

CONSUMPTION FUNCTION IN THE WESTERN BALKANS COUNTRIES

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Abstract

In this paper relationship between consumption and income is examined in the Western Balkans countries in period 2005-2014. The relationship is explored in form of the Keynesian consumption function structured as a simple regression equation in which variations in consumption are explained by changes in income. Parameters obtained from the regression equation have signs in accordance with the standard economic theory. GDP (used as a proxy for income) has a positive and significant impact on private household consumption. The Hausman and the Breusch-Pagan Lagrangian test are also done in order to decide between usage of random or fixed effect techniques, and after that between random effect and ordinary least square techniques. Marginal propensity to consume appears to be less than average propensity to consume (APC) implying a decrease in APC through time. Consumption expenditures of this group of countries conform to models based on the Keynesian consumption function.

Household consumption expenditures are estimated for period 2015-2017 by usage of the World Bank projections and the resulting figures predict an increase in consumption.

Policy recommendation from the model used in this paper is that economic growth could be boosted by reducing the factors that influence consumption such as taxes.

Keywords: consumption function, marginal propensity to consume, gross domestic product

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Introduction

The lion's share of GDP in each country belongs to consumption. Bogovic (2002) argues that personal consumption participates with more than 60% in the total world production.² Consumption can be a driving force of a country's economic growth considering its multiplier effect on the level of GDP. Countries striving to boost their growth in the short term and to induce development in the long term, without an increase in government expenditures and running budget deficits, need to increase their aggregate consumption. In Keynesian economics, the level of aggregate demand in economy is considered as determining factor in thinking of business cycles and its fluctuations. These two aspects, among others, bring about studying of consumption gets research relevancy.

Keynesian theory, beside aggregate consumption, also focuses on concepts such as: the investment function, the demand for money and supply of it, and the mechanisms for determining the movement of prices and wages (Modigliani, 1986). However, the consumption function still remains among the most prominent concepts of the Keynesian theory to the extent that some authors (Williams, 1957) suggest that consumption function is at the essence of Keynesian economics.³

Keynes in his well-known book (2007, p. 87) argues: "The fundamental psychological law, upon which we are entitled to depend with great confidence both *a priori* from our knowledge of human nature and from the detailed facts of experience, is that men are disposed, as a rule and on average, to increase their consumption as their incomes increase, but not by as much as the increase in income." This relationship is later on named the consumption function. Human nature and psychology are in the realm of human sciences. In this paper *facts of experience* are examined in more detail on a group of countries.

There are some factors that can cause disruption of the functional relation between income and consumption. Romer (2000, p. 161) argues that consumption can shift as a result of change in other factors such as consumer confidence. In that special case when the consumer confidence falls the consumption function will be dislocated down, in diagrammatical terms, and consequently consumption for a given level of disposable income might be lower than before. Authors also discuss other factors that can cause shifting of the consumption function such as: changes in interest rates or in stock market valuations (Nellis & Parker, 2004, p. 76). These and similar factors leading to change position of the consumption function are out of the scope of this paper.

Scientific methodology of Keynes was based on Marshall's teaching, meaning that its main building-blocks were devised with a clear purpose to solve a problem (Backhouse & Bateman, 2006). In that way, his methods were predominantly concrete, sometimes at the expense of abstractness and generality (Hoover, 2006). Practitioners of Keynesian economics "treat the consumption function as fixed, and deduce the effects on the size of

² Similarly, according to data obtained from the World Bank, available for year 2013, total world expenditure on household private consumption was 58% of the total world GDP.

³ This concept was later on challenged by other economic theorists such as Duesenberry (1949) with the relative income hypothesis, Friedman (1957) with the permanent income hypothesis, Ando and Modigliani (1963) with the life cycle hypothesis.

the national income of an increase or decrease in governmental loan expenditure”, (Burns, 1995, p. 407). In the remainder of this section literature review is presented. In the second section, analytical method applied in the paper is introduced. Results of the analysis are given in the third section, and the paper ends with discussion in the fourth section.

