

Section 27: Economic cybernetics

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**DEFINING A ROLE OF SOCIAL FACTORS IN A COUNTRY
ECONOMIC DEVELOPMENT**

Growing women's role in society is reflected in the expansion of their participation in social processes and business. Increasing of women's intellectual and volitional activity leads to growth of their competitiveness in the labour market, which stimulates gender asymmetry alignment. In general, gender equality contributes to human capital and improves labour productivity. Well educated woman can participate in more economically valuable activity and expand the market competitiveness. On the other hand, she understands the necessity of investing in the human capital of her children. That forms the basis for replication of highly efficient human resources. Thus, gender equality appears to be an important factor of economic growth [1].

In the last decades, the proportion of women involved in the company management in the top and middle levels increased significantly. In 2015, each fifth woman in the world on average held the position of top manager. In Latvia that parameter was 32%, Romania, Poland, Hungary, Bulgaria, Lithuania, Estonia, Ukraine and China - 18-25%. The lowest percentage of women in top management was observed in the Middle East and North Africa. The proportion of women – co-owners of the business – also increased. Remarkably, the highest positions by this indicator were occupied by China (64%), Sweden (53%),

Hungary and Romania (47%). In Turkey, that parameter received 25%, and in India - 11% [2].

Recently, however, new risks of gender asymmetry appear. Significant changes in current business models are caused by the destruction of familiar methods of production, consumption, logistics and marketing. That leads to changing the configuration of the established labor market. As a result the growing gender gap in traditionally "female" spheres is observed. In the same time new employment opportunities open in areas with generally high men proportion. These trends cause the need to consider gender factors in creating the social and economic forecasts of society development. However, despite the objective need, the gender factor is not enough investigated. So the aim of this work is to identify the relationships between gender inequality indicators and economic growth of the country.

The gender asymmetry is recently discussed quite often. Numerous reports on gender issues are published on a regular basis. Among them worth mentioned is «The Global Gender Gap Report» by World Economic Forum. The research covers 145 countries differentiated by Gender Gap Index. The top five rankings include Iceland, Norway, Finland, Sweden and Ireland. Ukraine occupies 67 position [2].

The United Nations publish «Human Development Report» where calculate two indices: Gender Development Index and Gender Inequality Index. Top-5 countries by the last index are Slovenia, Switzerland, Germany, Denmark and Austria. Ukraine ranks 57 among 188 countries [3]. A similar index for the EU countries is calculated by the European Institute for Gender Equality [4].

International Labor Organization presents a report «Women in Business and Management» that contains data about the women business activity in the world [5]. OECD Development Center estimates Social Institutions and Gender Index evaluating the level of women's discrimination in 160 countries. It should be noted that Ukraine has enough low SIGI index [6].

The abovementioned reports contain mainly statistical information on the gender asymmetry not taking into account the economic component. However, from time to time appear the works that try to calculate the economic effects of gender inequality. Among them the research by Ward J., Lee B., Baptist S., Jackson H. (2010) that investigates mainly the influence of demographic gender factors on the country economic growth [1]. This stipulates conducting the own research based on econometric methods, and aimed at identifying the relationship between gender inequality indicators and economic growth of the country.

For that purpose we have chosen for the analysis 16 indicators combined into 3 groups. The first group of factors involved the social and cultural indicators by G. Hofstede: power distance, individualism, masculinity, uncertainty avoidance, long-term orientation and indulgence (on a scale of 0 to 100) [7]. The second group of factors characterised the women business activity: the share of companies with women in top management; the share of companies whose owners are women; the proportion of women in senior and middle management levels; the proportion of women among all managers in the business [2].

The third group of factors reflected indicators of Gender Gap Index (on a scale from 0 to 1, where 1 is full gender equality): economic participation and opportunity; educational attainment; health and survival; political empowerment. Finally, the last two factors are the mean age of female at marriage and GDP (PPP) per capita in USD [8].

So, the purpose of our research was to identify factors that are very likely to determine the economic growth of society. For this goal, regression was used to determine the econometric relationships between the level of GDP per capita in PPP and a certain set of social and cultural factors.

Results. The analysis showed that not all the factors have a significant impact on selected economic indicators. A stepwise procedure of variable

selection was used to determine the set of the most important factors for modeling the GDP (PPP) per capita. After all the necessary tests the best regression can be seen in the following form:

$$y_i = -23508 + 333.33 \cdot x_{1i} + 211.44 \cdot x_{2i} - 621.92 \cdot x_{3i} + 70283.21 \cdot x_{4i}, R^2 = 0.92, \text{ where}$$

y - GDP (PPP) per capita in country i , USD;

x_1 - level of individualism by G.Hofstede in country i ;

x_2 - level of indulgence by G.Hofstede in country i ;

x_3 - share of women among managers in country i ;

x_4 - index of economic participation and opportunity in country i .

