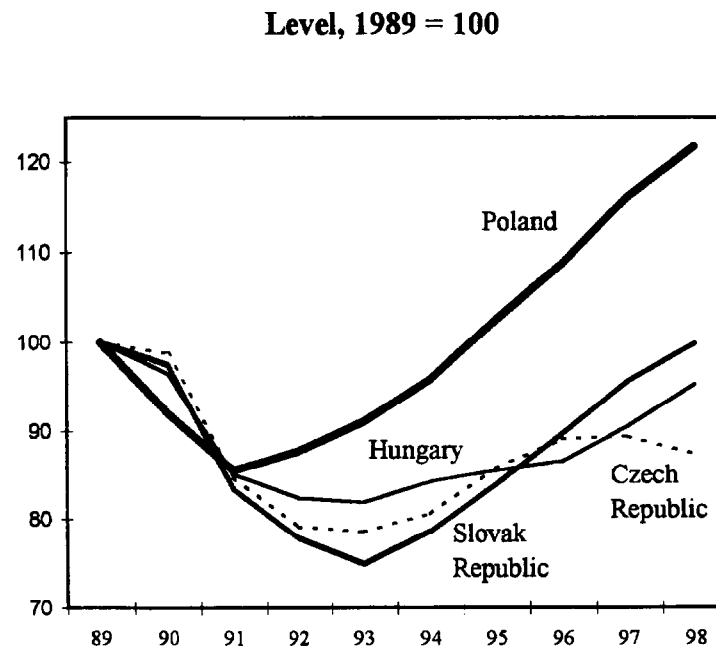
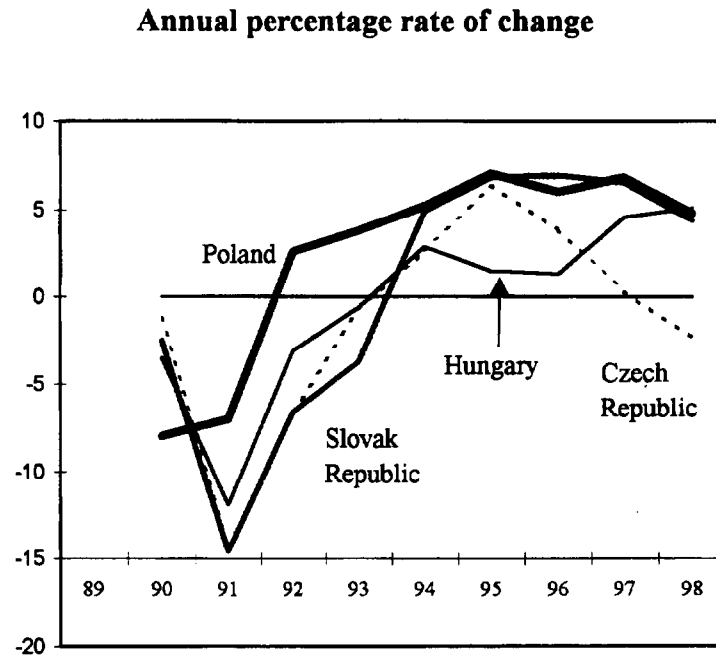
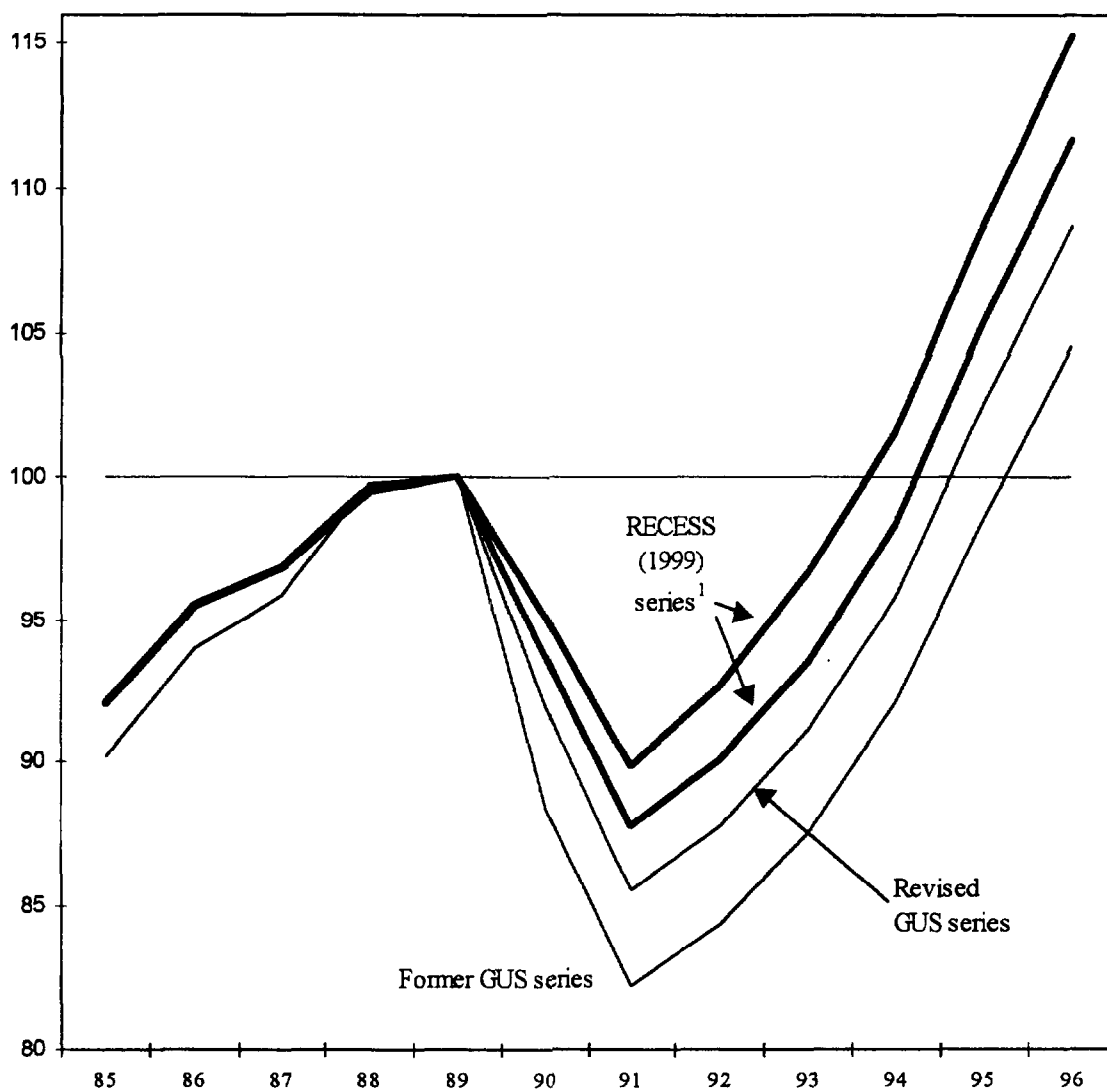


