10 THE "DOBRESCU" MACROMODEL OF THE ROMANIAN MARKET ECONOMY[*] - 2005 VERSION - YEARLY FORECAST - ACTUALISED SCENARIO

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Macromodel of the Romanian Market Economy[*****]

In this article we present only the economic forecast of the variable of interest; for a description of the model see the previous number of the Journal [4].

The macromodel estimates the short and medium-term economic implications for internal policies and of changes in the international context.

This new version of the Romanian macromodel incorporates the experience accumulated through the utilisation of its previous forms - either experimental (tested during 1991-1995) or operational (developed during 1996-2003). At the same time, it introduces some methodological and information improvements.

The most significant of them is the structural decomposition of the economy, associated with input-output techniques. Output and absorption are divided into: a) agriculture, sylviculture, forestry, hunting, and fishing; b) mining and energy; c) manufacturing industry; d) constructions; e) transport, post and communications; f) trade and services. These can be easily translated into classical three-sector classification: primary (a-b), secondary (c-d), and tertiary (e-f).

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Due to the relatively advanced stage of the transitional processes in Romania, the behavioural functions were accommodated - as much as possible - to the standard relationships. Unlike the versions that used the statistical series beginning with 1980, the present one is based exclusively on information concerning the period 1989-2004. Therefore, we have considered more adequate to name this variant the macromodel of the Romanian market (not transition, as before) economy.

Since the input-output tables are defined yearly, the model contains only annual indicators. They are expressed in denominated local currency (RON). When there were several statistical sources for the same indicator, we preferred the data extracted or derived from national accounts.

The statistical series are relatively short and often fractured (because of the transformation processes of transition). It is known that ADF test of stationarity does not offer sure results in the case of limited number of observations. Nevertheless, the series satisfying it were used, as a rule. The Granger causality test was computed for one, two, and three lags. The simplest methods of estimation were also preferred. The structural breaks in the evolution of some indicators were attenuated by the inclusion of dummies. Obviously, all these circumstances weaken the stability of the econometric coefficients that must be continuously updated. The main relationships are grouped in seven sections: input-output block; labour market, production function; domestic absorption, foreign trade, prices and exchange rate, and interest rate.

Key-words: model, input-output analysis, econometric relationships, simulations

JEL Classification: C5, E2, E6, H6

The scenario of the model

The current scenario was updated with the most recent information of macroeconomic data provided by the National Institute of Statistics, and this is the major source of difference from the previous scenario. The hypotheses under which the forecast was conducted were the same.

The macromodel starts from the statistical data of the previous years and several exogenous indicators, specific to the current year, which are separately established or extracted from other forecasts.

1. Among them, the expected index of disposable income (IY_D^{exp}) plays a leading role.

The experience of Romania showed that, in order to minimise the already produced losses and the future potential losses induced by inflation, the economic agents and trade unions exert a considerable pressure to obtain certain increases in nominal income; many of them are negotiated beforehand and agreed. The probability to fulfil such expectations proved significant. The budget policy (main public revenues and expenditures) is also defined in advance. There are more and more credible methods to approximate the possible transfers from abroad.

The estimation of IY_D^{exp} deserves a special investigation. For the moment, we only consider it as given. Obviously, in the future, the situation may change substantially.

The structure of the macromodel allows to switch to other - eventually more relevant – targets.

2. The public budget is estimated using the following exogenous coefficients: ratio (to GVA) of the value added tax, excises duties and other similar indirect taxes; ratio (to import of goods and services expressed in RON) of the customs duties; ratio (to GDP) of the direct taxes and other revenues (excluding indirect taxes) of the general consolidated budget; share of the sector i in total net indirect taxes, i=1,2,...,6; ratio (to general consolidated budget expenditures) of the government transfers; ratio (to GDP) of other expenditures (excluding government transfers) of the general consolidated budget; ratio (to general consolidated budget expenditures) of the budget subsidies on goods.

Deliberately, the present version of the macromodel contains a compendious structure of the general consolidated budget. Its future improvements will considerably develop this section.

3. The monetary policy is represented by the broad money (M2), submitted to the control of the Central Bank.

4. The international environment is characterised by the following parameters: net incomes and current transfers, billion euros; foreign direct and portfolio investment, billion euros; yearly index of world trade, volume; world trade deflator, SDRs; short-term interest rate in advanced economies.

These and other similar information may be obtained from the forecasts of the international financial institutions and of specialised research centers. As in the case of public budget indicators, the next versions of the macromodel could significantly extend the range of indicators regarding the international context (regional disaggregation, state of the foreign financial markets, etc).

5. The number of population over 15 years (AP) – involved in the determination of labour force – is extracted from the demographic predictions. Finally - again exogenously - the rate of tangible fixed assets depreciation (dfa) is estimated.

