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MEDIUM AND LONG-TERM SCENARIOS OF GROWTH OF THE POLISH ECONOMY AFTER JOINING THE EUROPEAN UNION

The paper presents the assumptions for the medium-term policy simulations and the long-term scenario analyses. It shows the results for the baseline scenario after joining the EU and the alternative scenarios.

Keywords: European Union integration, economic forecast, statistical models, policy simulation, economic scenario

INTRODUCTION

Medium-term forecasts and policy simulations of the economic growth of Poland have now enjoyed a tradition of a few years. The Łódź Institute of Econometrics and Statistics used the W5 model in the early 90's; the forecasts were elaborated and updated twice a year to be presented at international conferences, e.g. at the Project LINK meetings. Over the next years further medium-term forecasts and policy analyses were based on consecutive versions of the W8 model (see: W. Welfe, 1997b; R. Courbis, W. Welfe 1999; A. Welfe 2000). The policy simulations were mainly directed towards studying the likely impact of joining the European Union in contrast to staying outside. Their results were used by the Ministry of Economy engaged in medium-term economic policy programs. Medium-term forecasts and analyses were also built in parallel by governmental agencies and occasionally by the Committee *Poland 2000 Plus* at PAN (see: *Strategia...* 2000; A. Karpiński et al. 1999) Those forecasts used to be elaborated not by means of macro-econometric models but – at best – by means of some accounting identities, which guarantees consistency among basic macro-categories for the purpose of forecasting.

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The analyses elaborated by the Łódź Institute exhibited reasonable acceptance despite some failures in the baseline forecasts, which resulted mainly from the inability to foresee domestic shocks (e.g. a turn to tight monetary policy) or external ones (financial shocks in the Far East and Russia).

All these encouraged the authors to extend the time horizon up to 25 years. The construction of a long-term forecast and scenario analyses required a re-elaboration of equations explaining the changes in economic potential (human capital and R&D) and extension by equations generating technological progress. To this end, a new macroeconomic model of the Polish economy, W8-D, was constructed (W. Welfe 2001; W. Welfe et al. 2002, 2003). The model was built with the intention of meeting the needs of the long-term strategy of economic and social development of the country. The results of the long-term forecast were used to quantify the government's proposals on growth strategy (Board of Ministers, 2000).

The model takes into account the impact of technical progress on capacity output, represented by changes in the total factor productivity (TFP). The endogenization of technical progress followed the lines advocated by the endogenous theory of growth (Welfe et al. 2001). This was executed by means of relating the outlays on R&D and education to expenditures of central and local governments and incomes of the private sector and indirectly to GDP.

The simulation version of the one-sector W8-D model includes 211 equations of which 79 are stochastic. The model is simultaneous and dynamic. Its prologue block contains 22 equations, the simultaneous block has 94 equations, and the epilogue block has 101 equations. There are 8 feedback variables in the model.

The paper presents the assumptions for the medium-term policy simulations and the long-term scenario analyses. It shows the results for the baseline scenario after joining the EU and the alternative scenarios: the optimistic scenario shows the likely impact of both effects of expansive domestic policy aimed at the full absorption of the opportunities offered by the UE and the favourable external conditions. The pessimistic scenario demonstrates the likely results of a failure to absorb the possibilities and funds related to the EU accession.

1. ASSUMPTIONS UNDERLYING MEDIUM AND LONG-TERM ECONOMIC POLICIES

While elaborating the assumptions of the forecasts, and economic analyses, the authors benefited from the projection of the PAN Committee of Forecasting *Polska 2000 Plus* as well as from medium-term projections elaborated both by the Ministry of Economy and the Ministry of Finance. Following those programs, they expect the policy to be focused on promoting growth and exports, and the government to employ all possible measures of fiscal, industrial, and income policies (tax exemptions, subsidies, increased outlays on education, science, and environmental protection) to reach these goals. It is assumed that the introduction of additional means is needed to increase the competitiveness of the Polish economy, especially in small and medium-size enterprises. At the same time, the authors expect the policy of keeping low levels of inflation to be continued, whereas monetary policy will be loosened. However, the positive effects of such steps should be conspicuous after some delay, especially after the implementation of short-term policies aimed at pursuing economic recovery and fighting down the crises in public finances.