Figure 2. Real GDP in Poland and Neighboring Countries



Sources: National statistical offices.

Figure 3. Alternative Real GDP Estimates
(1989 = 100)

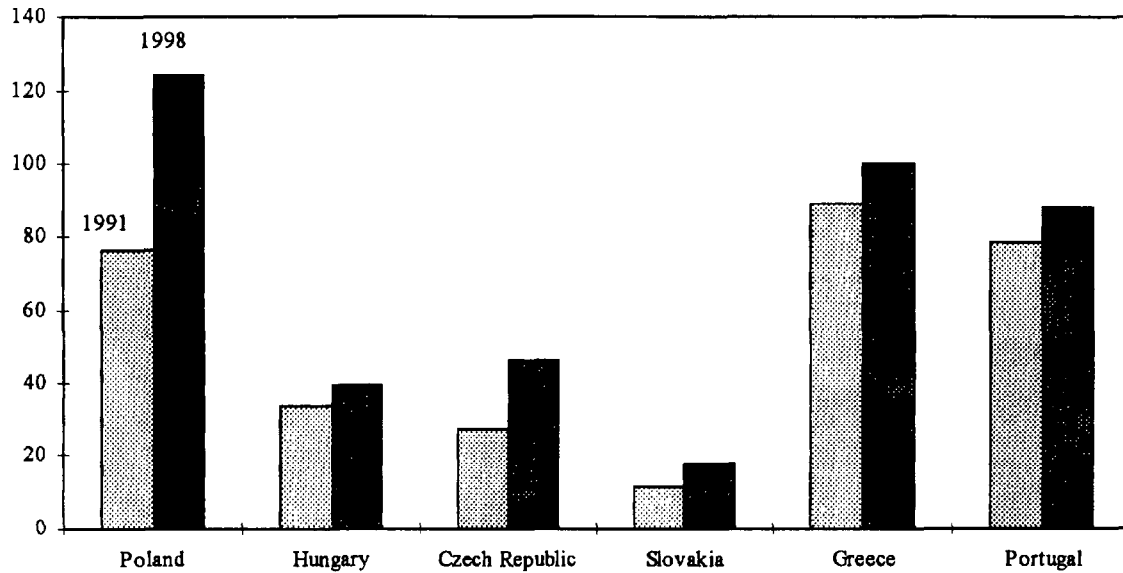


Sources: GUS Yearbooks; RECESS (1999).

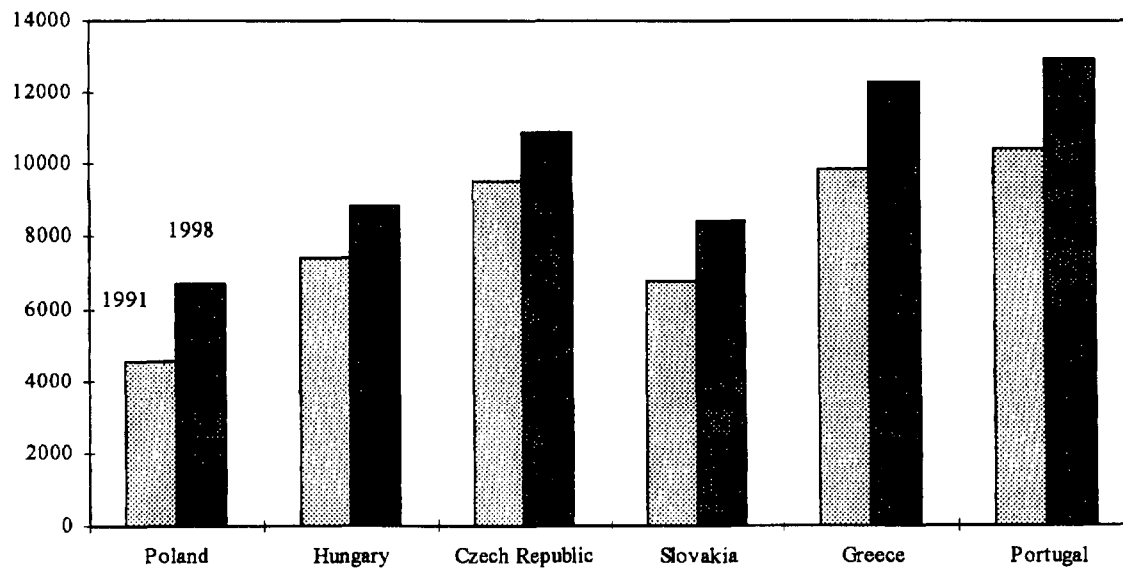
¹Two different sets of estimates are proposed by RECESS.

