Macroeconometric study of Ukraine's growth and reform

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Abstract

To analyze prospects for Ukraine's economic growth and a program of reforms, we construct two macroeconometric models—high frequency with monthly observations, and low frequency with annual observations. In search of consistent information, we critically examine available statistics including World Development Indicators for Ukraine. We generate several forecasts using the technique of importing key variables from a high frequency solution into the low frequency model, thus incorporating recent changes in economic trends. We simulate the model to perform policy analysis of the effectiveness of restructuring Ukraine's energy sector with raising tariffs and implementing the pension reform.
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1. Introduction

Since gaining independence in 1991, Ukraine experienced one of the steepest recessions among the former Soviet Union countries. To forecast the growth of Ukraine's economy, we construct two macroeconometric models: high frequency (HF) based on monthly observations and low frequency (LF) based on annual observations. We collect information from 1992, the first full year of independence, through 2009. Our main data sources were from Ukraine's State Committee of

Statistics (Ukrstat) and the World Development Indicators (WDI) of the World Bank (WB). We analyze the WDI database and demonstrate that it suffers from significant discrepancies in the values of Ukraine's GDP and its components, acknowledged by the WB staff. We therefore do not use the WDI when relevant Ukrstat data are available.

Since there is no mechanism to force econometric forecasts to deviate from trajectory set by inertia in sample time series in response to ongoing changes in a medium-term forecast period, we employ the solution of the HF model to create such a mechanism, and to eliminate the need for the so-called add factors conventionally used to match forecast values with actual observations. In combining the use of HF and LF models we follow the methodology developed by Klein and Kushnirsky (2005) and elaborated by Klein, Kushnirsky, and Mercado (2008a), Klein, Kushnirsky, and Mercado (2008b). One of the two computational methods suggested by the methodology and employed in this paper is the importation of annualized values of key variables from the HF solution into the LF model. We start applications of models at mixed frequencies by generating an ex-post forecast, in order to assess the predictive ability of the models. We also build a 2011–2015 forecast, to compare it with growth in the preceding five-year period and to use in simulation of the impact of Ukraine's pension reform and raising the efficiency of the energy sector.

The paper is structured as follows. Section 2 analyzes the performance of Ukraine's economy and the provisions of a new government program of reforms. In Section 3 we discuss our data sources and our search for their consistency. Section 4 contains the structures and major equations of the constructed models, describes Ukraine's ex-post and 2011–2015 forecasts, and compares the latter with growth in the preceding five-year period. Section 5 describes policy analysis and performs simulation to assess the effectiveness of reforming the energy sector and the pension system. Section 6 gives the conclusion.

2. Ukraine's economy and new program of economic reforms

Ukraine is relatively rich in such natural resources as mineral deposits, ferrous metals, chemicals, and building materials. The country possesses one of the world's largest areas of fertile black soil; the latter covers two thirds of the territory. It has a developed industrial base, including electronics and information technology. The social fabric, however, has been characterized by deep cultural and religious divisions, entrenched bureaucracy resisting reforms, and a squabbling government.

The following data characterize the transitional decline in Ukraine's production: the country's 2009 GDP was 63%, agricultural production 70%, industrial production 80%, and construction 9% of their respective 1990 levels (*Dzerkalo tyzhnia* No. 49, 2011).[1] The country lags considerably behind Russia in liberalization of trade, privatization, and the formation of self-regulating economic mechanisms. The introduction of a new currency in 1996, the hryvnia (UAH), and its use as an exchange rate anchor contributed to stabilization.

The 1998 financial crisis was a silver lining for Ukraine's transition process. A major factor was a 70% devaluation of the hryvnia. Economic growth accelerated, prompted by favorable external demand and competitive cost structure. The service sector gradually rose in importance, while the

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[1] The low 8.6% for construction may be misleading. In the past, the bulk of industrial construction was undertaken by the military industrial complex, but since Ukraine's independence this is no longer the case. Another factor is that, according to Soviet methodology, annual construction statistics incorporated the so-called *nezavershennoe stroitel'stvo*, that is, incomplete construction projects the scale of which reached staggering proportions.