William Davidson Institute
AT THE UNIVERSITY OF MICHIGAN

Liquidity Constraints, Loss Aversion, and Myopia: Evidence from Central and Eastern European Countries

By: Ramiz Rahmanov

William Davidson Institute Working Paper Number 1082
August 2014

Liquidity Constraints, Loss Aversion, and Myopia: Evidence from Central and Eastern European Countries

Ramiz Rahmanov

Central Bank of the Republic of Azerbaijan
R. Behbudov Str. 32, Baku AZ 1014, Azerbaijan
Phone: +99412 493 8923, fax: +99412 493 8951, e-mail: ramiz_rahmanov@cbar.az

Abstract

This paper adopts the asymmetric error correction technique to investigate the dynamics of household consumption in Central and Eastern European (CEE) countries. The asymmetric co-integration testing shows that households in all CEE countries but Bulgaria respond asymmetrically to negative and positive shocks. Further, the estimates of the asymmetric error correction equations show that despite underdeveloped banking sectors, households in all CEE countries asymmetrically responding to deviations but Slovakia exhibit loss aversion. As an explanation for this finding, we suggest that to smooth consumption, households in these countries deplete their savings.

JEL classification codes: **C22, D11, D12, E21.**

Key words: **loss aversion, liquidity constraints, consumption, asymmetric error correction model, Central and Eastern Europe.**

Acknowledgments: I would like to thank all participants of the 7th South - Eastern European Economic Research Workshop hosted by Bank of Albania in 4-5 December 2013 for comments and recommendations.

Note: The views expressed here belong to the author and do not necessarily represent those of the Central Bank of the Republic of Azerbaijan.

Introduction

After the dissolution of the socialist system, Central and Eastern European (CEE) countries[1] started implementing political and economic reforms to move from centrally planned to market economies. The legal and financial sector reforms implemented during the transition period increased the depth and efficiency of the financial institutions and markets. Indeed, within the 1995-2010 period, the bank private credit as a percentage of GDP in CEE increased 2.8 times, while the net interest margin decreased by 0.9%. Furthermore, during the 1998-2010 period, the stock market capitalization as percentage of GDP rose 1.8 times, and the stock market turnover ratio increased by 25%. However despite significant progress, the financial institutions of all CEE countries are still inferior to those of most developed countries either in terms of depth or efficiency or both (Figure 1). For example, in terms of depth of the banking sector, only Estonia is close to Germany and Japan, whereas in terms of efficiency, none of the CEE banking sectors performs better than those of Germany and Japan. Among advanced countries shown in Figure 1, only the banking sector of the US gives up to the banking sectors of some CEE countries in terms of depth and efficiency. This is not surprising because in contrast to many countries, the US economy has a well-developed market-based financial system which compensates the low developed banking sector. As shown in Figure 2, the US financial market is superior to the financial markets of CEE countries, Germany, and Japan.

For households, higher financial development implies easy access to financial resources which enables them either to finance purchases of durable goods or smooth consumption during temporary declines in income. Since previous studies (Shea, 1995, Shirvani and Wilbrate, 2000, Apergis and Miller, 2006) find that households in Japan, Germany, and the US, the countries with developed financial systems, demonstrate loss averse behavior, then we should expect that due to relatively shallow and inefficient financial systems, households in CEE countries remain liquidity constrained.