1.Literature review and conceptual framework

Williams (1957, p. 274) argues that Keynesian economics is built on two assumptions: “(i) that consumption is dependent on income and (ii) that there is a ‘regular’ or ‘stable’ or ‘normal’ relation between them, such that the consumption function can be derived as a given datum of the system and used as a basis of policy and prediction.”

Bayar & Mc Morrow (1999, p. 5) suggest “that the consumption impact of changes in income depends crucially on the perceptions of consumers as to the transitory or permanent nature of these income changes.” While “the permanent income hypothesis implies that changes in current disposable income affect the consumption only to the extent they affect permanent income”, Romer writes (2000, p. 153), “consumption function implies that they have a large direct effect on consumption.” If taxes and transfer payments are assumed constant “then a change in disposable income is the same as a change in total income, so the consumption function shows the relationship between consumption and total income”, (Hubbard et al., 2012, p. 306).

Blanchard (2013, p. 4) suggests that consumption might depend more on current than on future income in situations when economy is faced with a decline in output and income. Tapsin & Hepsag (2014) having examined household consumption expenditures and income (GDP used as a proxy) in *group of countries* (Eurozone) find a positive relation between variables. Khan et al. (2015) have examined determinants of consumption function. In their research they rely on China and G7 countries and finding that GDP and wealth are the most prominent factors that influence aggregate consumption in the short and long term. Recent studies (e.g. Ezeji & Ajudua, 2015; Vasilev, 2015; Mishra, 2011) have explored the relationship between consumption expenditures and income (or real consumption expenditure and economic growth) *on country level* and have also found positive and significant impact. Vasilev (2015) employing Error-Correction Model has shown that households in Bulgaria in period 1997-2005 behaved in a Keynesian way, meaning that households have based their consumption decisions on current income. Amin (2015) has even tested the Keynesian consumption function among university students, i.e., *on individual level*, and has found that main conjectures of it hold true.

2.Methods

The consumption function is given as a linear function of variables:

$$C = c_0 + c_1 \cdot Y^d \quad (1)$$

where, C stands for the current consumption⁴ and Y^d represents the disposable income. This function, state Miles & Scott (2005, p. 307), relies on a stable relation between current values of consumption and income in an economy. Functional relationship of that kind is also assumed in this paper, *ceteris paribus*. Current consumption expenditure (formerly known as private consumption and nowadays as household final consumption) is a market value of all goods and services, including durables (cars, home appliances, personal computers, etc.), purchased by households.⁵ Since data for disposable income, that is, “the income that remains after consumers have received transfers from the government and paid their taxes” (Blanchard, et. al. 2010, p. 43) are not existent for the Western Balkans countries, nominal GDP is used as a proxy variable.⁶ Equation (1) is estimated by a simple regression model:

$$C_{it} = \alpha + \beta \cdot Y_{it}^d + \varepsilon_{it} \quad (2)$$

Where, i refers to countries⁷ and t refers to time period (2005-2014). According to the economic theory⁸ a positive relationship in equation (2) is assumed between consumption and current income, so β coefficient is expected to be positive and less than unity ($0 < \beta < 1$). Additionally, it is expected also if disposable income is zero then (autonomous) consumption is positive ($\alpha > 0$).

4 All data are in constant 2005 U.S. dollars.

5 It excludes purchases of dwellings but includes imputed rent for owner-occupied dwellings. It also includes payments and fees to governments to obtain permits and licenses. Here, household consumption expenditure includes the expenditures of nonprofit institutions serving households, even when reported separately by the country.