Extending the forecast horizon by 25 years makes it possible to more freely determine the feasible socioeconomic strategies. However, a reasonable choice is limited to such strategies that stand good chances of implementation, to strategies that more or less follow the trajectories of growth experienced by the most developed countries.

Let us consider Poland's future as an information- and knowledge-based society. It is dependent upon broadly defined knowledge, including the globalization effects within a broadly understood economic environment (the EU membership). Economic forecasts and analyses must first take into account factors that affect long-term growth, that is, not only technological progress embodied in fixed assets but also human capital and the overall technical knowledge of a society. Demographic factors are treated as exogenous and so are all the characteristics concerning the world economy.

Literature on long-term growth trends in Poland includes (a) the monograph elaborated at the Committee of Forecasting at PAN called *Poland 2000 Plus* (Komitet Prognoz 2000), which outlines not only the growth trends up to the year 2020, but also defines the basic instruments of growth policies ordered by periods (updated by Orłowski, Zienkowski 2002), and (b) *Polska 2025 2000* by Rządowe Centrum Studiów Strategicznych (Government Center for Strategic Research) which extended the analyzed time horizon up to the year 2025.

According to the guidelines summarized in these investigations, the major goals of long-term economic strategies consist of increasing the living standards of society on the eve of the information era in as fast and dynamic a way as possible. This process must be accompanied by continued 4–5% rates of GDP growth over the whole forecasted horizon. For such purposes to be achieved, one has to reduce the unemployment rate to its natural 6–7% level at the end of the period (2020–2025). All these should go together with curbing inflation to a level typical of EU member countries (2–3 percent) around the year 2010. (It happened to have declined to 1% already in 2003). One more important and advisable issue would be to loosen the pressures in the balance of public finance and payments.

2. ASSUMPTIONS FOR THE BASIC FORECAST

The basic forecast assumptions are as follows. According to demographic predictions, within 2001–10 a considerable increase will occur in the labour supply (of 1.4 million, of which 1.15 million will be between 2001–5), whereas in the period 2010–20 we will witness a drop in the labour supply (of 2 million, of which 800 thousand will be between 2011–15), which will continue in the years 2021–25 on a similar scale. On the other hand, the number of people at primary school age will decrease significantly in the years 2001–10, which will result in a drop of people at secondary and tertiary age in the further years (Holzer and Serek 2000, p. 20).

It is assumed that the rate of growth of investment will be higher than that of GDP but the share of investments in GDP will not exceed 30 percent (in current prices), which makes the forecast very different from the PAN scenarios, in both variants of which such shares are close to 40 percent (36–38 percent). The EU accession will be of importance for the development of the infrastructure and inflows of FDI (including greenfield FDI).

Serious steps concerning fiscal, industrial, and scientific policies will be taken to raise the weight of technological progress in economic growth, so that the share of TFP in the total increase of the potential output could reach 50 percent. This will be achieved by: (1) appropriate growth of human capital, which in the model boils down to increasing the ratio of the number of people with higher education to the total number of the working population: and (2) increasing expenditure on education until it reaches 8 percent of GDP in 2025. A rise in domestic R&D outlays is also assumed so that its share in GDP could amount to around 3 percent in 2025. A considerable increase in efficiency of the use of imported capital in R&D is also assumed.

3. OUTLINE OF A FORECAST UP TO THE YEAR 2025

The above assumptions, supported by the stability of the tendencies observed so far, have formed the basis for the forecast up to the year 2025.¹ All the calculations have been run by means of the W8-D model of the Polish economy (W. Welfe 2001). The results are summarized in Table 1 below.

The average rate of growth will in general remain high (4% up to the year 2015), initially accelerating in the years 2004–2007, then decelerating (2008–2010) and finally coming back to 4.5–5%.

The increment in investment outlays will be higher, especially in the years 2004–2007 and shows an oscillation around 5.3%. As this rate will be barely higher than that of the GDP, the share of investment outlays in GDP (current prices) will increase up to 29% in 2010 and to 30.4% in 2020, only to remain almost constant later on.

We predict that up to the year 2010 private consumption will be characterized by an increasing tendency up to 2.9% and after 2010 a further increase will take place (from 3% up to 3.6–3.8%), whereas public consumption will oscillate around 2.5% annually.