Figure 4. GDP and GDP Per Capita in Selected Countries
(In constant 1991 US dollars¹)

GDP at Market Exchange Rates, in Billions of US Dollars



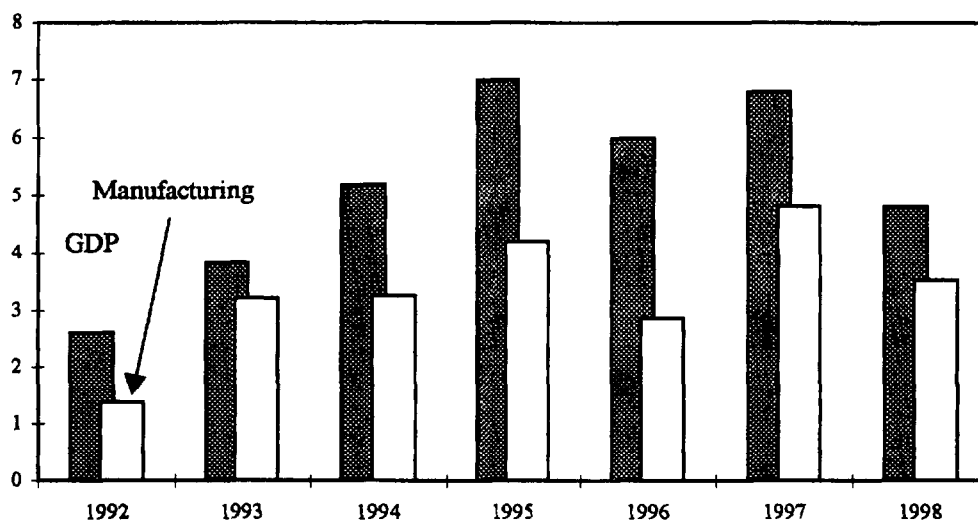
GDP Per Capita at Purchasing Power Parity Rates



Sources: OECD (1998); national statistical offices.

¹ Not taking into account the 1998 upward revision of Polish GDP.

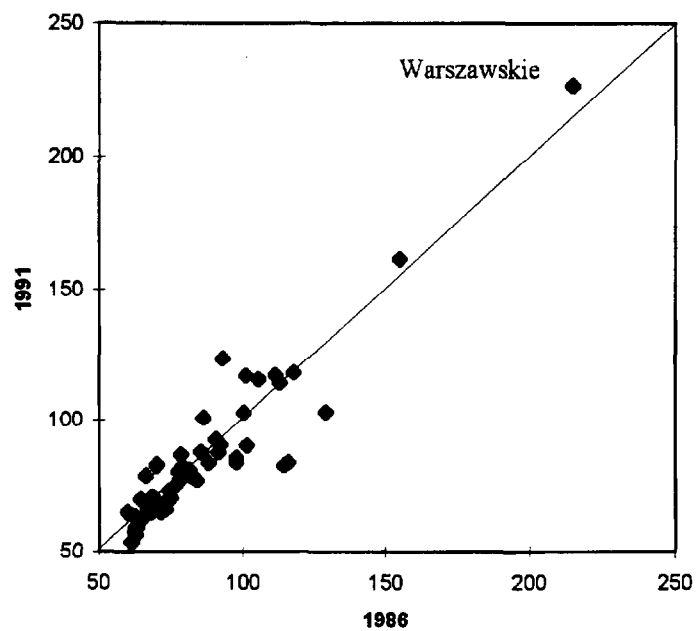
Figure 5. Contribution of Manufacturing to Overall GDP Growth
(In percentage points)



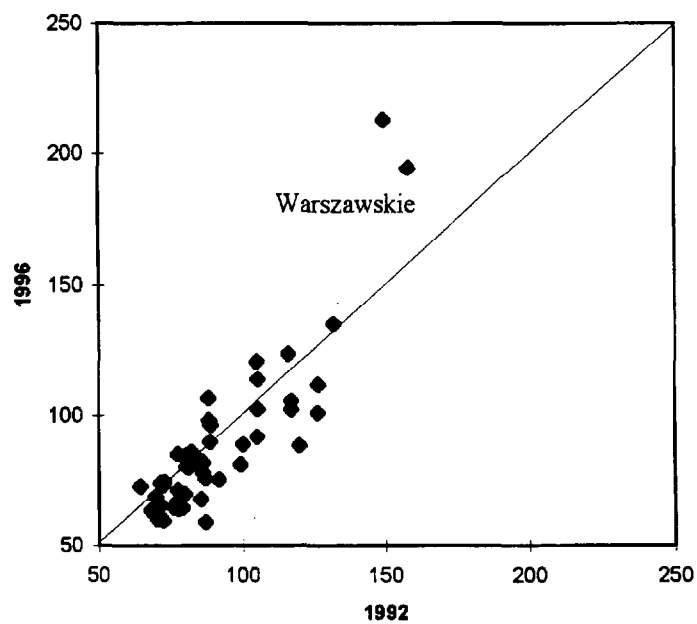
Sources: GUS; authors' calculations.