A. Computational Hypothesis

1. The exogenous variables were defined according to the following premises:

 a) the inflationary expectations are significantly diminishing in time;
 b) the re-monetization process of the economy continues, but the decrease in the money velocity is induced by the gradual normalization of price dynamics;
 c) the foreign capital inflows are stationary or are increasing moderately;
 d) only the consolidated budget is considered, the revenue and expenditure evaluation coefficients are aligned (in ways which are specific to the macro-model) with the parameters from the last Economic Program for Pre-accession for the 2005-2007. For example, direct taxes and other budget revenues are considered around 19% of the GDP, transfers to the population account for 45.5% of the budget expenditure;
 e) the depreciation in the fixed capital is 0.05, which corresponds to an average period of utilization of 20 years;
 f) the external environment is relatively stable, no possible shocks coming from

this direction were considered, short-term interest rate in advanced economies is considered 0.018, the world trade deflator is around 1.034, and the world trade index, in volume, is 1.045;

g) the projections of the population above 15 years of age are according to the current demographic projections, the population above 15 years is considered in 2007 around 18.1 million people;

The sectoral structure of the net indirect taxes which results from input-output tables was kept in large.

2. The Romanian economy was subject in the 2005-2006 period to some negative influences which have delayed effects of 1-2 years. The current structure of the macromodel is such that the influences are introduced on the basis of expert estimations of the total factor productivity. Therefore, the corresponding function from the system (ITFP) is multiplied by. 0.985 in 2007.

3. The solutions obtained for the interval generate three inertial conditions which require special discussion:

- a significant increase in household consumption at the expense of investments;

- an appreciation of the RON exchange rate;

- a significant increase in the imports of goods and services with the severe deterioration of the trade balance;

These tendencies are inter-related.

There is a possibility that they result, at least partly from the basic function specification as well as the data series used in regressions. At least as plausible is the explanation that the evolutions are indeed the real behaviour of the Romanian economy. In the building of the present scenario using the 2005 version of the macro-model the second assumption is considered true.

From a technical point of view I have done the following adjustments:

3.1. During the entire interval, the household consumption equation was divided by 1.035.

3.2. In the exchange rate equation I have introduced a corrective coefficient which maintains the appreciation of the RON in an economic sustainable period.

The above coefficients were derived by repeatedly solving the model in order to get close to the main indicators from the simulations derived in the Pre-acession Economic Program.

The proposed technique should not be viewed only as a computational exercise. It is motivated by more profound rationale. If the macroeconomic management does not change, the probability of attaining this scenario is reduced. The probability becomes acceptable only in case that strong measures for producing the adjustment of the domestic demand, exchange rate and imports are adopted and become effective. In other words, the coefficients presented in 3.1 and 3.2 should be considered not only as computational ingredients but also as milestones in designing the macroeconomic policy mixed for the period. Both the Government as well as the Romanian National Bank have frequently expressed their readiness to act in this respect.

B. Simulation results

The main indicators of the economic plausible solution of the system are presented in Table 2.

Table 2

2007 Forecast

Indicators	Symbol	2007 Scenario
GDP, current prices, bill. RON	GDP	377.15
GDP index, current prices	IGDP	1.1014
GDP index, constant prices	IGDPc	1.0677
Household consumption index, constant prices	ICHc	1.1748
Gross fixed capital formation index, constant prices	IGFCFc	1.1777
Export of goods and services, bill. euros	XGSE	36.864
Import of goods and services, bill. euros	MGSE	51.164
The deficit of the trade balance (% of GDP)	rNX	-0.12805
Labour force, mill. pers.	LF	10.059
Employment, mill. pers.	E	9.4149
Unemployment rate	ru	0.0641
GDP deflator	PGDP	1.0316
Consumption price index	CPI	1.0395
Exchange rate, RON/EUR	ERE	3.3773
Revenues of the general consolidated budget (% of GDP)	br	0.3182
Expenses of the general consolidated budget (% of GDP)	be	0.3466
The general consolidated budget deficit (% of GDP).	cbb	-0.0284
Money velocity	v	2.8357

Therefore, the reduction in the inflationary expectation induces a compression of the nominal GDP, the growth rate of the real output (IGDPc) is increasing. It is worth mentioning that the main resources of growth are the total factor productivity and the increase in the capital. As expected, the premise for this evolution is a significant desinflation.

With respect to domestic demand, according to the hypothesis adopted, the dynamics of the gross fixed capital formation stays high, while the annual rate of household consumption tends towards 17%. In spite of the correction (mentioned above) introduced in the exchange rate equation, the trade balance deficit remains troublesome (12.8% of GDP). This means that the issue of actively stimulating exports and maintaining import expansions within reasonable limits should be a major preoccupation of Government institutions and the National Bank of Romania.

Bibliography

Dobrescu Emilian, "Macromodel of the Romanian Market Economy (Version 2005)", PHARE Programme RO2003/005-551.02.03 "Strengthening the capacity for analysis, macroeconomic forecast and elaboration of economic policies within the National Commission of Prognosis, the Ministry of Economy and Trade and the Prime Minister's Cabinet" – Romanian Center for Economic Policies; http://www.cnp.ro/SiteNCP.pdf

Dobrescu Emilian, "Integration of Macroeconomic Behavioural Relationships and the Input-Output Block (Romanian Modelling Experience)", Paper presented at the International Conference on Policy Modelling (Ecomod 2006), Hong Kong, June 28-30, 2006, http://www.ecomod.org/files/papers/1564.pdf.

Dobrescu Emilian, *Macromodels of the Romanian Market Economy*, Editura Economică, Bucharest 2006, 326 pgs.

Bianca Păuna, Ion Ghizdeanu, Cornelia Scutaru, Petre Fomin, Corina Sâman: The "Dobrescu" Macromodel of the Romanian Market Economy – 2005 version – Yearly forecast, basic scenario, Romanian Journal of Economic Forecasting, 1/2007.