Real wages increase will grow from 3% in 2006–2010 to 4% by the end of the period, which will be initially accompanied by a slow growth and then by a slight drop in employment. Savings will grow at a faster pace than consumption. As a result, after 2010 final domestic demand will accelerate, reaching 3.9% in the period 2010–2015 and stabilizing at 4% over the next years.

After the year 2005 there will follow a slight decline in the growth rate of capacity output resulting from the decreasing productivity of machinery – to 4% in the years 2006–2015 and up to 3.4% in the last decade of the analyzed period. It should be noticed that the growth in the capacity output within 2010–2025 is only in half by means of augmenting investments and labour force. The remaining 50% result from technological progress represented by TFP, the annual average growth rate of which equals 1.8%.

After accession to the EU, the effective GDP growth will be slightly higher than the growth rate of the capacity output. The ratio of capacity utilization will initially stabilize at 70% only to grow in the last decade to 77%. Due to the high growth rates of labour productivity (3–4% annually after the year 2010), the increase in employment will proceed very slowly. Limited labour supply after 2015 makes it realistic to reduce the unemployment rate from 15% in 2010 to 6% in 2025. However, restructuring Polish agriculture might blur this projection.

We expect the situation in foreign trade after joining the EU to undergo a crucial improvement thanks to the increased competitiveness of the Polish commodities. We do not report here data which is comparable to earlier periods because after Poland's accession to the EU over two-thirds of Polish exports will be internal flows between Poland and the EU member countries. The same applies to all the components of the balance of payments. However, it is worth mentioning that under full comparability, both the trade and current account balances would become positive at the end of the analyzed period.

After accession to the EU the inflation rates will be low, converging to the EU average, amounting to 2% a year in the final periods. Money supply will be growing proportionally to the rate of growth of GDP measured in current prices. Credit supply will be characterized by the growth rates sufficient to cover the expected investment demand with real interest rates oscillating around 5 percent. The state budget deficit will be considerably high up to the year 2020 which is mainly caused by public debt servicing. We expect a state budget surplus to appear around the year 2020.

4. ASSUMPTIONS FOR THE ALTERNATIVE SCENARIOS

Scenario analyses can be built for many alternative aims that might reflect strategies of the future economic development of the country. In the past such scenarios were constructed on the basis of the W5 model of the Polish economy (see: W. Florczak et al. 1994) and more recently – on the basis of the W8 model (see: W. Welfe 1997a, 1997b, 1998, 1999a) to investigate the possible effects of Poland's accession to the EU. One should also mention numerous studies by K. Barteczko and A. Bocian (e.g. 2000) and analyses by the Poznań group (Z. Czerwiński et al. 1998). In addition we have to consider the presented monograph by the PAN Committee *Polska 2000 Plus* (see: *Strategia...* 2000) updated by W. Orłowski, L. Zienkowski (2002) as well as the KBN investigation (A. Kukliński 2001). A comparison of the results obtained by different authors can be found in our study (W. Welfe 2002).

Two scenarios: optimistic and pessimistic based on the W8-D model are presented below.

In the *optimistic* scenario we have assumed more favourable (compared to the baseline forecast) external factors conducive to export expansion and inflows of FDI. There will follow a considerable improvement in the technological level of domestic production caused by far-reaching restructuring of the economy, a more effective absorption of technical knowledge and increased competitiveness of the economy as a result of expansive policy after EU accession.

All this is going to be translated into the structure of the model by:

- increasing investment outlays by 4 percentage points; after the year 2010 – by 2 percentage points;
- increasing the growth rates of exports by 2 percentage points over the whole simulation horizon;
- increasing by one and a half the elasticity of absorption of technological knowledge via imported R&D.

The *pessimistic* scenario assumes failures in economic policy after Poland's accession to the EU. Tensions in the state budget caused by the growing costs in implementing the socio-economic reforms and the necessity to service the foreign debt will decelerate the outlays on investments, on education and R&D and lower the absorption of EU funds. In the pessimistic scenario the above outlays will remain at the present low levels.

As a result, we have introduced the following alterations into the model:

- decline in investment outlays by 2 percentage points to the year 2010;
- decline in the growth rates of exports by 1 percentage point.

In addition, in the first ten-year period we have assumed a stagnation of the ratio measuring the share of outlays on education (both basic and higher) in GDP and a minor growth in the ratio of outlays on R&D to GDP (from 0.83% in the starting year to 0.95 % in the year 2010).