Figure 6. Regional Gravity Shifts
(Regional per capita GDP in percent of nationwide average)

Shifts in the course of the overall contraction



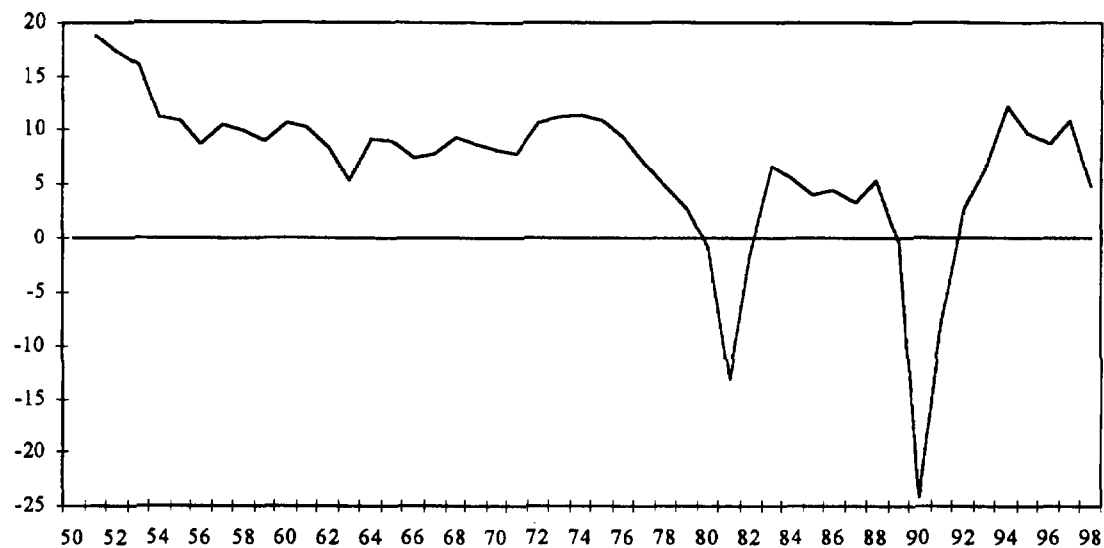
Shifts during the take-off



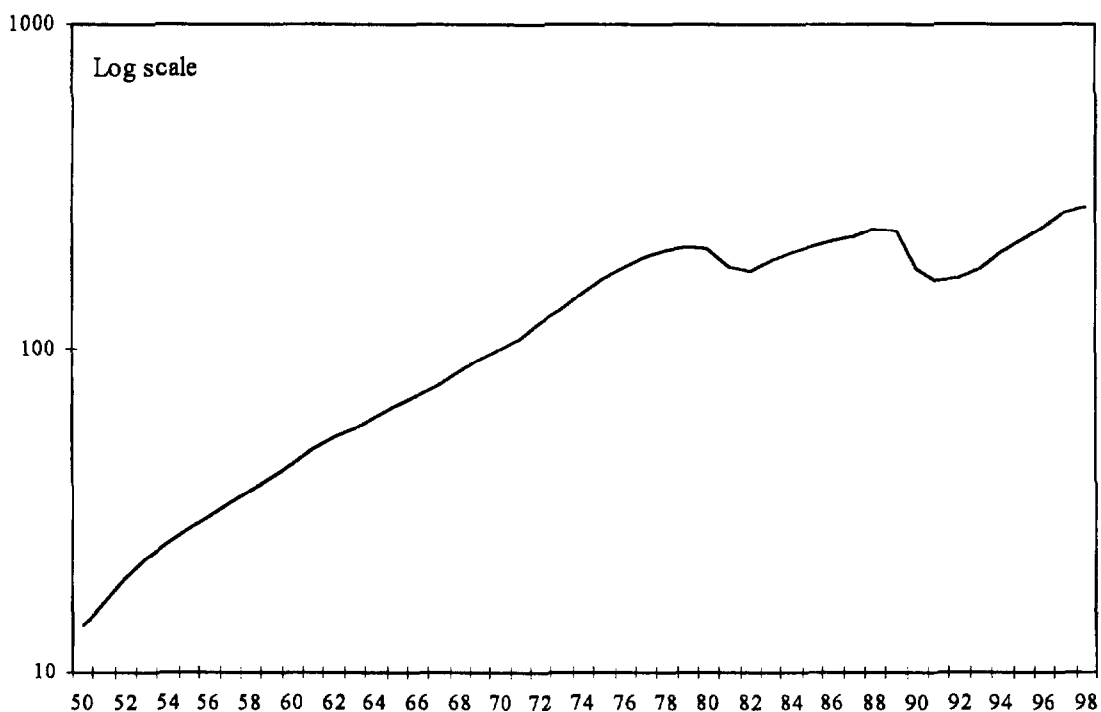
Sources: GUS, RECESS, and authors' computations.