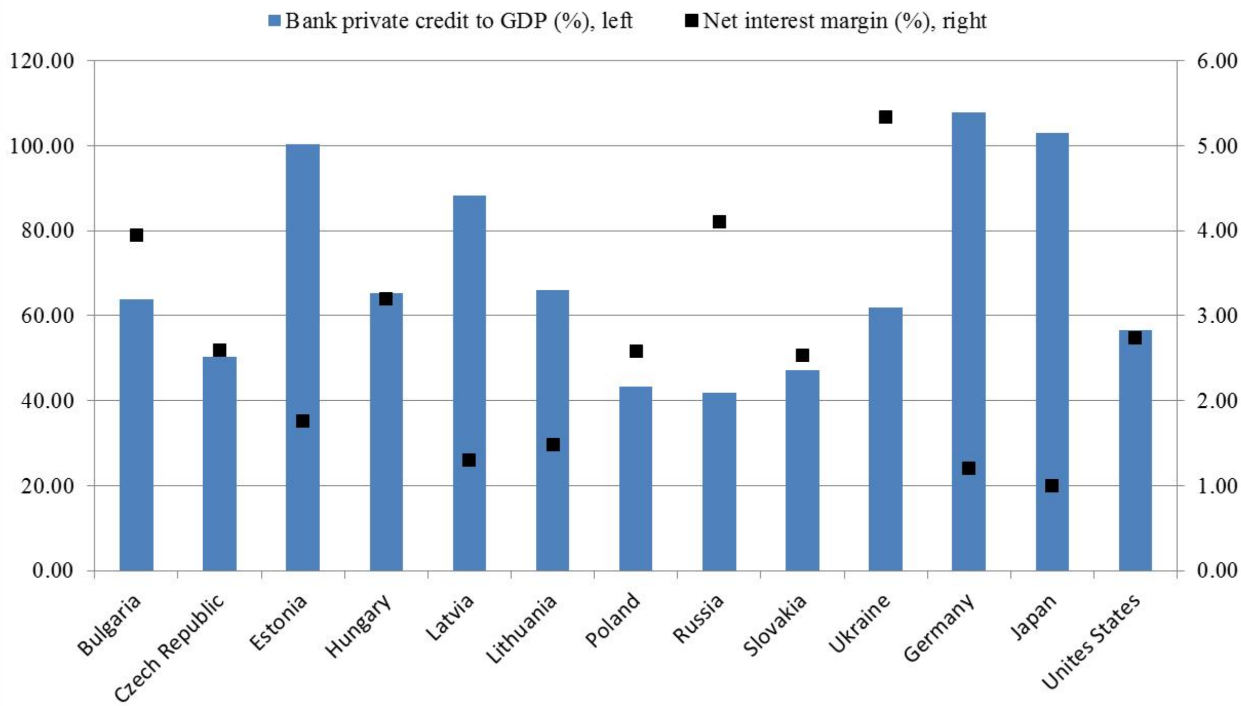
The purpose of this paper is to determine whether households in the CEE countries indeed remain liquidity constrained due to relatively immature financial systems or instead become loss averse for some reason. To answer this question, we employ asymmetric error correction models which distinguish between negative and positive deviations of consumption from the long run equilibrium. Such differentiation allows us to conclude in which countries households are still exposed to liquidity constraints or become loss averse.

The results of the asymmetric error-correction tests show that households in all CEE countries but Bulgaria respond asymmetrically to short run deviations of consumption from the equilibrium levels. Further, the results of the asymmetric error correction models indicate that households in Slovakia are liquidity constrained, whereas households in the Baltic States, Czech Republic, Hungary, Poland, Russia, and Ukraine are loss averse. The finding that only in Slovakia households are liquidity constrained does not accord with the initial hypothesis. The most likely explanation of this result is that in the short run, after a negative shock, households in these countries prefer to deplete savings to maintain the same lifestyles rather than to decrease consumption.