The economic slowdown observed at the turn of the years 2001 and 2002 might hold in some further years because of the worsening of external factors, continuation of tight monetary policy and inefficiencies in public administration.

Outcomes of the scenario analyses are reported in Table 1 below. It contains information about average annual rates of growth (if not indicated otherwise) of major macro variables along with deviations from the baseline forecast laid out by five-year periods (or at the end of a five-year period).

Table 1

Five-year growth rates of the Polish economy in the years 2001–2025 (constant prices 1995) and percentage deviations from the baseline solution; based on the W8-D model

Category		Years					
		Scenario	2003–2005	2006–2010	2011–2015	2016–2020	2021–2025
1	2	3	4	5	6	7	8
Domestic final demand	% rate of growth	Opt.	6.2	5.2	5.1	5.1	5.1
		Prog.	4.8	3.5	3.9	4.0	4.0
		Pes.	3.4	2.8	3.0	3.5	3.2
	% deviation; end of period	Opt.	6.9	15.8	22.6	29.3	36.4
Pes.		-6.3	-9.3	-13.0	-15.2	-18.1	
Private consumption	% rate of growth	Opt.	4.9	3.5	3.8	3.9	3.5
		Prog.	4.0	2.9	3.4	3.8	3.6
		Pes.	3.0	2.3	2.6	3.4	2.8
	% deviation; end of period	Opt.	3.0	5.6	8.0	8.9	8.4
Pes.		-3.5	-6.4	-10.0	-11.5	-14.6	
Public consumption	% rate of growth	Opt.	3.0	3.1	3.2	3.3	3.3
		Prog.	2.6	2.5	2.5	2.5	2.5
		Pes.	2.0	2.2	2.2	2.5	2.4
	% deviation; end of period	Opt.	1.4	4.1	7.6	11.5	15.9
Pes.		-1.1	-2.7	-4.2	-4.7	-4.3	

Table 1 continued

1	2	3	4	5	6	7	8
Gross investments	% rate of growth	Opt.	11.0	9.0	7.4	7.1	7.3
		Prog.	7.0	5.1	5.4	5.1	5.3
Pes.		2.7	4.4	4.4	4.2	4.4 ^b	
Gross investments (% share in GDP)	end of period	Opt.	19.5	43.6	57.8	73.5	90.3
		Prog.	-15.5	-18.3	-22.4	-25.5	-27.9
Pes.		30.5	35.5	37.8	38.1	37.7	
Exports	% rate of growth	Opt.	27.4	28.9	30.2	30.4	30.5
		Prog.	24.3	26.4	27.6	27.7	28.2
Pes.		11.3	9.8	9.59	9.7	9.5	
Imports	% rate of growth	Opt.	9.3	7.8	7.59	7.4	7.5
		Prog.	7.3	6.8	6.59	6.7	6.5
Pes.		9.5	20.0	31.62	45.7	59.8	
Net exports (% share in GDP)	end of period	Opt.	-5.5	-8.8	-13.00	-16.2	-20.0
		Prog.	10.4	8.9	8.3	7.3	6.8
Pes.		8.6	6.7	6.7	6.4	6.2	
GDP	% rate of growth	Opt.	7.1	6.4	6.4	6.1	5.8
		Prog.	9.1	20.4	29.7	35.5	38.9
Pes.		-6.3	-8.1	-9.5	-10.7	-12.4	
Potential GDP	% rate of growth	Opt.	-6.9	-5.2	-1.8	0.1	1.0
		Prog.	-7.2	-6.0	-4.4	-1.6	2.8
Pes.		-6.4	-5.7	-4.4	-4.8	-1.4 ^b	
Capacity utilization ratio	end of period	Opt.	6.4	5.3	5.6	6.6	7.2
		Prog.	4.8	3.7	4.1	4.5	4.8
Pes.		3.4	2.7	2.9	3.6	3.6	
Fixed assets (machinery and equipment)	% rate of growth	Opt.	7.0	15.4	23.3	35.6	51.6
		Prog.	-5.4	-9.8	-15.1	-18.9	-23.7
Pes.		6.5	5.4	6.2	5.9	6.5	
Gross investments	% rate of growth	Opt.	5.1	4.1	4.1	3.4	4.1
		Prog.	4.0	2.5	2.3	2.3	2.4
Pes.		7.0	7.8	19.0	33.5	50.2	
Gross investments (% share in GDP)	end of period	Opt.	-5.2	-11.9	-19.2	-23.6	-29.1
		Prog.	75.4	75.5	73.1	75.2	77.4
Pes.		70.7	70.6	70.6	74.1	76.7	
Exports	% rate of growth	Opt.	70.5	72.4	74.2	78.7	82.6
		Prog.	7.3	5.6	7.0	6.8	6.6
Pes.		5.6	3.4	4.1	4.3	4.4	
Imports	% rate of growth	Opt.	3.7	1.8	2.7	3.1	3.5
		Prog.	2.8	13.5	30.3	47.2	63.9 ^b
Pes.		-3.5	-10.6	-16.5	-21.2	-24.7 ^b	