Figure 7. Long-Run Evolution of Gross Industrial Output¹

Annual Percentage Rate of Change



Level, 1970 = 100

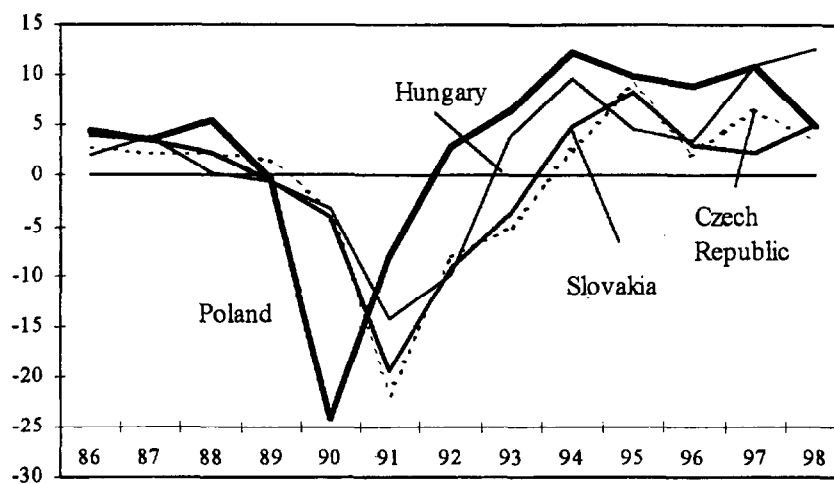


Sources: GUS, and authors' computations.

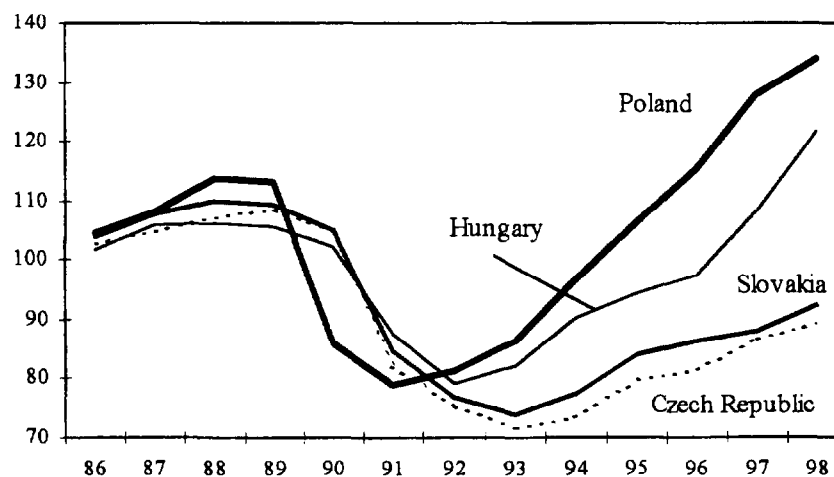
¹Based upon unrevised GUS series.