---

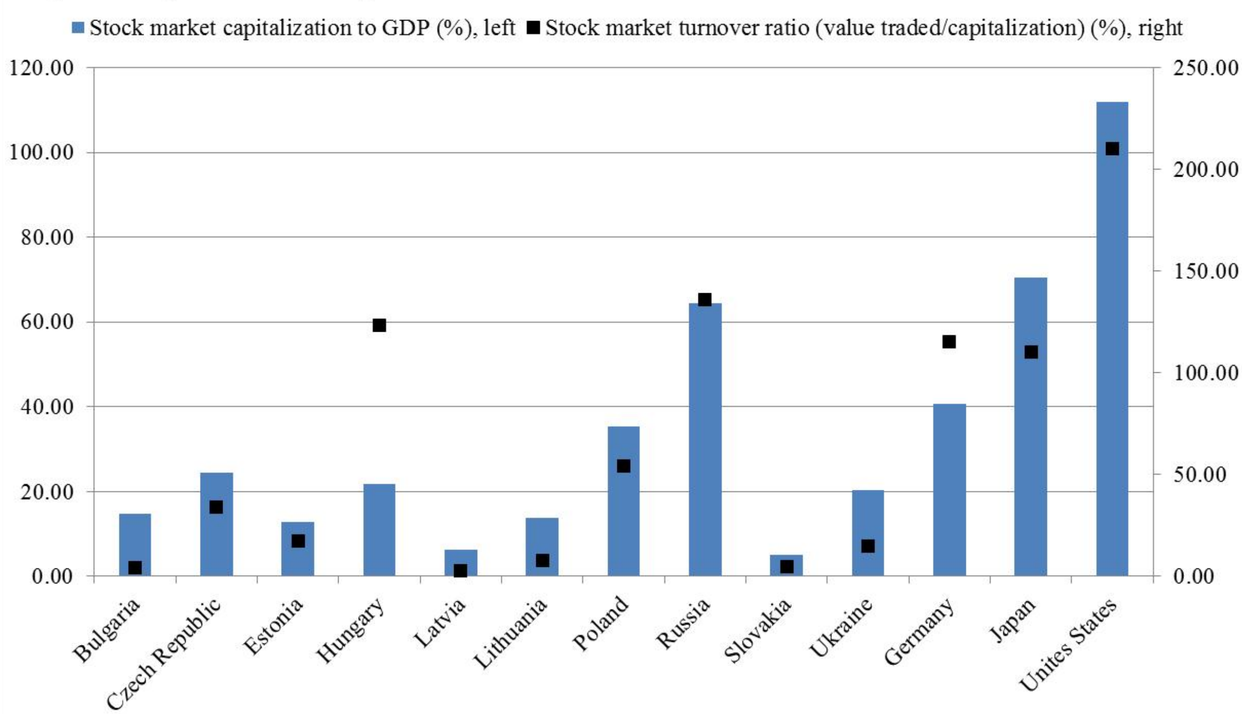
[1] In this study, the CEE countries include Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Russia, Slovakia, and Ukraine.

Figure 1. **Depth and efficiency of financial institutions, 2010**



Sources: The Little Data Book on Financial Development 2013

Figure 2. **Depth and efficiency of financial markets, 2010**



Sources: The Little Data Book on Financial Development 2013

The rest of the paper is organized as follows. The next section gives a brief overview of the related literature. The third section presents the concepts of loss aversion, liquidity constraints, and myopia. In the following section, the threshold error correction methodology is introduced. The fourth section describes the data, and the fifth section presents and discusses the estimation results. Finally, the last section concludes the paper with the summary of the empirical results and their implications.

Literature review

Previous studies examining the impact of income and wealth changes on consumption did not differentiate between negative and positive changes as they assume that households respond symmetrically to both positive and negative changes. However, there are several studies which find that actually consumption responds differently to positive and negative shocks. For example, Patterson (1993) analyzes the impact of credit constraints, changes in income and housing withdrawals on consumption within the two period intertemporal model and finds that positive and negative changes in income have asymmetric effects on consumption. Zandi (1999) also finds that consumers respond faster to wealth declines than to increases.