Table 1 continued

1	2	3	4	5	6	7	8
Employment	% rate of growth	Opt.	1.4	0.8	0.6	-0.6	0.1
		Prog.	1.3	0.8	0.5	-1.0	0.1
		Pes.	0.7	1.1	-0.4	-0.5	-0.3
	% deviation; end of period	Opt.	0.5	0.6	1.0	2.6	3.3
	Pes.	-3.2	-1.0	-4.3	-2.4	-3.2	
Total factor productivity	% rate of growth	Opt.	1.67	2.20	2.42	2.74	3.08
		Prog.	1.66	1.98	1.82	1.74	1.82
		Pes.	1.00	1.05	1.09	1.00	0.81
	% deviation; end of period	Opt.	0.02	0.89	3.78	8.71	15.47
	Pes.	-2.4	-6.38	-9.71	-12.91	-17.04	
Domestic outlays on R&D	% rate of growth	Opt.	17.0	16.2	8.6	8.6	8.4
		Prog.	15.1	14.5	6.5	6.7	7.1
		Pes.	4.0	4.0	5.0	5.0	5.0
	% deviation; end of period	Opt.	8.8	17.0	29.1	40.8	50.2
	Pes.	-37.0	-61.8	-64.3	-67.0	-70.1	
Foreign outlays on R&D	% rate of growth	Opt.	7.1	7.1	7.1	7.1	7.1
		Prog.	7.1	7.1	7.1	7.1	7.1
		Pes.	7.1	7.1	7.1	7.1	7.1
Labour productivity	% rate of growth	Opt.	5.0	4.5	5.0	7.2	7.2
		Prog.	3.7	2.9	3.6	5.5	4.8
		Pes.	2.8	1.6	3.2	4.1	3.8
	% deviation; end of period	Opt.	6.3	14.5	22.1	32.2	46.7
	Pes.	-2.9	-8.9	-11.4	-16.9	-21.2	
Human capital per employee	% rate of growth	Opt.	0.47	0.19	0.13	0.17	0.19
		Prog.	0.44	0.17	0.13	0.12	0.12
		Pes.	0.40	0.12	-0.02	0.00	0.00
	% deviation, end of period	Opt.	0.21	0.41	0.47	0.64	0.95
	Pes.	-0.14	-0.03	-0.70	-1.34	-1.93	
Unemployment rate (%)	end of period	Opt.	16.8	14.3	7.7	3.9	3.1
		Prog.	17.2	14.9	8.6	6.3	6.2
		Pes.	19.9	16.7	12.5	8.6	9.2
Real average wages	% rate of growth	Opt.	5.2	3.9	2.8	2.0	1.6
		Prog.	4.4	3.1	2.8	3.9	4.1
		Pes.	2.4	1.5	3.0	3.8	3.4
	% deviation, end of period	Opt.	4.0	8.0	8.6	0.5	-11.3
	Pes.	-8.2	-13.6	-13.6	-13.3	-16.7	

