

Comprehensive Assessment of Fiscal Stability in Ukraine

Dmytro Boyarchuk August 13, 2008



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Agenda



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- Many countries pay particular attention to the issue of fiscal stability
- The key goal of fiscal stability is reduction of public finance vulnerability to various shocks
- So far in Ukraine budget planning is provided for short-term and depends on some situational reasoning
- The project targeted development of a framework for monitoring fiscal risks in Ukraine and preventing possible negative impact of the risks





- There is no unique methodology for estimating fiscal stability
- Many countries have their own experience
- International organizations recommend to apply standard macroeconomic indicators for analysis of situation (public debt, deficit)
- However, as for now there exist researches which propose more accurate instruments for identification of approaching problems in fiscal sector



International experience (continued)



- IMF applies monitoring of financial indicators since for developed countries the indicators are very sensitive to any changes at the economic system
- OECD applies early warning system (leading indicators)
- Contingent liabilities approach
- Cyclically-adjusted balance approach
- Intergenerational fairness indicator



Institutional issues of fiscal stability



- Some countries institutionalized instruments of fiscal stability to use them as important benchmark during budgeting process
- European Commission controls level of budget deficit and public debt
- Great Britain developed Code of Fiscal Stability
- Australia applies balance sheet management for budget analysis



Methodological issues



- Early warning system (leading indicators)
- Definition of crisis
- Thresholds
- Method for probability estimate



Early warning system (probit-logit model)



- Logit distribution and binary dependent variables
- Two definitions of crisis:
 - deviation from the plan in nominal terms (change in %)
 - deviation from the plan in relative terms (% of GDP)
- Variable selection



Early warning system (probit-logit model) (continued)



• Thresholds

	Crisis occurs within the defined time horizon	No crisis occurs			
Indicator issues a signal	A	В			
Indicator does not issue a signal	С	D			

$$\omega = \frac{B/(B+D)}{A/(A+C)}$$
(3)

An alternative way to describe this relationship is:

 $\omega = \beta / (1 - \alpha)$



Where β is Type II error, and α is Type I error.

Algorithm of estimations



- 1. Probit-logit model estimates econometric relations between variables
- 2. Based on the estimated coefficients we generate probabilities
- 3. We use generated probabilities for estimation of optimal threshold
- 4. As soon as we have estimated coefficients and optimal thresholds the early warning system is ready for application



Application of the system



Table 3.1. Interface for table with signaling indicators

	Units	Current	l ad1	Lag2	Lad3	l aq4	l aq5	l ad6
	Critto	observations	Lugi	-~92	Lago	Lagi	Lago	Lago
Real wage index	change, % m/m	1.05	0	0	0	0	1	0
FSTS	change, % m/m	1.02	1	0	0	0	1	0
Industrial output	change, % m/m	1.08	0	0	1	0	0	0
Retail trade	change, % m/m	1.15	1	1	0	0	0	0
Construction	change, % m/m	1.10	0	0	0	0	0	1
CPI	change, % m/m	1.03	1	1	1	0	0	0
PPI	change, % m/m	1.02	1	1	1	0	0	0
NEER	change, % m/m	1.00	0	0	0	0	0	0
REER	change, % m/m	1.00	0	0	1	1	0	0
JPMorgan	change, % m/m	1.03	1	1	1	1	0	0



Indicators' approach



- Indicators' approach coincide with probit-logit method of eraly warning system by (i) definition of crisis and (ii) thresholds estimation
- The difference between methods stems from use of probabilities
- Indicators' approach presumes direct relation between independent variable "crisis" indicator



Estimate results on probit-logit method



- The system provided consistent results
- There is no Type II errors (we observe shocks but the system do not provide signal)
- Increasing probability of negative shock leads to decrease in probabilities for positive shock (and vise versa)
- Sufficient number of signaling indicators for enterprise profit tax (positive and negative shocks)



• Very few signaling indicators for VAT (in particular for negative shocks)