The neglect of the possibility for asymmetry not only worsens performances of models but also leads to the failure to identify whether households are loss averse or liquidity constrained. One of the first attempts to resolve this shortcoming belongs to Shea (1995) who conducts a test to assess whether the US households are myopic or liquidity constrained. He concludes that households are neither myopic nor liquidity constrained but loss averse because they show strong sensitivity to negative changes in income and wealth. In another study devoted to the US, Apergis and Miller (2006) apply an asymmetric error correction model to the quarterly data on non-durable consumption, after tax labor income, and stock market capitalization over the period 1957 to 2002. They find that consumers react more strongly to unfavorable news than to favorable news. Thus, their finding confirms the existence of loss aversion among the US households. Further, Shirvani and Wilbratte (2000) use multivariate co-integration tests to check for the presence of asymmetric responses of consumption to changes in wealth in the US, Japan, and Germany. Their results indicate that households in these countries are loss averse because in the short run, consumption responds more strongly to stock market price decreases than increases. Finally, Van Treeck (2008) applies 2SLS and ARDL methods to the quarterly US data over the period 1953-2007. The employed specification of the ARDL model allowed asymmetry not only in the short run but also in the long run. The estimates produced by the 2SLS method indicate the existence of loss aversion, whereas the ARDL method indicates loss aversion in the long-run and liquidity constraints in the short run.

Despite the sufficient evidence on asymmetric effects of negative and positive changes in income and wealth on consumption in developed countries, to our best knowledge, only one paper examined the possibility of asymmetry in the responses of household consumption to negative and positive shocks in CEE countries. Sonje et al. (2012) use the threshold co-integration method proposed by Enders and Siklos (2001) to study household consumption dynamics in four CEE countries. They conclude that in Bulgaria, Croatia, and Estonia, consumption significantly adjusts only to negative discrepancies, whereas in Czech Republic, consumption exhibits symmetric adjustment to negative and positive discrepancies.

This paper extends the article of Sonje et al. (2012) in several ways. First, in this paper we increase the number of countries to ten. Second, we interpret the asymmetric responses of household consumption to positive and negative shocks within the concepts of loss aversion, liquidity constraints, and myopia. Finally, we examine whether the degree of financial development explains the behavior of CEE households during short run positive and negative shocks.

Theoretical framework

The standard model used in the analysis is derived from the Life Cycle Model proposed by Ando and Modigliani (1963). According to this model, the consumer maximizes his or her utility subject to the budget constraint, so we assume that at the end of the period, wealth equals to gross saving plus interest income:

$$\max E_t \sum_{t=0}^{T} \beta^t u(c_t)$$

$$s.t. \quad w_{t+1} = (1+r)(w_t + y_t - c_t)$$

where w_t is consumer's wealth at the beginning of the period, c_t is household consumption, y_t is current labor income, r is real interest rate, and β is a time preference factor.

Assuming that the utility function is quadratic, real interest rate is equal to a time preference factor, and labor income is AR(1) process, we obtain the following expression which implies that current household consumption depends on its labor income and wealth:

$$c_t = \alpha y_t + \beta w_t \qquad (1)$$

where α and β are the marginal propensities to consume out of labor income and wealth.

Although the coefficients α and β in equation (1) reflect the long run marginal propensities to consume, in the short run, there is a possibility of a deviation from the long run relationship due to positive and negative shocks. The way households respond to deviations depends on such characteristics of households as loss aversion, liquidity constraints, and myopia.

The concept of loss aversion, first introduced by Kahneman and Tversky (1979), originates from experimental evidence which suggests that people evaluate outcomes not in terms of levels but in terms of changes relative to some reference point. Furthermore, experiments show that agents value changes asymmetrically. In particular, they care more about losses than gains of the same magnitude. For household consumption, the concept implies that households tend to be more sensitive to decreases than to equivalent increases in their consumption relative to the long run equilibrium level. Hence, when labor income and wealth are below the equilibrium levels, they smooth consumption through borrowing. However, when labor income and wealth exceed their equilibrium levels, households prefer consuming above the steady level to making savings. (Bowman et al., 1999 and Kahnmean et al., 1991, Tversky and Kahneman, 1991)

