The Response of Consumption to Alternative Measures of Financial Development and Real Interest Rate in a Sample of Central and East European Countries

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Abstract

The paper focuses on investigating the relationship between (gdp share of) consumption and, two alternative measures of financial development and real interest rate using a sample of eight Central and East European countries for the period of 1993-2010. The panel estimation of two alternative regression equations for consumption suggested that the direction of the net effect of financial development on consumption can vary depending on the measure of financial development chosen. Specifically we found out that while the ratio of broad measure supply of money supply (M2) to gdp has a negative (and statistically significant) effect on consumption, the effect of the ratio of domestic credit to gdp is positive but statistically insignificant. Furthermore, the estimation results have produced evidence of a positive (and statistically significant) effect of real interest rate on consumption. And finally the per capita real gdp and growth rate of real gdp have been found to be (statistically) insignificantly associated with consumption.

Keywords: Financial development, consumption, savings, real interest rate

1. Introduction

The issue of macroeconomic effects of financial development has been continuing to be a topic of interest in empirical research. The main focus of the past literature has particularly been on investigating the qualitative and quantitative nature of the relationship between financial development key macroeconomic parameters such as economic growth, savings and investment .The nature of the results are (in general) mixed and contradictory suggesting that the macroeconomic effects of financial development can vary across countries and the sample period chosen. The present study focuses on investigating the response of private consumption (as a percentage of GDP) to two alternative measures of financial development and real interest rate in a sample of eight central and east European countries. The major findings of our empirical work consisting of running alternative panel regressions for consumption can be summarized as follows : i) The qualitative nature of the relationship between financial development and consumption is likely to depend on the proxy chosen to measure financial development ,ii) The consumption (contrary to what is normally expected) has been found to be positively affected by the increase in real interest rate over the sample period which is 1993-2010, iii) The per capita real GDP and growth rate of real GDP have not been found to be associated with consumption (as a percentage of GDP) in a statistically significant manner. The organization of the rest of the paper is as follows: The second section briefly explains the theoretical aspect of our study and states the key findings of some of the past literature. The third section is devoted to "Data and Methodology". The estimation results are presented and discussed in section four. The last section concludes with a brief summary of results and their policy implications.

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2. Theory and Literature Review

The mainstream theories about consumption (such as Keynesian Theory, Permanent Income hypothesis and Life-Cycle hypothesis) suggest that the key variables that are likely to affect the consumption and savings decisions of households are current income (actually current disposable income),real interest rate and wealth(including financial and housing wealth).While Keynesian theory assumes that the most important factor affecting (current) consumption is the current income, Permanent Income hypothesis and Life-Cycle hypothesis focus on both current and expected future income in addition to wealth and real interest rate as the main factors affecting the household behavior in consumption-saving decisions; while increases in current income are expected to positively affect both current consumption and savings, increases in wealth and expectations of a higher future income are expected to raise current consumption at the expense of lower (current) savings. The net effect of higher real interest rates on consumption (and therefore savings) is theoretically ambiguous for savers (or lenders) due to its opposing income and substitution effects. However for borrowers there is no such ambiguity and both kinds of effects work in the same direction; consumption falls and savings increases (Mishkin, 2012).

Financial development simply refers to the increase in the quality and quantity of financial services with lower transaction costs (Güngor et al.,2014). However some authors have preferred to be more specific about the concept of financial development and attempted to define it as improvements in some or all of the alternative functions that a financial sector performs for an economy. The most important ones of such functions include the mobilization of savings in the form of liquid assets, acquiring information about investments, allocation of resources (such as allocation of financial capital to different sectors and projects),exercising corporate control by monitoring managers and risk management and, facilitation of trade and contracts (Levine,1997).Based on this definition and the implicit assumption that liberalization of financial sector is a critical factor in accelerating the process of financial development, the direction of the net effects of financial development on consumption and therefore on savings rates are likely to be theoretically ambiguous. Originally it was hypothesized that as the financial sector switches to a relatively more competitive market-based system as a result of liberalization policies (involving privatization of state banks, lowering the barriers for the entry of new domestic and foreign banks, lifting off the restrictions on interest rates offered by banks on deposits, reduction of required reserve ratios, allowing banks to introduce new instruments and etc.) national saving rates would increase leading to an increase investment rates and economic growth (McKinnon,1973;Shaw,1973). The basis of this hypothesis was largely the assumption that a more competitive financial structure would raise real interest rates and lead to mobilization of savings. The mobilization of savings meant not only an increase in the volume of actual savings but more importantly an increase in the ratio of actual savings held in the form of monetary assets in the banking sector.