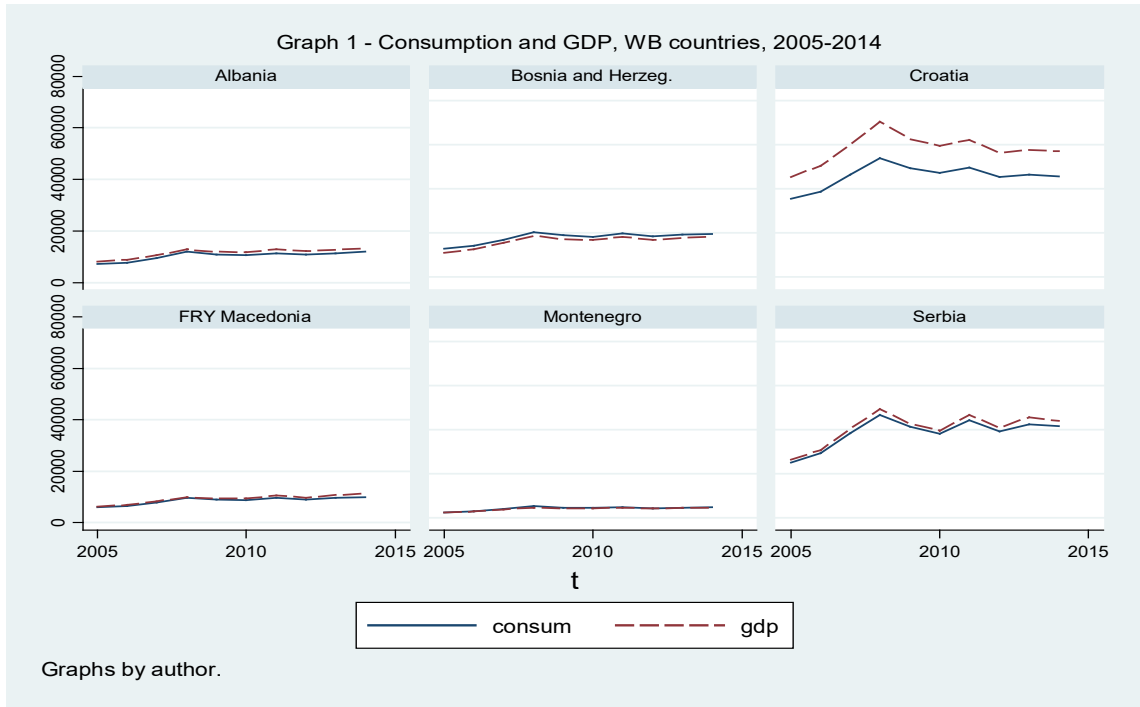
6 Data from: World Bank national accounts data, and OECD National Accounts data files: www.data.worldbank.org (access: 01.02.2016). Dollar figures for GDP are converted from domestic currencies using 2005 official exchange rates. Data for Bosnia and Herzegovina (B&H): www.bhas.ba (access: 01.02.2016). Since data for B&H are expressed in Local Current Unit (LCU), the official exchange rate was used to convert it into US dollars.

7 Geographical scope of this paper covers 6 countries, known as the Western Balkans: Albania, B&H, Croatia, FRY Macedonia, Montenegro, and Serbia. Kosovo is also mentioned as a separate country by the European Commission (EC) (for instance, see: <http://ec.europa.eu/trade/policy/countries-and-regions/regions/western-balkans/>; access: 03.02.2016.) with a precaution that designation of Kosovo separately is without prejudice to positions on its status. This paper shares the opinion of the EC. However, since data on Kosovo are still very scarce, in this paper Kosovo is not in the focus of analysis.

8 See, for instance, Dadkhah, 2009; Blanchard et al., 2010.

3. Results

Since the data collected is presented as a panel data the first step is the specification of panel ID variable and time variables. The following graph depicts variables of consumption and GDP for 6 Western Balkans countries in the period of 2005-2014.



The data for analysis is summarized in several informative ways. The following table presents: mean, standard deviations, minimum and maximum values divided into three categories: overall, between and within countries for both variables. There are 60 observations in the data set, collected on annual basis, arranged into 6 groups (countries), each group containing 10 data items (2005-2014).