All factor coefficients are significant, the model is adequate. It accurately explains how GDP per capita in the country depends on the selected parameters. In particular, the growth of individualism in the country by 1 point contributes to higher GDP per capita at 333 USD. Increase in the level of indulgence by 1 point leads to a higher level of GDP per capita at 211 USD. At the same time, the growth of number of women in management positions does not contribute to the enrichment of the country. On the contrary, each additional percentage of women in top-management takes away 622 USD from GDP per capita. At last, it is extremely important to mention the index of economic participation and opportunity in the country: each increase of the mentioned index by 0.01 point leads to the growth of GDP per capita at 702 USD.

It's also interesting to study how each of the socio-cultural indicators is linked to GDP per capita in the country. Fig. 1 shows the structure of the four social components in comparison with the country GDP per capita.

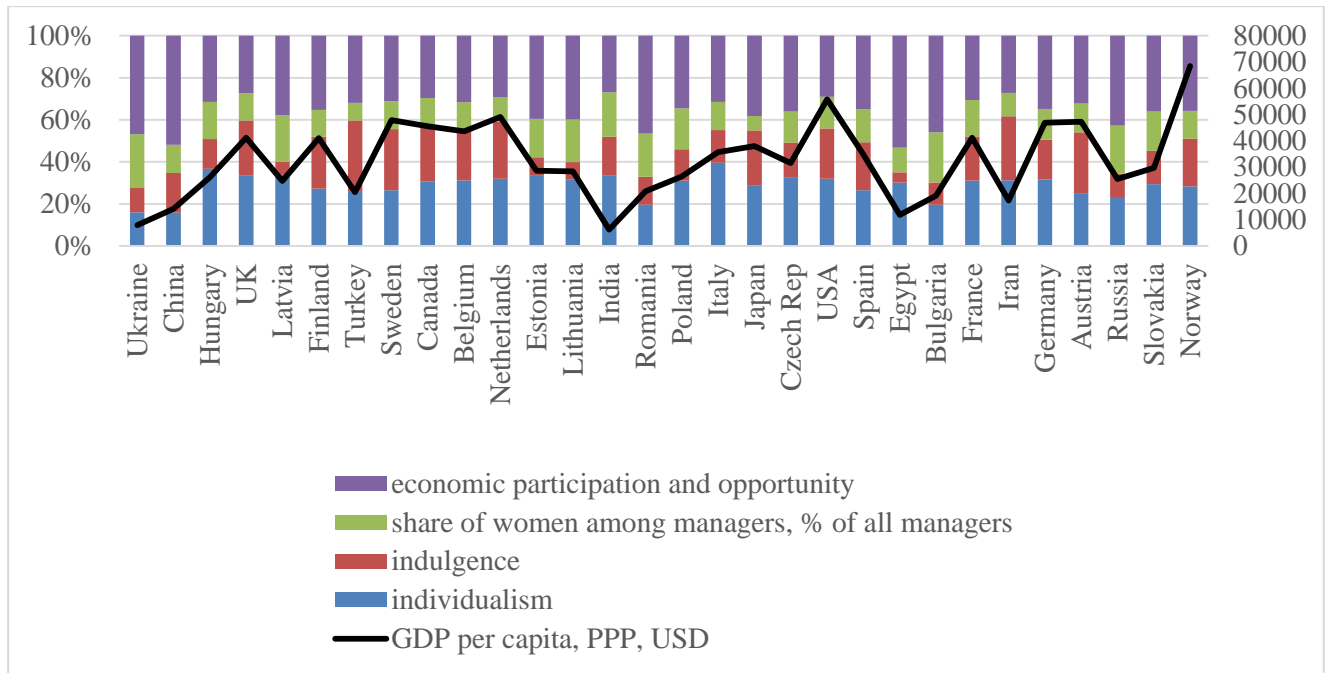


Fig. 1. Structure of socio-cultural indicators and GDP (PPP) per capita, USD

Source: author's calculations based on [2; 5; 7; 8]

Furthermore, based on the obtained model we calculated a value of a sample regression function that shows forecasted level of GDP per capita determined by 4 socio-cultural indicators. For example, in Ukraine it should be 15193.5 USD, although the real value is almost two times less (7970.75). At the same time for Lithuania the real and calculated GDP are almost the same (29,089.39 and 28,359.10 USD respectively). Similar calculations were done for all the considered countries. As a result we calculated the coefficient of country gender and socio-cultural potential exploitation, which shows the deviation between the real and calculated GDP:

$$K_i = \frac{\hat{y}_i}{y_i}, \quad \text{where}$$

y_i - GDP (PPP) per capita in country i, USD;

\hat{y}_i - GDP forecasted by regression.