However the subsequent empirical literature investigating the relationship between financial development and, saving rates and consumption, have not been able to produce evidence in favor of this hypothesis for all the countries and the sample periods investigated. In other words, the net effect of financial development on consumption and savings is likely to be ambiguous. Two of the most important factors contributing to this ambiguity (theoretically) are the ambiguity of the net effect of a likely increase in real interest rates and the extent of the households facing binding borrowing constraints before the liberalization process. In the first case, if the income effect dominates the substitution effect, a given increase in real interest rate may lead to an increase in consumption and a corresponding decrease in savings. Some authors have produced empirical evidence in favor of this possibility for certain countries (Easterly and Hebbel, 1993;Bandiera et al., 2000). And secondly, if the percentage of households facing borrowing constraints in the early stages of financial development is sufficiently high, the relaxation of borrowing constraints is likely to lead to an increase in consumption (through additional borrowing made possible by a higher level of financial development) and a corresponding decline in the rate of saving (or increased rate of dissaving) by such households. Some of the past literature which produced evidence of such a positive effects of financial development on current consumption growth include King, 1986;Ludvigson,1996;Bachetta and Gerlach, 1997). Naturally this increased rate of growth of current consumption could be due to the positive effects of financial development on income growth particularly through increased productivity growth. Therefore some authors have analyzed the direct effect of financial development on private savings and reported a negative impact (Japelli and Pagano, 1994; Hondroyiannis, 2005). On the other hand, Kelly and Mavrotas (2003) have produced evidence of a positive impact of financial development on the volume of private savings in Sri Lanka. Similarly Güngör et al.(2014) have reported positive effect of financial development on the private saving rate in Turkey.

Both of these two studies have used a similar methodology based on constructing a composite index of financial development using three different indicators of financial development. It is worth to note that some authors have been unable to detect any kind of statistically significant effect of financial development on savings. One such study is that of Quartey (2005) who has carried out Granger causality tests and found out that financial development does not Granger cause domestic savings (as a percentage of gdp) and domestic savings does not Granger cause financial development.

3. Data and Methodology

Using panel (annual) data for the sample period of 1993-2010 we estimate two alternative specifications of the general model of the final consumption expenditures (as a percentage of gdp) that is presented below in the form of equation (1):

$y_{it} = a_0 + b'x_{it} + u_{it}$

Where

$I = 1 \ldots \ldots n$ (n-the number of countries)
$T = 1 \ldots \ldots n$ (T-the number of periods)
y_{it} = final consumption expenditures (as a percentage of GDP) of countryi in period (year) t;
x_{it} = the vector of k regressors (independent variables);
b' = the vector of k coefficients;
a_0 = constant term (same across countries and time periods);
u_{it} = error term for each observation distributed normally with "0" mean and constant variance.
The independent variables (regressors) that we use to specify the regression equation given by (1) are listed below:

Independent Variables

(a)   . FD1 (sum of money and quasi-money as a percentage of GDP (M2/GDP)).
(b)   . FD2 (domestic credit provided by the banking sector as a percentage of GDP)
(c)   . RI (real interest rate)
(d)   . PCY (logarithm of per capita real gdp)
(e)   . GR (growth rate of real gdp)
(f)   . y (-1) (one-period lagged value of the dependent variable –consumption-).

Our sample of eight Central and East European Countries included in our empirical analysis are Hungary, Bulgaria, Poland, Czech Republic, Slovenia, Romania, Ukraine and Belarus. We estimate two alternative empirical specifications of the general model (eg.1) using two alternative sets of independent variables listed above: The first one relates consumption to two different indicators of financial development (FD1 and FD2), real interest rate (RI), (logarithm of) per capita real gdp (PCY) and one-period lagged value of consumption (y (-1)). In the second equation we use basically the same set of regressors with one difference: the PCY is replaced by GR (growth rate of real GDP). Some of the past literature have produced evidence of a positive effect of income growth on the saving rate implicitly suggesting a decline in the share of consumption in gdp in response to a higher rate of economic growth (Carol and Weil,1993; Singh, 2009). FD1 and FD2 are used as regressors in both specifications of our regression model of consumption. This is because these two proxies of financial development can be considered as measuring the level of development of a financial sector in terms of performing different functions. For example; FD1 (M2/GDP) can be taken as a measure of the 'degree of monetization' of the economy particularly in terms of the relative size the monetary assets used as a medium of exchange and store of value (in the form of demand and saving deposits). Therefore FD1 is a proxy that best represents the relative effectiveness of the financial sector in facilitating transactions and (probably more importantly) mobilizing savings by encouraging households to hold their savings in the form of liquid (monetary) assets instead of illiquid (non-monetary) assets such as land, gold or durable goods. On the other hand, FD2 (Domestic credit/GDP) seems to be an indicator of the relative level of development of financial sector in relation to performing other kinds of important functions; extending credit to entrepreneurs and firms and households and therefore provide financing for investment projects and consumption needs of households, providing information to managers regarding the feasibility of investment projects and therefore exercising corporate control through monitoring the managers performance.