Variable		Mean	Std. Dev.	Min	Max	Observations
consum	overall	20901.3	16271.51	2252.613	53992.93	N = 60
	between		17241.98	4084.743	45851.01	n = 6
	within		3581.205	7363.62	29043.21	T = 10
gdp	overall	23301.86	20068.6	2257.118	70481.45	N = 60
	between		21338.31	3910.042	58244.71	n = 6
	within		4108.666	9045.746	35538.6	T = 10

Average consumption and GDP in overall data set are 20.9 and 23.3 billion US\$, respectively. Considering the standard deviation, it can be noticed that for both variables *between* variations are higher than *within* variations, which indicates that data tends to be closer to the mean of the data set within individual countries than between countries.

The Hausman test is run in order to decide between the usages of fixed or random effects

techniques to analyzing panel data. This test stipulates the null hypothesis (H_0) as the usage of the random effects model vs. alternative hypothesis (H_a) as the usage of the fixed effects model (Greene, 2012, ch. 11). Since $\text{Prob}>\chi^2=0.3241$, which is higher than 0.05 the null hypothesis cannot be rejected, therefore the random effects technique will be applied.

	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	$\sqrt{\text{diag}(V_b-V_B)}$ S.E.
gdp	.8621139	.8573377	.0047762	.0048437

b = consistent under H_0 and H_a ; obtained from xtreg
B = inconsistent under H_a , efficient under H_0 ; obtained from xtreg

Test: H_0 : difference in coefficients not systematic

$$\begin{aligned} \chi^2(1) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 0.97 \\ \text{Prob}>\chi^2 &= 0.3241 \end{aligned}$$

The random effect technique assumes that variation across countries is random and uncorrelated with income as an independent variable in the model. Results of the Breusch-Pagan Lagrangian test suggest there are significant differences across countries ($\text{Prob}>\chi^2=0.0000$), so running the random effects technique is more appropriate than the simple ordinary least square technique.

Breusch and Pagan Lagrangian multiplier test for random effects

$$\text{consum}[id,t] = Xb + u[id] + e[id,t]$$

Estimated results:

	Var	sd = sqrt(Var)
consum	2.65e+08	16271.51
e	309787.8	556.5859
u	8694154	2948.585

Test: $\text{Var}(u) = 0$

$$\begin{aligned} \chi^2(1) &= 238.30 \\ \text{Prob} > \chi^2 &= 0.0000 \end{aligned}$$

Upon completing tests the regression of consumption on current income is run and results are presented in the following table. The intercept in the model, α , usually with little economic meaning, can be interpreted as autonomous consumption. It is what people would consume without income in the current year.⁹

⁹ Blanchard et al., 2010, p. 44.

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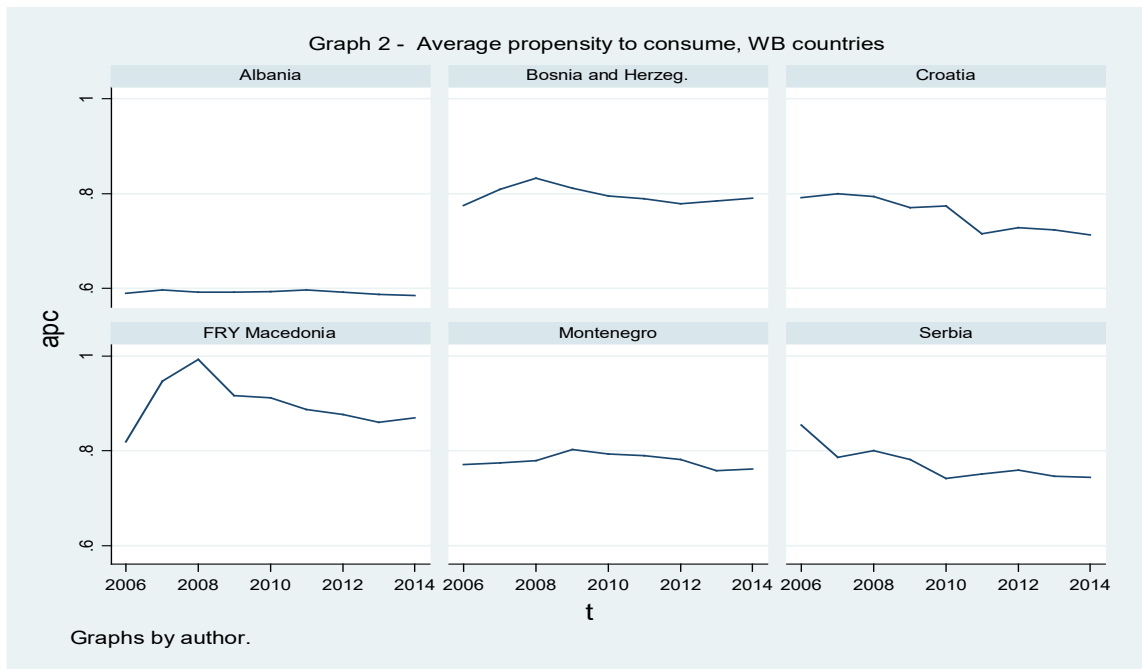
Random-effects GLS regression              Number of obs   =       60
Group variable: id                        Number of groups =        6