All the coefficients are distributed in the interval from 0.52 (Ukraine) to 1.31 (Norway) and show how the country uses its socio-cultural and gender potential. Based on the nominal value of the coefficient we arranged all

countries by groups. The first group includes countries for which coefficient is less than 0.80. These countries are characterized by relatively wide shade economy (Ukraine, China, and Hungary) and underestimated level of living. The second group includes countries with coefficient from 0.8 to 0.9 (Great Britain, Latvia, Finland, Turkey, and Sweden). The third group comprises countries that have a ratio of 0.9 to 1: Canada, Belgium, Netherlands, Estonia, Lithuania, India, and Romania. The fourth group of countries is characterized by slightly overstated level of GDP per capita. For them, the coefficient is between 1 to 1.1: Poland, Italy, Japan, Czech Republic, and USA. The fifth group of countries has a coefficient between 1.1 to 1.2: Spain, Egypt, Bulgaria, France, Iran, and Germany. Finally, four countries in the seventh cluster have GDP strongly overvalued in respect to the model level (coefficient greater than 1.2): Austria, Russia, Slovakia, and Norway. These countries fully exploit their socio-cultural and gender potential.

Finally, for a better understanding of country differentiation a special matrix was built. It investigated the relationship between the level of GDP per capita and the achieved coefficient of socio-cultural and gender potential exploitation. All countries that have GDP per capita less than 20 thousand USD were distributed in the first group. Countries with GDP per capita between 20 and 40 thousand USD went to the second group. The third group contained countries with GDP per capita above 40 thousand USD. Similarly, countries with a coefficient less than 0.9 went to the first group, from 0.9 to 1.1 – to the second, more than 1.1 – to the third. Thus, countries with low coefficient do not sufficiently use the potential formed by social, cultural and gender spheres. As a result, their level of economic development is lower in comparison with other countries. Middle and high values of the coefficient indicate that countries efficiently exploit their gender and cultural potential. As a result, such countries have zero or positive difference between the real and calculated by regression GDP per capita (see. Fig. 2)

Coefficient of country gender and socio-cultural potential exploitation	High	Egypt Iran Bulgaria	Russia, Slovakia	France Germany Austria Norway
	Medium	India	Romania Poland Lithuania Estonia Czech Rep Italy Japan	Belgium Canada Netherlands USA
	Low	Ukraine China	Latvia Hungary	Finland UK Sweden
		Low	Medium	High
		GDP (PPP) per capita		

Fig. 2. Clustering of countries

Source: author's calculations based on [2; 5; 7; 8]

Fig. 2 shows that Ukraine is among countries with low coefficient and GDP per capita. Country profile is formed by low level of individualism, indulgence and women political empowerment, average economic activity, and early age of marriage. That means that

avoidance of the gap between real and potential economic growth requires increase in the level of individualism and indulgence, stimulating wider participation of women in political life and reviewing priorities for career and marriage.

Conclusions. The study showed that the economic development of society is significantly associated with socio-cultural and gender factors. The paper discusses various social parameters (socio-cultural indicators after G. Hofstede, indicators of women business activity in the society, etc.). It was revealed that at least some of these parameters significantly correlate with the level of GDP per capita. In particular, it is shown that the rise of individualism in the country by 1 point contributes to higher GDP per capita at 333 USD, indulgence - at 211 dollars USD. At the same time, the growth of number of women in management positions does not contribute to the enrichment of the country. On the contrary, each additional percentage of women in management takes away 622 dollars USD from GDP per capita. Finally, index of economic participation and opportunities in the country plays an important role: each increase it by 0.01 point leads to the growth of GDP per capita at 702 USD.

The important role of the identified factors indicates the necessity to encourage change in the mentality of the Ukrainian people, significantly increasing the level of individualism. Obviously, it is necessary to promote

competition in various spheres of life. The relationship between socio-cultural figures indicates that the growth of individualism and indulgences will increase the participation of women in economic and political life of society, which in turn leads to higher living standards. The country should also stimulate the review of priorities concerning career and marriage: the mature family is able to contribute to the welfare of the society more significantly.

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