Liquidity constraints which imply that households cannot maintain their consumption level during low income periods through borrowing can occur for a number of reasons. First, poorly developed financial markets or existence of capital controls can restrict access of local banks to international financial resources. In such a case, banks will loan money at interest rates which may not be affordable to many households. Second, the lack of information regarding credit risks of borrowers causes the risks of moral hazard and adverse selection and therefore refrains banks from providing loans to households or makes banks increase lending rates. Third, banks are reluctant to provide or extend credits to households which cannot provide financial or real assets as collateral. Although, under liquidity constraints, households are unlikely to maintain their consumption in recession, they can save for a rainy day in a boom period. (Flavin, 1985, De Brouwer, 1996, Gomez and Paz, 2010, and Beznoska M. and R. Ochmann, 2012)

Under myopia, consumption closely follows income and wealth. Therefore, households react symmetrically to positive and negative deviations of consumption from the long-run equilibrium level (Shea, 1995). Madsen and McAleer (2000) explain myopia by the presence of income uncertainty which encourages households to increase precautionary savings when income decreases and do the opposite when income increases. As a result, we observe that consumption decreases following a negative shock and increases following a positive shock.

Although the concepts of loss aversion and liquidity constraints represent different mechanisms, both of them assume that households respond asymmetrically to fluctuations in income and wealth. In this case, the application of the standard econometric approaches such as the Engle-Granger two-step procedure, the Dynamic OLS method, and the Vector Error Correction Model which do not distinguish between responses to negative and positive shocks will not enable us to conclude whether households experience loss aversion or liquidity constraints or myopia. To determine a household type, in the next section, we introduce econometric methods whose construction allows separating effects of positive and negative changes in variables.

Econometric framework

The econometric techniques used to investigate the asymmetric responses of variables include such methods as 2SLS, ARDL, and the Engle-Granger two-step procedure with asymmetric equilibrium errors (TAR, M-TAR) proposed by Enders and Siklos (2001). Although the 2SLS method was one of the first and most popular methods, the use of this approach can be problematic. In aggregate consumption studies, researchers use lagged values of variables as instruments for their current values, and for this purpose, they use either longer or shorter lags. On the one hand, when longer lags are used, the instruments are unlikely to be correlated with an error term, but they can be weakly correlated with explanatory variables. On the other hand, when shorter lags are employed, the instruments can be strongly correlated with both explanatory variables and an error term. Given that, the validity of lags as instruments is questionable, the 2SLS estimates cannot be always credible. The ARDL approach is usually used when variables have different orders of integration. When variables follow integrated of order one processes, the error correction methodology is normally applied. Since variables employed in the current study are difference-stationary, and the 2SLS approach is unsatisfactory due to the use of lagged values of variables as instruments, the empirical analysis will be performed using the TAR/M-TAR approach.

The Enders and Siklos (2001) procedure begins by estimating the long-run equilibrium relationship of the following form:

$$c_t = \alpha_0 + \alpha_1 y_t + \alpha_2 w_t + \mu_t \quad (1)$$

where c_t is consumption, y_t is labor income, w_t is wealth, and μ_t is a stochastic disturbance term; c_t, y_t, and w_t are I(1) processes.

In the standard Engle-Granger methodology, we use the residuals from the long-run equation (1) to estimate the following equation:

$$\Delta\mu_t = \rho\mu_{t-1} + \varepsilon_t \quad (2)$$

where ε_t is a white noise disturbance.

Rejecting the null hypothesis of no co-integration (ascertaining that $-2<\rho<0$) implies that the residuals of (2) are stationary with mean zero.

