The Role of Exchange Rate and Price Factors in Profitability Improving in Ukraine

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1. Introduction

The various issues emerge on the stage of overcoming of lingering transition crisis and market economy formation. They are connected with the choice of direction of application of the governmental regulation instruments and methods. Some of the most useful methods are exchange rate and price regulations of the economy. Exceeding government intervention to business activity, budget socialization and political disturbances caused significant deceleration of economic growth in the year 2005, which leads us to think about efficiency of national economic policy and its new goals and priorities. It's irremissible to forget about economic efficiency of the economy on the current stage of economic development in Ukraine. One of the key indicators of economic efficiency is profitability.

The determination of pattern of an influence of exchange rate and price factors on profitability of the economy and the formulation of optimal exchange rate and price policy for improvement of economic efficiency of the economy are the aims of present research.

2. Methodology

There are many approaches to definition of the term profitability. For the purpose of this article, profitability is defined as the ratio of total profit before tax to GDP. In other words, profitability of the economy here means profit share of GDP or total profit-output ratio.

As a key indicator of exchange rate policy here is used comprehensive weighted average measure of exchange rate of hryvnya—nominal effective exchange rate (NEER) that was developed by Hirsch and Higgins (1970) and extended by others (see, for example, Rhomberg 1976). NEER calculates as weighted average of major bilateral nominal exchange rates, with weights based on the trade shares reflecting the relative importance of each currency in the effective exchange rate basket. In other words, that is some average ratio indicates the exchange rate of hryvnya to currencies of the countries—trade partners of Ukraine.

Whereas, wholesale prices create a foundation of profit formation of manufacture which is most controlled division by government, the wholesale price index (WPI) is used here as an indicator of price policy. WPI is calculated as weighted average of three components: internal wholesale prices, export wholesale prices and import wholesale prices. It is considered that a wholesale price index reflects a state of business sector immediately hence WPI is a better indicator of inflation than consumer price index (CPI).

Purposely for determination of influence of considered factors the well-known method of correlation-regression analysis is used in this article.

3. The analysis of influence of exchange rate factors

The revaluation of national currency that was realized by National bank of Ukraine (NBU) in April 2005 demonstrably showed a shift of pattern of government exchange rate policy from steady pegging to US dollar to appreciation of hryvnya. The present step called an animated discussion in various groups of Ukrainian society that was connected with its possible causes and consequences. Among these a fight against inflation, budget implementation, depreciation of savings in foreign currency and losses of exporters, worsen and complicate the conditions of work primarily for the national producers were called often (see, for example, Bereslavska 2006; Herasym et al. 2005; Porokhovshchykov 2005; Sherr 2005; Zholud 2005). At the same time, in our view the debaters neglected the critical point of the present problem. That concerns answers to following questions:

a) How will shift of exchange rate policy is reflected in efficiency of the economy of Ukraine?
b) What exchange rate policy must be followed to implement the gain of profitability of the economy?

These questions are underlined by research, results of which are presented further.

Seeing the value of profitability of the economy depends on various factors, the *NEER* index of hryvnya was considered in the aggregate with a variety of different factors. During the analysis among the aggregate of various factors (more than 30), which can influence the dynamics of the key measures of efficiency of the economy in a varying degree, were selected most significant. As a result of carrying out a correlation-regression analysis were obtained the valid multifactor models described below.

The linear form of the closest of detected correlations indicates a high dependence of profitability of the Ukrainian economy on external factors:

$$\Pi = -28.127 + 1.101NEER + 0.610EXP_1 + 0.502MET \qquad (1)$$

where Π denotes profitability of the economy (dependent variable), *NEER* is quarterly accession rate of *NEER* of hryvnya, EXP_1 is a share of exports in

GDP with a lag of 3 months, *MET* is quarterly accession rate of world metal prices[1].

The power form of corresponding correlation, framed on chain indexes, looks as follows:

$$\Pi = 0.687 \times NEER^{1.253} \times EXP_1^{0.971} \times MET^{0.525} \quad (2)$$

where *NEER* denotes a chain index of the *NEER* of hryvnya, *MET* is a chain index of world metal prices.

Obtained models are valid and adequate. Those assign that in the period of 1999–2005 the dynamics of profitability of the Ukrainian economy in more than 70 per cent was defined by export volume, *NEER* and the dynamics of world metal prices[2], which are external conjunctural and exchange rate factors. The models denote a positive influence of hryvnya revaluation on profitability of the economy. However it is necessary to carry out a more particular analysis to define an optimal exchange rate policy for improving the profitability of the economy, the economic interpretation of its results is developed below.

The decrease and alteration of a pattern of influence of the *NEER* of hryvnya to inverse occurred in the years 2001–2002, when substantial correction the exports growth rate took place after its vigorous growth in 2000 against the background of a shift of pattern of government exchange rate policy from devaluation to stabilization. With the revival of export activity, world conjuncture and with a passage to policy of pegging the hryvnya to the devaluating US dollar by NBU in the years 2003–2004, a correlation between the *NEER* dynamics and profitability of the economy became direct.