Table 1 continued

1	2	3	4	5	6	7	8
Real household incomes	% rate of growth	Opt.	6.2	4.9	4.1	3.6	3.6
		Prog.	5.3	4.1	3.6	3.6	4.0
		Pes.	3.2	3.2	2.6	3.2	2.7
	% deviation, end of period	Opt.	4.2	8.5	11.3	11.5	10.1
		Pes.	-9.2	-9.8	-14.1	-15.8	-20.5
GDP deflator	% rate of growth	Opt.	2.1	3.6	2.8	2.9	2.9
		Prog.	2.0	2.3	2.5	2.3	2.5
		Pes.	2.4	4.2	4.7	5.1	4.7
	% deviation, end of period	Opt.	1.4	6.3	8.5	11.1	13.8
		Pes.	2.0	5.5	17.5	34.0	49.5
Consumer deflator	% rate of growth	Opt.	2.2	3.8	2.9	3.1	3.4
		Prog.	2.1	2.8	2.7	2.2	2.4
		Pes.	2.5	4.6	4.7	5.1	4.8
	% deviation, end of period	Opt.	0.9	4.6	6.0	10.1	15.8
		Pes.	2.0	5.1	16.0	32.5	47.9
Exchange rate (USD/PLN)	end of period	Opt.	4.3	4.7	4.6	4.4	4.2
		Prog.	4.2	4.5	4.4	4.3	4.2
		Pes.	4.1	4.7	4.9	5.2	5.4
Current account balance (% share in GDP)	end of period	Opt.	-5.4	-4.0	-1.6	-0.2	0.5
		Prog.	-5.7	-4.6	-3.4	-1.4	1.6
		Pes.	-5.2	-4.5	-3.4	-3.5	-1.2
State budget balance (% share in GDP);	end of period	Opt.	-4.5	-3.0	-0.6	-0.7	-0.8
		Prog.	-5.0	-2.8	-0.2	0.1	0.2
		Pes.	-6.0	-3.0	-0.1	-0.2	-0.3

Note: Opt. – optimistic; Prog. – baseline forecast; Pes. – pessimistic; the rows entitled "per cent deviation, end of period" show the per cent deviations from the baseline forecast at the end of the forecasting period i.e. the last year within the particular five year period, for instance the year 2025 for the period covering 2021–2025

Source: own calculations

5. OUTCOMES OF THE OPTIMISTIC SCENARIO

As a result of the above presented assumptions, the rates of growth of GDP will exceed 6% on the eve of Poland's accession to the EU, then they will decline to 5% only to increase again to 7%. In the whole period under consideration the average rate of the GDP growth will amount to 6%, which will ensure more than the quadruple of GDP (4.2). The GDP of 2025 would be more than a half bigger than that in the baseline forecast.

Particular components of the final demand are growing at respectively higher pace than in the baseline. Investment outlays increase initially at 11–12% rates in the first ten-year period, then decline to 8.6% in 2010 and later on oscillate around 7%. The share of investments in GDP will rise all the time exceeding 38% in the last ten years of the simulation. Thus, the level of gross investments in 2025 would be more than 90% higher than the baseline. The rates of growth of private consumption – after acceleration in the first ten-year period – would oscillate around 3.5–4%, which would guarantee a moderate – as compared to the baseline forecast – 8–9% increment in the last ten years of the simulation.

Capacity output would exhibit a slightly slower increase than GDP, the only exception being the years 2009–2015, which would raise the rate capacity utilization to 77%. The average growth rate of potential GDP would equal 5.8%, which over the whole analyzed period would mean more than its quadruple value (4.1). As a result, the capacity output of 2025 would be then one and a half as big as in the baseline forecast.

The sources of the increments in potential output would be, on the one hand, investments leading to the accumulation of fixed assets (initially this would account for 60% of its growth, then for 50%) and, on the other hand, total factor productivity, whose share would increase from 40% to 50%. The rates of growth of TFP would grow regularly from 1.3% in the starting year, 2.2% in the year 2010, to 3% in the last years of the simulation. This would be related mainly to the assumed efficiency increase of the cumulated outlays on R&D, especially foreign R&D.

Due to the fast economic development and also owing to a decline in labor supply, the unemployment rate would decrease considerably after the year 2010, reaching circa 4% in 2020 and even 3% in 2025. The rate of unemployment might be, however, much higher if one makes allowances for hidden unemployment in agriculture.

The balances of foreign trade and current account would become positive after 2020. The state budget balance would still remain negative but after the year 2010 it would not be higher than 0.8% of GDP. The rates of growth of inflation after 2010 would oscillate around 2.5–3%, so they would be close to those predicted for the EU.

All in all, the optimistic scenario assures high growth rates of the economy provided intensified investment efforts, which seems feasible as long as there occurs a considerable increase in FDI. The welfare effects would be adjourned in time, curbing inflation rates remains unthreatened.