According to the Engle-Granger procedure, the changes in μ_t equals ρ times μ_{t-1} regardless of whether μ_t is positive or negative. This assumption of symmetric adjustment can be problematic if consumption adjusts asymmetrically. A formal way to introduce asymmetric adjustment was proposed by Enders and Siklos (2001) who allow the deviations from the long-run equation in (1) behave as a threshold autoregressive (TAR) process. Thus, the residuals from (1) are estimated in the following form:

$$\Delta\mu_t = I_t\rho_1\mu_{t-1} + (1-I_t)\rho_2\mu_{t-1} + \varepsilon_t \quad (3)$$

where ε_t is a white noise disturbance, and I_t is the Heaviside indicator function such that

$$I_t = \begin{cases} 1 & if\ \mu_{t-1} \geq \tau_1 \\ 0 & if\ \mu_{t-1} < \tau_1 \end{cases} \quad (4)$$

where τ is the value of the threshold which is unknown and needs to be estimated. However, in many empirical applications, it is appropriate to set the threshold value to zero.

Enders and Siklos (2001) also introduce an alternative method for computing the Heaviside indicator:

$$M_t = \begin{cases} 1 & if\ \Delta\mu_{t-1} \geq \tau_2 \\ 0 & if\ \Delta\mu_{t-1} < \tau_2 \end{cases} \quad (5)$$

If specification (5) of the Heavyside indicator is used, the model is named the momentum-threshold autoregressive (M-TAR) co-integration model. The special characteristic of this model is that it allows the series to respond more strongly in one direction than the other. M-TAR models can be especially helpful in consumption analysis since households usually attempt to smooth any large changes in consumption.

To estimate the threshold value, we use the method suggested by Chan (1993). According to this method, first, the estimated residuals are ascended in the way that $\mu_1<\mu_2<\ldots<\mu_T$, where T is the number of observations, and then the first and the last 15% of observations are discarded. The remaining 70% of observations are threshold candidates. For each threshold candidate, (3) is estimated, and the candidate at which the OLS estimation does not suffer from serial correlation and yields the smallest sum of squared errors is considered to be the optimal threshold value.

If serial correlation is detected in (3), then it needs to be augmented with lagged changes of μ_t, such that (3) becomes:

$$\Delta\mu_t = I_t\rho_1\mu_{t-1} + (1-I_t)\rho_2\mu_{t-1} + \sum_{j=1}^{p}\gamma_j\Delta\mu_{t-j} + \varepsilon_t \quad (6)$$

where ε_t is a white noise disturbance.

After estimating (3) or (6), one proceeds to examining the asymmetric co-integration relationship. First, it is necessary to determine whether variables in TAR and M-TAR models are cointegrated. For this purpose, the null hypothesis of no co-integration among variables (H_0: $\rho_1=\rho_2=0$) is tested. However, since the F-statistic of the null hypothesis has a non-standard distribution, the critical values are obtained using Monte Carlo experiments. If the null hypothesis of no co-integration is rejected, the null hypothesis of symmetric adjustment (H_0: $\rho_1=\rho_2$) can be tested using a standard F statistic. The failure to reject the null hypothesis implies that households are myopic.

In the presence of the asymmetric co-integrated relationship, the error-correction model for c_t takes the form:

$$\Delta c_t = \alpha_0 + I_t\rho_1\mu_{t-1} + (1-I_t)\rho_2\mu_{t-1} + \sum_{k=1}^{p}\alpha_k\Delta c_{t-k} + \sum_{k=1}^{p}\beta_k\Delta y_{t-k} + \sum_{k=1}^{p}\gamma_k\Delta w_{t-k} + \varepsilon_t$$

where ρ-s are adjustment coefficients, and ε_t is a white noise disturbance. ρ_1 reflects the speed of adjustment to positive shocks, and ρ_2 reflects the speed of adjustment to negative shocks. If ρ is statistically significant then the larger ρ implies the faster convergence to the long-run equilibrium level. Hence, the large and significant ρ_2 means that households are loss averse, whereas the small and significant ρ_2 means households are liquidity constrained.