R-sq:  within = 0.9783                    Obs per group:  min =       10
        between = 0.9765                  avg =      10.0
        overall = 0.9764                  max =       10

corr(u_i, X) = 0 (assumed)                Wald chi2(1)    =   2555.96
                                           Prob > chi2     =    0.0000
    
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	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
consum						
gdp	.8573377	.016958	50.56	0.000	.8241006	.8905748
_cons	923.7372	1268.763	0.73	0.467	-1562.992	3410.467
sigma_u	2948.5851					
sigma_e	556.58588					
rho	.9655942	(fraction of variance due to u_i)				

An increase of income in the Western Balkan countries for 1 mil \$, on average, lead to a rising in household consumption expenditures of 0.86 mil \$. Average propensity to consume¹⁰ at the beginning of the period is 0.96 and at the end it has declined to 0.93, (in nominal terms). In that way, the Keynes's believe stated as a "fundamental psychological rule of any modern community that, when its real income is increased, it will not increase its consumption by an equal absolute amount"¹¹ is confirmed. Furthermore, the average propensity to consume for the entire period is higher than the marginal propensity to consume.



¹⁰ It is calculated as ratio of total consumption to total income in each consecutive year.

¹¹ J.M. Keynes, 1936. The General Theory of Employment, Interest and Money, p. 96 as cited in Friedman (1957, p. 3)

Economic projections¹² for years 2015, 2016 and 2017 forecast the growth of the six Western Balkans countries to be, on average, 2.2%, 2.5%, and 2.9%. These projections imply the household consumption expenditures in these three years will amount to 407.7, 445.9 and 496.7 billion \$, respectively.

Discussion

Keynes's theoretical framework on consumption and income known as the consumption function is examined in this paper. Although some previous analyses corroborate the Keynesian consumption function, empirical evidence presented in the paper is not in conflict with the expected findings. Regression results on consumption function for the six Western Balkans countries affirm the expected signs and significance of estimated parameters. If income of the Western Balkan countries increases for 1 mil \$, it will lead to rising in household consumption expenditures of 0.86 mil \$. Taken as an instrument for policy advice, the consumption function implies that factors which encourage the household consumption (such as: various tax cuts, etc.) are needed in order to enhance consumption expenditures and the economy as a whole. However, fuller models of specification relating consumption to income and other variables in these countries are recommended for making comprehensive policy advices. Keynes's opinion that marginal propensity to consume is lower than average propensity is also confirmed in the paper. This opinion also implies that the average propensity to consume would decline over time and data presented in the paper comply with that implication.

¹² <http://www.worldbank.org/en/publication/global-economic-prospects/data> (access: 28.02.2016.)