6. OUTCOMES OF THE PESSIMISTIC SCENARIO

This scenario brings the continuation of the economic slowdown in the first ten-year period. After a temporary increase (up to 3.5%) in the growth rates of GDP just after Poland's accession to the EU, these rates start diminishing to 2.5–3%. In later years they will slightly rise from 3% to 3.6% at the end of the simulation. All in all, this would give a 3.4% rate for the whole analyzed period, which would mean more than doubling (2.3) of GDP. In such a case, the GDP of 2025 would be smaller by nearly 24% than that of the baseline forecast.

The main reason for such a poor performance would be the assumed decline in the growth rates of investment outlays. They would range between 4% and 5% annually, which means that in 2025 the volume of investments would be 28% smaller than the baseline. Private consumption – after temporary oscillations – would grow initially at good 3% rates then decline to slightly over 2% rates. Consequently, the volume of consumption of 2025 would be smaller than in the baseline forecast by circa 15%.

Capacity output would rise slightly slower than GDP, especially after 2010, reaching an average rate of growth of 2.3% ; still the potential GDP would be about 30% lower than in the baseline. All this would be accompanied by a decline both in the rates of growth of investment outlays and in the total factor productivity; the rates of the latter would decline from 1.1 to 0.8% in 2025. The contribution of TFP in potential GDP growth would barely exceed one-third.

As a result of a decline in the rates of growth of output and despite low rates of growth of labour productivity, the unemployment rate would – after increasing to 20% in 2005 – fall to 15% in 2010 and to 9% in 2025. This drop would be to a large extent caused by the declining labour supply.

The situation in foreign trade and in the balance of payments would worsen in terms of nominal values. However, we would notice some improvement if we pointed to relative measures, i.e. shares of these variables in GDP. In such a case, the current account balance would drop to –1.2% of GDP.

The state budget deficit, after an initial decline (in absolute terms) to 0.1% of GDP in 2015, would start growing again to about 0.3% in 2025.

The rate of inflation will show higher dynamics than in the baseline forecast, oscillating around 4.5–5% a year. Thus, it would be much higher than assumed by the EU authorities and make it problematic joining the EMU.

As a result, the pessimistic scenario results not only in decelerating economic growth and potential but also in sharpening tensions in the labour market, in foreign trade and in the state budget to say nothing of the relatively high (compared to the baseline solution) inflation.

7. SUMMARY OF SCENARIO ANALYSIS

The scenario analyses presented above contain, it seems, realistic suggestions defining the possible boundaries of the future economic development of Poland. The actual performance will most probably lie somewhere in between the analyzed variants and not far from the forecast.

Anyway, the long-term rates of growth after 2010 may oscillate around either 6% or 3% year, ensuring either a 50% increase or 25% drop compared to the baseline solution. Consequently, the volume of GDP per capita in 2025 may either get higher (these outcomes have been obtained assuming 3% rates of growth of the EU), eliminating the economic gap between Poland and the least developed EU member countries (Greece and Portugal) being in 2025 ca 6% higher, than their estimated level or the gap would remain practically unchanged.

A similar picture emerges if we analyze potential GDP. The optimistic variant would lead to raising the role of TFP and an increase of competitiveness. On the other hand, the pessimistic scenario would mean decelerating the restructuring and modernization of the economy.

In the optimistic variant, the rate of unemployment would be declining all the time, reaching its natural level. According to the pessimistic scenario, the unemployment rate would exceed 20% and its further decline could be directly traceable to the drop in the labour supply. The trade and payments balances would in the pessimistic scenario still remain endangered, whereas the optimistic variant would lead to the disappearance of any possible threats in this area.

Finally, in the optimistic variant the rates of inflation will be in line with the EU authorities' recommendations. On the other hand, in the pessimistic scenario the rates of inflation would be much higher than that recommended by the EU authorities, which might question Poland's accession to the EMU.

8. FURTHER RESEARCH AGENDA

We are going to treat the above presented scenarios as a benchmark for our future investigation. Firstly, one should determine the contribution of particular factors in the final outcomes. Secondly, one should build more specific, complex scenarios, e.g. variants taking into consideration the impact of the world cycles, threats stemming from possible financial crisis in the balance of payments, etc. Finally, the elaboration of further possible scenarios induces some enlargement in the existing W8-D model so as to disaggregate the economy to capture modern sectors of services and processing, on the one hand, and modernization of the agriculture, on the other.

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Received: October 2003, revised version: January 2004