Figure 8. Gross Industrial Output in Selected Countries

Annual percentage changes

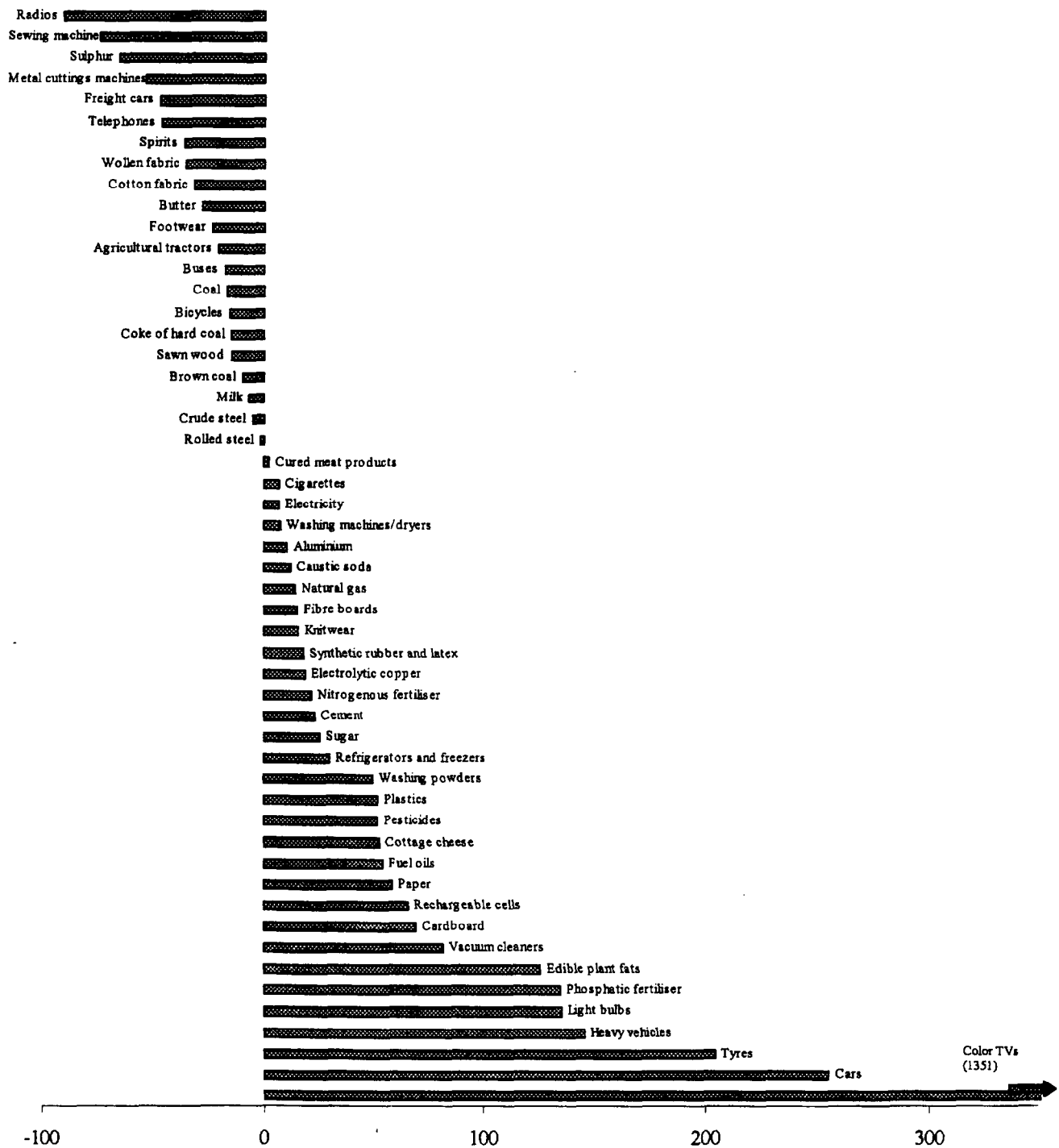


Levels, 1985 =100



Sources: National statistical offices.

Figure 9. Production of Selected Goods
(Percent increase between 1991 and 1998)



Sources: GUS and authors' calculations.

Figure 10. Regional Industrial Fortunes
(Percent increase in gross industrial output between 1991 and 1998)