Data description

The data set analyzed in this study comprises of quarterly time series of 10 emerging economies from Central and Eastern Europe: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Russia, Slovakia, and Ukraine. The data cover the period 1995Q1-2012Q2 when available[2] and include the following variables: final household consumption expenditure measured as total expenditure of households on goods and services, compensation of employees measured as total remuneration of employees which includes not only wages but also employers' social contributions, and a stock market index. The sources of consumption and compensation data are Eurostat and the statistical offices[3], while stock market data come either from the statistical portal of stock market data[4] or the websites of the individual stock exchanges. All variables are adjusted to real terms by the CPI's and seasonally adjusted by the X-12 ARIMA method. Furthermore, all variables are transformed into natural logarithms; income and compensation variables are in a per capita basis.

It should be acknowledged that due to the availability and homogeneity reasons, the data employed here do not totally agree with the definitions of the variables used in the Life Cycle model, and this fact imposes some limitations on the statistical analysis in this study. First of all, the current study uses total consumption, whereas the Life Cycle model considers only non-durable consumption. The standard theory uses only non-durable consumption because it represents a flow variable, whereas durable consumption represents additions and replacements to the asset stock and hence may have a different dynamic pattern (Mehra, 2001). However, Mehra (2001) mentions that the use of total consumption is validated if the purpose of the study is to estimate the effects of labor income and stock market wealth changes on consumption. Second, compensation of employees rather than pure labor income is used. Third, the lack of data on stock market wealth of households left no choice as to proxy it by the stock market index. Finally, since logs of aggregate time series tend to be more linear than their levels, we employ logs of variables (Mehra, 2001).

Additionally, the statistical analysis uses a set of dummy variables to account for the episodes of financial crisis and other specific events in the economic histories of CEE countries. Following the definition suggested by Hahm et al (2012), we define dummy variables for these periods as follows: it takes the value of one when the rate of change of the stock market index belongs to the bottom 3% tail of the pooled in-sample distribution (Bulgaria-2008Q4, Czech Republic – 2008Q4, Czech Republic-2011Q3, Estonia – 2008Q4, Hungary-1998Q3, Hungary – 2011Q3, Latvia – 2008Q3, Lithuania – 2008Q4, Poland-2008Q4, Poland-2011Q3, Russia-

[2] Bulgaria (2001Q4-2012Q2), Czech Republic (1995Q1-2012Q2), Estonia (2000Q1-2012Q2), Hungary (1995Q1-2012Q2), Latvia (2000Q1-2012Q2), Lithuania (2000Q1-2012Q2), Poland (1999Q1-2011Q4), Russia (1999Q1-2012Q2), Slovakia (1995Q3-2012Q2), and Ukraine (2001Q4-2012Q2).

[3] http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home (EUROSTAT); http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/en/main/ (Federal State Statistical Service of Russian Federation); http://www.ukrstat.gov.ua/ (State Statistical Service of Ukraine).

[4] http://www.stooq.com/

1998Q2, Russia – 2008Q4, Slovakia-1998Q1 and 1998Q2, Slovakia – 2008Q3, and Ukraine - 2008Q3) and 0 otherwise. The dummies for 1998 refer the Russian financial crisis, the dummies for 2008 refer to the global financial crisis, and the dummies for 2011 correspond to the fears regarding the European sovereign debt and downgrade of the French sovereign rating.