Literature

- Amin, B., 2015. Test of Keynesian Consumption Function: a Case Study of University of the Punjab. *Management and Administrative Sciences Review*, 4 (5), pp. 787-800.
- Ando, A. & Modigliani, F., 1963. Hypothesis of Saving: Aggregate Implications and Tests. *American Economic Review*, 53 (1), pp. 55-84.
- Backhouse, R.E. & Bateman, B.W., 2006. *The Cambridge Companion to Keynes*. Cambridge University Press.
- Bayar, A. & Morro, K.Mc., 1999. Determinants of Private Consumption. *Economic Papers*, 135. Brussels, 32 pp.
- Blanchard, O., Amighini, A. & Giavazzi, F., 2010. *Macroeconomics: a European Perspective*. Pearson Education Limited.
- Blanchard, O. & Leigh, D., 2013. Growth Forecast Errors and Fiscal Multipliers. *IMF Working paper*, WP/13/1. International Monetary Fund.
- Bogovic, N.D., 2002. Long-term Characteristics of Personal Consumption in the Republic of Croatia. *Ekonomski pregled*, 53 (7-8), pp. 622-639.
- Burns, A.F., 1995. Keynes' Theory of Underemployment Equilibrium. In: Hazlitt, H., 1995. *The Critics of Keynesian Economics*. The Foundation of Economic Education, Inc., New York.
- Dadkhah, K., 2009. *The Evolution of Macroeconomic Theory and Policy*. Springer.
- Duesenberry, J.S., 1949. *Income, Saving, and the Theory of Consumer Behavior*. Cambridge, Harvard University Press.
- Ezeji, Ch.E. & Ajudual E.I., 2015. Determinants of Aggregate Consumption Expenditure in Nigeria. *Journal of Economics and Sustainable Development*, 6 (5), pp. 164-169.
- Friedman, M., 1957. *A Theory of the Consumption Function*. Princeton University Press.
- Greene, W.H., 2012. *Econometric Analysis*. 7th ed. Pearson Education Limited.
- Khan, Kh. et al., 2015. Determinants of Consumption Function in Case of China and G7 Countries. *International Journal of Economics and Empirical Research*.
- Mishra, P.K., 2011. Dynamics of the Relationship between Real Consumption Expenditure and Economic Growth in India. *Indian Journal of Economics & Business*, 10 (4).
- Hazlitt, H., 1995. *The Critics of Keynesian Economics*. The Foundation of Economic Education, Inc., New York.
- Hoover, K.D. Doctor Keynes: economic theory in a diagnostic science. In Backhouse, R.E. & Bateman, B.W., 2006. *The Cambridge Companion to Keynes*. Cambridge University Press.
- Hubbard, G.R., Anthony, P.O. & Rafferty, M., 2012. *Macroeconomics*. Pearson Education,

Inc. Prentice Hall.

Keynes, J.M., 2007. *The General Theory of Employment, Interest and Money*. Atlantic Publishers & Distributors (P) LTD.

Miles, D. & Scott, A., 2005. *Macroeconomics: Understanding the Wealth of Nations*. John Wiley & Sons, Inc.

Modigliani, F., 1986. *The Debate over Stabilization Policy*. Cambridge University Press.

Nellis, J.G. & Parker, D., 2004. *Principles of Macroeconomics*. Pearson Education Limited.

Romer, D., 2000. Keynesian Macroeconomics without the LM Curve. *Journal of Economic Perspective*, 14 (2), pp. 149-169.

Tapsin, G. & Hepsag, A., 2014. An Analysis of Household Consumption Expenditures in EA-18. *European Scientific Journal*, 10 (16).

Vasilev, A., 2015. Modeling Real Private Consumption Expenditure in Bulgaria after the Currency Board Implementation (1997-2005). *Zagreb International Review of Economics & Business*, 18 (1), pp. 81-89.

Williams, J.H., 1995. An Appraisal of Keynesian Economics. In: Hazlitt, H., 1995. *The Critics of Keynesian Economics*. The Foundation of Economic Education, Inc., New York.