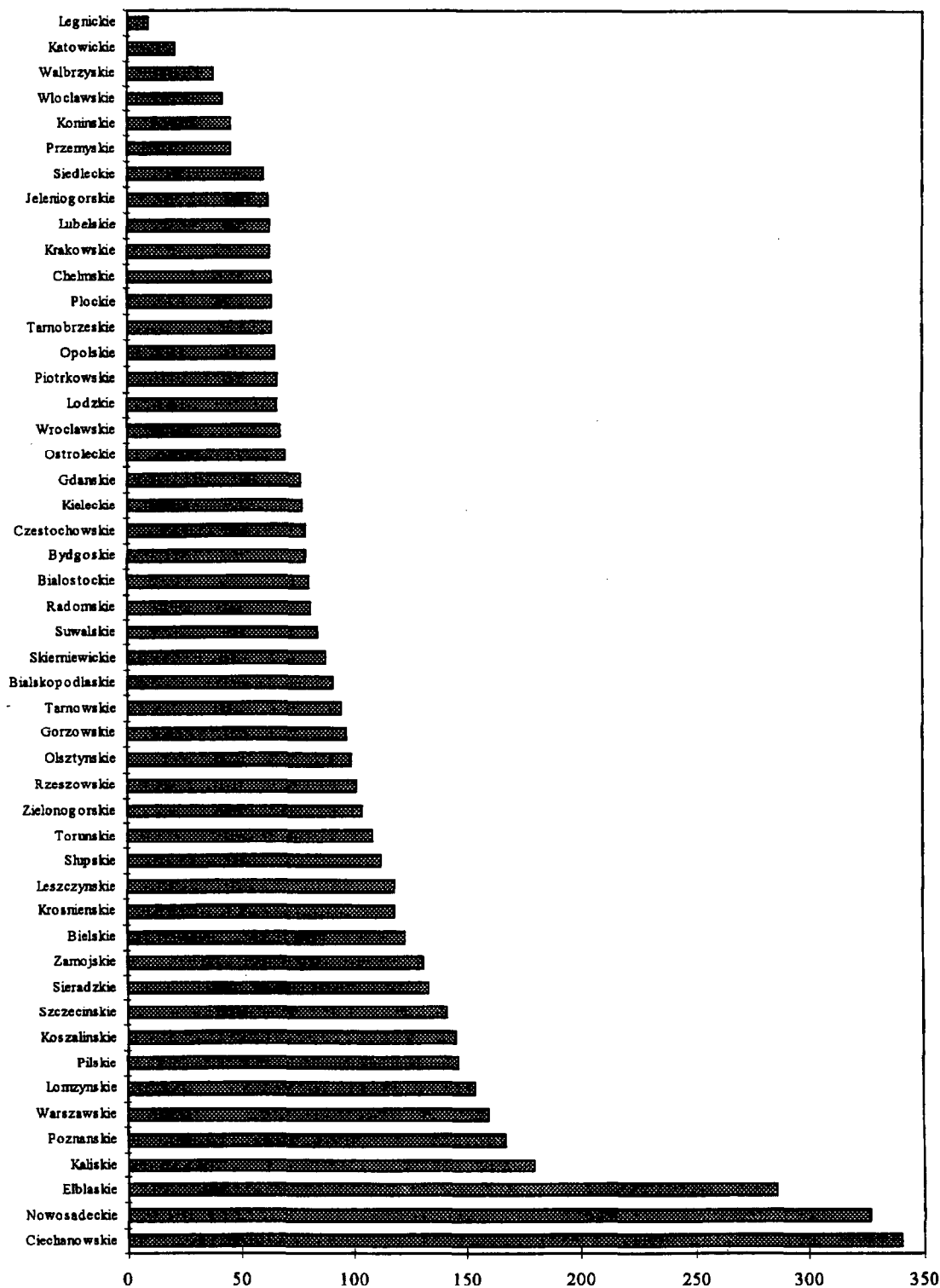
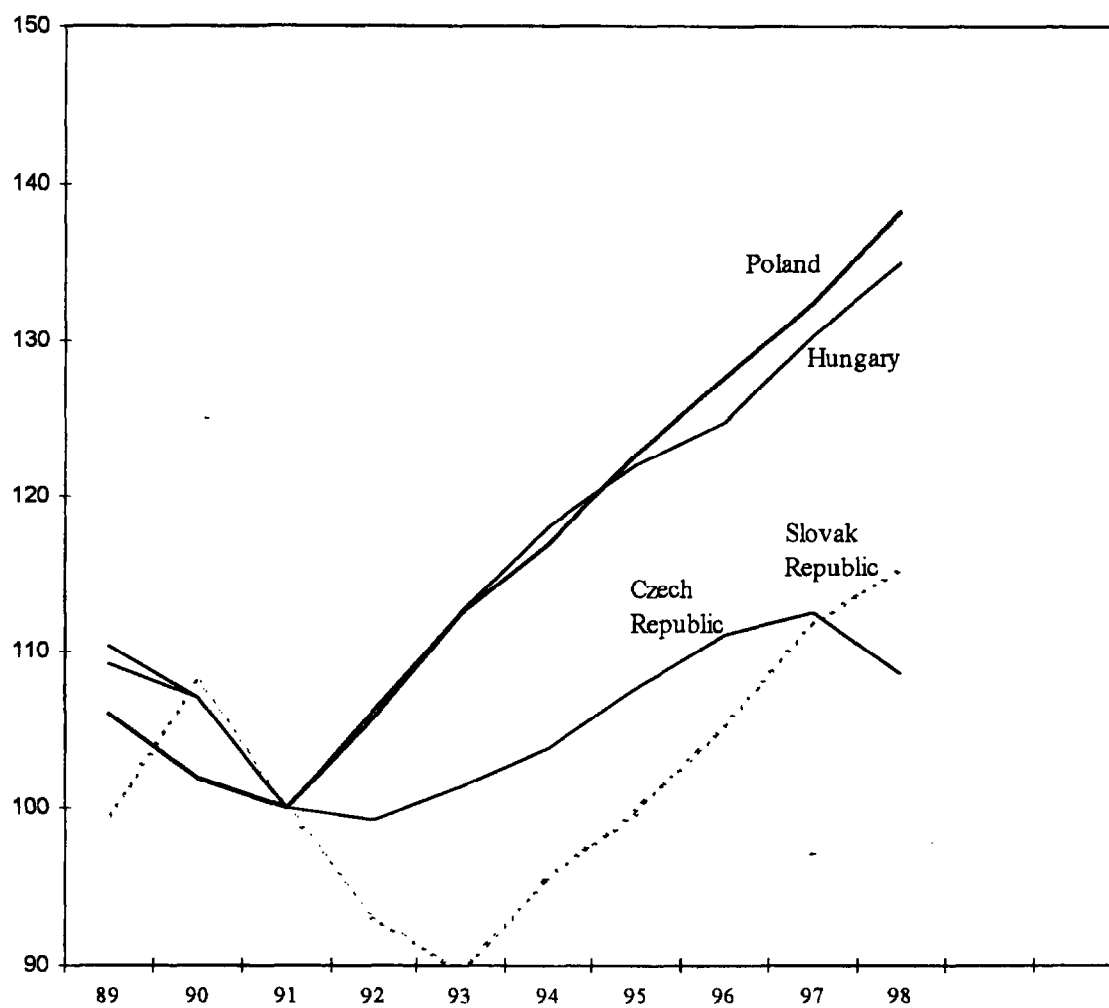


Figure 11. Productivity

(GDP per employed person, 1991 = 100)



Sources: National statistical offices, and authors' calculations.