An increase in the value of FD2 can also be considered as a sign of relaxation of borrowing (or financing) constraints for some of the households and firms who could not previously borrow against future income. And the reason for not including PCY and GR in the same equation as regressors is simply the fact that they are usually highly correlated. In other words, as GR (growth rate of gdp) increase intuitively one would expect PCY (per capita real gdp) to increase as well.

4. Empirical Results

The results of panel estimation of the two alternative regressions (eq (1) and (2)) for final consumption expenditures (a percentage of gdp) have been summarized below in **Table 1**:

Table 1: Regression Analysis of the Effects of Financial Development and Selected other Parameters on Consumption

Dependent Variable: C (Final Consumptions Expenditures as a percentage of GDP)		
Regressor	(1)	(2)
Constant	3.33 (0.84)	4.60 (1.25)
FD1	-0.03 (-2.17)**	-0.04 (-2.14)**
FD2	0.02 (1.33)	0.03 (1.28)
RI	0.04 (4.21)*	0.03 (2.91)*
PCY	0.08 (0.85)	
GR		0.04 (0.81)
C (-1)	0.95 (24.31)*	0.94 (23.92)*
$\bar{R}^2$	0.83	0.83

- These regressions are estimated using unbalanced panel data for the eight countries in our sample from 1993-2010 (137 observations total).
- Heteroskedasticity – robust standard errors are given in parentheses under the coefficients.
*- The individual coefficient is the statistically significant at 1 % level.
**- The individual coefficient is the statistically significant at 5 % level.

Each column in Table 1 reports a different regression and each row reports a coefficient estimate and t-statistic. And Adjusted R-squared value of each regression is given at the bottom of the corresponding column.

In what follows we first summarize the basic findings reported in Table 1 and then discuss their implications particularly for policy making:

1) FD1 (M2/GDP) has been found to have statistically significant negative effect on the dependent variable (C) in both regression equations given by (1) and (2). In other words, an increase in the volume of broad measure of money supply (M2) relative to GDP has been found to be negatively related to the share of final consumption expenditures in GDP for the average country in our sample. And the estimated value of the coefficient of FD1 and its t-statistic seem to be fairly robust to alternative specifications of the estimated model.

2) FD2 (domestic credit provided by the banking sector as a percentage of GDP) has a positive effect on the dependent variable (C) in both two alternatives specifications of the estimated model. But this effect is not statistically significant.

3) RI (real interest rate) has been found to have a positive effect on the dependent variable (C) and its estimated coefficient is statistically significant (at 1% level) in both equations ((1) and (2)).

4) The coefficient of PCY (per capital real GDP) is positive but statistically insignificant as can be observed in eq. (1).

5) The coefficient of GR (growth rate of real GDP) is also positive but statistically insignificant as can be observed in eq. (2).

6) The coefficient estimate of (one-period) lagged value of the dependent variable (C(-1)) is positive and highly significant (at 1% level) in both equations (1) and (2).

The most critical insights that one can derive from the estimation results summarized above are related to the differential effects of two different proxies we have used for financial development (FD1 and FD2) and the positive effect of real interest rate on consumption. The reported negative (and statistically significant) effect of FD 1 (in both eg (1) and (2), suggest that an increase in the level of financial development in terms of ' degree of monetization' of the economy has been associated with a decline in the gdp share of consumption for the average country in our sample. And this, in turn implies that an increase in the value of FD1 in likely to be associated with an increase in private saving rate. An increase in the value of FD1 result can result from a variety of factors resulting from liberalization of financial sector overtime; an increase in the degree of competition in the financial sector due to lowering the restrictions for the entry of new (domestic and foreign) banks and elimination of ceilings on interest rates that can be offered by banks(for demand and savings deposits), reduction in required reserve ratios and introduction of new financial instruments. Intuitively one would expect the development of financial sector in terms of switching to a more competitive structure as a result of these policy changes to lead to positive effects particularly on the volume of actual savings held in the form of monetary assets instead of illiquid assets such an land ,gold and durable goods. And the estimated negative coefficient of FD1 on C could possibly reflect this kind of substitution of household savings from non-monetary assets to monetary assets held in the banking sector. As previously argued one would intuitively expect. the qualitative nature of the effect of FD2 on C to be positive as an increase in its value could be taken as an improved capacity of banking sector in providing credit to firms and households in need of financing (their projects and consumption expenditures).And this improved financing capacity of the banking sector may imply a relaxation of borrowing (financing) constraints for at least some of the households who were previously unable to borrow (from the banking sector) against their future income. The sign of estimated coefficient of FD2 in both equations (1) and (2) is positive as theoretically expected. However both estimates are statistically insignificant suggesting that (for the average country in our sample) the development of the financial sector (in terms of improved financing capacity) has probably not been associated with any kind of (statistically significant) reduction in the percentage of households facing binding, borrowing constraints or relaxed the borrowing constraints for such households in a significant manner.