There is traced a close positive correlation[3] between the dynamics of *NEER* and profitability during the period from November 2003 up to and including May 2005, which denotes a negative influence of hryvnya devaluation on profitability of the economy. Thereby the nominal revaluation of hryvnya, which was led by NBU in April 2005, must be reflected positively on a profitability of the economy of Ukraine.

Under conditions of an increase of world market prices on metals and other raw materials exported by Ukraine, the devaluation of hryvnya is reflected negatively on economic efficiency as that leads to increase of internal prices on subjects of labour (i.e. raw materials, fuel, inventory materials) and correspondingly to advance in the cost of production of the GDP. The positive effect of devaluation for export branches vastly reduces under their chiefly

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[1] Models (1) and (2) were obtained as result of analysis of 23 quarterly observations for period from 4 quarter of 1999 to 2 quarter of 2005. NBU and IMF (IFS) provide the data. All variables in (1) are in percentage terms.

[2] Metals and metallurgy industry products are the dominant items in merchandise exports of Ukraine.

[3] The correlation coefficient amounts to approximately 0.753.

high energy-output ratio and dependence on imported material resources under the rise of internal prices on fuel to the world price level. Consequently, a necessity of hryvnya revaluation for profitability improving in the same conditions is evident.

In case of downward trend of world conjuncture and fall in world prices on basic items of Ukrainian merchandise exports (mainly raw materials) the devaluation becomes a positive factor, which supports price competitiveness of domestic goods on the external markets and promotes an increase of efficiency of the economy of Ukraine.

Thus, it is advisable to revaluate the hryvnya in prospect if a favourable world market conjuncture on metals and other raw materials persists. In case of fall of world raw material prices, the further revaluation of hryvnya for the purpose of increasing economic efficiency of the economy is inexpedient. The world price stabilization must be accompanied by stabilization of the hryvnya exchange rate.

The same exchange rate policy will permit to optimize the influence of exchange rate factors on profitability of the economy and promote an increase of the latter.

These conclusions are supported by results of other researches in the field of influence of exchange rate policy on a macroeconomic situation in Ukraine (see, for example, Serhiyenko 2006; Honcharuk, Zholud 2006).

As shown in Bereslavska (2007), the currency fluctuations are connected with a price level in the economy of Ukraine. And elasticity of the prices to dynamics of the exchange rate of hryvnya at devaluation of hryvnya considerably above, than at revaluation. It implies that revaluation influence on the level of the internal prices is little, hence it is necessary to consider another important factor of profitability—the price factor.

4. The analysis of influence of price factors

The relations in form of regression models were determined under considering the WPI index in the aggregate with other important factors. The linear form of most valid of those is following:

$$\Pi = 3.926 + 0.042 INV_3 + 1.464 WPI \qquad (3)$$

where INV_3 denotes a quarterly accession rate of permanent investments with a lag of 3 months, WPI is a quarterly accession rate of wholesale prices[4].

Obtained model is valid and adequate. According to its parameters the dynamics of wholesale prices and permanent investments in more than 80% defines the value of profitability of the economy. The model (3) denotes the positive influence of WPI growth to economic efficiency of the economy.

[4] Model (3) was obtained as result of analysis of 16 quarterly observations for period from 3 quarter of 2001 to 2 quarter of 2005. NBU and IMF (IFS) provide the data.

At the same time, the efforts of the Ukrainian government to restrain an increase of prices on certain goods (i.e. sugar, meat, oil products), produced in a country, by administrative nonmarket methods in the first half of 2005 negatively told on the profitability level and even led to commodity shortage. Therefore, it seems that the application of hard regulation instruments for price administration under conditions of absence of monopolies is inadmissible in terms of effective economic development.

5. Conclusions

On the ground of premises may be concluded the following resume.

a) The level of profitability of the economy of Ukraine vastly defines by external conjunctural, price and exchange rate factors.
b) Among the other factors an influence of nominal effective exchange rate and wholesale price index to profitability of the economy of Ukraine is the most.
c) It is advisable to revaluate the hryvnya in prospect under the saving of a favourable world market conjuncture on metals and other raw materials. In case of fall of world raw material prices, the further revaluation of hryvnya for the purpose of increasing economic efficiency of the economy is inexpedient. The world price stabilization must be accompanied by stabilization of the hryvnya exchange rate.
d) The pegging of wholesale prices by application of hard regulation instruments for price administration under conditions of absence of monopolies is inadmissible in terms of effective economic development.

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Abstract **The Role of Exchange Rate and Price Factors in Profitability Improving in Ukraine**

The influences of nominal effective exchange rate of hryvnya and wholesale price index changes to value of profitability of the economy is defined by application of correlation-regression analysis. The recommendations about optimization of currency and price policy for improvement of economic efficiency of the economy of Ukraine are framed.