References

- Balassa, B. and T. Bertrand (1970), "Growth Performance of Eastern European Economies and Comparable Western European Countries," *American Economic Review*, Vol. LX, No. 2, pp. 314-20.
- Balcerowicz, L. (1995), *Socialism, Capitalism, Transformation*, Central European University Press, Budapest.
- Balcerowicz, L. and A. Gelb (1994), "Macropolicies in Transition to a Market Economy: A Three-Year Perspective," *Proceedings of the World Bank Annual Conference on Development Economics*.
- Berg, A. (1994), "Does Macroeconomic Reform Cause Structural Adjustment? Lessons From Poland," *Journal of Comparative Economics*, Vol. 18, pp. 376-409.
- Berg, A., E. Borensztein, R. Sahay and J. Zettelmeyer (1999) "The Evolution of Output in Transition Economies: Explaining the Differences," IMF Working Paper No. 99/73.
- Berg, A. and J. Sachs (1992), "Structural Adjustment and International Trade in Eastern Europe: The Case of Poland," *Economic Policy*, No. 14, pp. 117-73.
- Bernard, A. and C. Jones (1996), "Productivity Across Industries and Countries: Time Series Theory and Evidence," *Review of Economics and Statistics*, Vol. 78, No. 1, pp. 135-146.
- Borensztein, E. and J. Ostry (1992), "Structural and Macroeconomic Determinants of the Output Decline in Poland: 1990-91," IMF Working Paper, No. 92/86.
- Cameron G., J. Proudman and S. Redding (1997), "Deconstructing Growth in UK Manufacturing," Bank of England Working Paper No. 73.
- De Broeck, M. and V. Koen (1999), "The Great Contractions in Russia, the Baltics and the Other Countries of the Former Soviet Union: A View from the Supply Side," unpublished manuscript.
- Canning, D. (1998), "A Database of World Stocks of Infrastructure, 1950-95," *The World Bank Economic Review*, Vol. 12, No. 3, pp. 529-47.
- Czyzewski, A., W. Orlowski and L. Zienkowski (1994), "Poland: Optimistic Scenario of Economic Development until 2005," *RECESS Research Bulletin*, Vol. 3, No. 2, pp. 17-41.

- Darvas, Z. and A. Simon (1999), "Capital Stock and Economic Developments in Hungary," National Bank of Hungary, Working Paper No. 1999/3.
- European Commission (1998), *Regular Report from the Commission on Poland's Progress Towards Accession*, Brussels.
- Fischer, S., R. Sahay and C. Vegh (1998), "How Far is Eastern Europe from Brussels?," IMF Working Paper WP/98/53.
- FTRI (1998), *Foreign Investment in Poland*, Foreign Trade Research Institute, Warsaw.
- Gomulka, S. (1998), "The Polish Model of Transformation and Growth," *Economics of Transition*, Vol. 6, No. 1, pp. 163-71.
- Gora, M. and M. Rutkowski (1990), "The Demand for Labour and the Disguised Unemployment in Poland in the 1980s," *Communist Economies*, Vol. 2, No. 3, pp. 325-34.
- GUS (1998), *1998 Statistical Yearbook*, Central Statistical Office, Warsaw.
- Hanson, P. (1982), "The End of Import-Led Growth? Some Observations on Soviet, Polish and Hungarian Experience in the 1970s," *Journal of Comparative Economics*, Vol. 6, pp. 130-47.
- IMF (1996), *World Economic Outlook*, October.
- Jackson, J., J. Klich, K. Poznaska and J. Chmiel (1999), "The Continued Importance of Business Creation: The Dynamics of the Polish Economy 1990-1996," *RECESS Research Bulletin*, Vol. 8, No. 1, pp. 5-40.
- Johnson, S., J. McMillan and C. Woodruff (1999), "Contract Enforcement in Transition," CEPR Discussion Paper No. 2081.
- Kennedy, R. (1997), "A Tale of Two Economies: Economic Restructuring in Post-Socialist Poland," *World Development*, Vol. 25, No. 6, pp. 841-65.
- Kołodko, G. (1989) "Stabilisation Policy in Poland. Challenges and Constraints," Institute of Finance Working Paper No. 3.
- Lane, T. (1992), "Inflation Stabilization and Economic Transformation in Poland: The First Year," *Carnegie-Rochester Conference Series on Public Policy*, Vol. 36, pp. 105-56.
- Marchetti, D. (1997), *Productivity and the Business Cycle, Three Essays on U.S. and Polish Manufacturing*, Garland, New York.

- Mauro, P. (1996), "The Effects of Corruption on Growth, Investment and Government Expenditure," IMF Working Paper No. 96/98.
- Ministry of Economy (1998), *Poland's Report: Industry in 1997*, Warsaw.
- OECD (1996), *Poland-OECD Economic Surveys*, Paris.
- OECD (1998), *National Accounts: Main Aggregates 1960-1997*, Paris.
- Pinto, B., M. Belka and S. Krajewski (1993), "Transforming State Enterprises in Poland: Evidence on Adjustment by Manufacturing Firms," *Brookings Papers on Economic Activity*, No. 1, pp. 213-70.
- Research Centre for Economic and Statistical Studies of the Central Statistical Office and the Polish Academy of Sciences (1999), "New GDP Estimates 1985-1995," RECESS, *Studia I Prace*, No. 263 (In Polish).
- Research Centre for Economic and Statistical Studies of the Central Statistical Office and the Polish Academy of Sciences, and Statistical Office in Katowice (1997), *Gross Domestic Product by Voivodships for 1995: Experimental Calculations*, August, Warsaw.
- Research Centre for Economic and Statistical Studies of the Central Statistical Office and the Polish Academy of Sciences (1994), "Spatial Differentiation of Gross Domestic Product per capita in Poland: 1986-1992," *RECESS Research Bulletin*, Vol. 3, No. 2, pp.3-15.
- Sachs, J. (1993), *Poland's Jump to the Market Economy*, MIT Press, Cambridge, Massachusetts.
- Task Force for Regional Development in Poland (1996), *Regional Development in Poland 1990-95, Diagnostic Report*, Warsaw.
- World Bank (1994), *Poland: Policies for Growth with Equity*, Washington DC.
- Strategy for Poland*, mimeo, Warsaw, June 1994.