Probably, the most interesting finding associated with the estimation results reported in Table1 is the positive (and highly significant) effect of real interest rate (RI) on consumption (C); higher real interest rates have been found to be associated with higher (gdp share of) consumption expenditures. This finding suggests that, for the average country in our sample of eight central and East European countries, the(positive) income effect of an increase in real interest rate seems to have dominated its (negative) substitution effects on consumption. This finding might yield critical insights for policy makers of the average country in our sample. One of these policy insights is the possibility of expansionary monetary policy aiming at stimulating the domestic economy (through a reduction in real interest rates) leading to contraction in output (and therefore employment) through its adverse effects on consumption. This possibility in particularly relevant for the countries where the responsiveness of investment to real interest rate is small making the net effect of sufficiently large reduction in real interest rate (on aggregate demand) negative due to the contraction in household demand for final consumer goods and services. Naturally investigating this issue empirically for each individual country separately seems to be the appropriate agenda for future research not only for academics but particularly for the policy makers of the eight countries included in our sample. The coefficient estimates of PCY (per capita real gdp)in eg.(1) and GR;(growth rate of real gdp) in eg.(2) are both positive and statistically insignificant. Based on these results one can argue that per capita (real) income and rate of income growth have (probably) not been significant determinants of allocation decisions of households regarding consumption and savings over the sample period chosen for the present study. One important policy implication of this finding is the possibility that policies that can increase the growth rate of gdp (or per capita income) cannot be expected to lead to higher rates of national savings which can be used to finance higher rate of investment in the future. This is important for policy making in the sense that it has sometimes been argued that policies which will increase the rate of income growth are likely to raise the rate of domestic savings (World Bank ,1993).In light of our findings this argument may not hold for the average country in our sample.

And therefore policy makers in these countries who may want to increase the national saving rate should preferably focus on specific policies aiming at raising private and public saving rates such as taxation of luxury consumption and introduction of additional incentives for the increased participation in private retirement schemes.

5. Conclusions

The literature on the effects of financial development on consumption and savings have implicitly assumed that all alternative measures of financial development should have similar effects an consumption-savings decisions of households. And the results of the past literature are usually mixed and contradictory in terms of the qualitative nature of the reported effects; they vary depending on the sample of countries investigated and the period of study chosen.

In the article we used two different proxies for financial development to investigate the relationship between each one of them and consumption (an a share of gdp) in a sample of eight Central and East European countries. Our empirical results have produced evidence of a statistically significant negative effect of the level of financial development on consumption when it is proxied by the ratio of money and quasi-money to gdp. However we have not been able to detect a similar effect on consumption in case of the second proxy (the ratio of domestic credit to gdp) we have used for financial development; its effect is opposite in nature (positive) but statistically insignificant. This finding suggests that improvements in the credit extension (or financing) capacity of banking sector might not have had significant effects   on consumption - saving decisions of households in the average country in our sample. The most radical insight of our empirical work resulted from the finding that higher real interest rates have probably had positive effects on 'gdp share of consumption'. This finding suggests that contractionary monetary policies aiming at reducing aggregate demand might lead to increased consumer spending for the average country in our sample of Central and East European countries reducing the effectiveness of such policies. On the other hand the positive effects of a given fiscal expansion on output and employment are likely to be stronger than otherwise since the possible increase in real interest rates resulting from such a policy can boost private consumption and therefore (at least partly) offsetting its negative crowding-out effect on investment. Furthermore per capita (real) gdp and growth rate (real) gdp have been found to be statistically insignificant determinants of gdp share of consumption. And this may suggest that fluctuations in income growth or per capital income may not generate significant fluctuations in respective gdp shares of consumption and private savings.

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