Before proceeding to the co-integration analysis, the first step is to confirm that all variables are integrated of order one (I(1)) processes. In order to test the stationarity of the variables, the Augmented Dickey –Fuller (ADF) test is performed. The lag length for the test is chosen by the Schwarz information criterion (SIC). The results, displayed in Table 1, show that the logs of consumption, income and wealth in Bulgaria, Hungary, Lithuania, and Poland are I(1) processes. In the case of Czech Republic, the ADF test indicates that consumption and wealth variables are I(1), whereas an income variable is an I(2) process in the "constant" and the "constant and trend" specifications. However, from the test details it becomes clear that the constant term and the constant and trend terms are statistically insignificant at the five percent level; hence, the result of the ADF test specification without exogenous terms is accepted. For Estonia, income and wealth variables are I(1) processes, whereas a consumption variable is an I(1) process in the "constant" and "none" specifications of the ADF test and an I(2) process in the "constant and trend" specification. However, since the trend variable is statistically insignificant at the conventional levels, the consumption variable is also considered to be an I(1) process. For Latvia, the ADF test shows that income and wealth variables are I(1) processes, but a consumption is an I(2) process. In the case of Russia, wealth is an I(1) process; consumption and income variables are trend stationary. In Slovakia, income and wealth variables are I(1) processes, but a consumption variable is trend stationary. Finally, for Ukraine, the ADF test finds that income and wealth are I(1) processes, whereas the "none" specification considers a consumption variable to be an I(2) process. However, a consumption variable is to be regarded as an I(1) process because in the "constant" specification of the ADF test for the first difference, the constant is statistically significant at the five percent.

The use of parametric corrections for autocorrelation by the ADF test decreases its power; hence, there is a risk of erroneously failing to reject the null hypothesis of non-stationarity. For this reason, as an alternative, we employ the Phillips – Perron (PP) test which uses the semi-parametric correction. The PP test results, presented in Table 2, imply that all variables, except income variables in the case of Russia and Slovakia which are trend stationary, are I(1) processes. Since the PP test is superior to the ADF test in terms of autocorrelation correction, its results are preferred. Given that all variables are either I(1) processes or trend stationary, the co-integration methods can be applied. However, to account for trend stationarity of some variables in the case of Russia and Slovakia, the long-run equations of these countries will be augmented with time trend variables.

The presence of the structural breaks can question the reliability of the ADF test and PP test results because a break in a trend causes serial correlation which resembles a random walk; therefore, we may erroneously fail to reject the null hypothesis of a unit root for series with a break (Perron, 1989). However, in our case, the breaks in the series should not raise concerns because our finding that the variables are I(1) accords with the previous studies.

Table 1

Augmented Dickey Fuller test

Country	Variable	None Level	None 1st diff.	None 2nd diff	Constant Level	Constant 1st diff.	Constant 2nd diff	Constant and trend Level	Constant and trend 1st diff.	Constant and trend 2nd diff
Bulgaria	C	0.9843	0.0259	0.0000	0.3243	0.0000	0.0000	0.6876	0.0000	0.0000
	Y	0.9992	0.0000	0.0000	0.6521	0.0000	0.0000	0.2780	0.0000	0.0000
	W	0.6544	0.0004	0.0000	0.3277	0.0082	0.0000	0.5377	0.0111	0.0000
Czech Republic	C	0.9715	0.0000	0.0000	0.6803	0.0001	0.0000	0.9990	0.0003	0.0000
	Y	0.9985	0.0110	0.0000	0.3883	0.0751	0.0000	0.7931	0.2226	0.0000
	W	0.7022	0.0000	0.0000	0.6577	0.0000	0.0000	0.8893	0.0000	0.0000
Estonia	C	0.9212	0.0000	0.0000	0.4733	0.0000	0.0000	0.9834	0.0997	0.0000
	Y	0.9498	0.0000	0.0000	0.6087	0.0000	0.0000	0.9371	0.0000	0.0000
	W	0.8416	0.0000	0.0000	0.3720	0.0000	0.0000	0.7530	0.0003	0.0000
Hungary	C	0.9811	0.0048	0.0000	0.7058	0.0000	0.0000	0.9963	0.0000	0.0000
	Y	0.9451	0.0000	0.0000	0.7213	0.0000	0.0000	0.9913	0.0000	0.0000
	W	0.8912	0.0000	0.0000	0.0668	0.0000	0.0000	0.4375	0.0000	0.0001
Latvia	C	0.9310	0.0938	0.0000	0.6489	0.3801	0.0000	0.2116	0.7635	0.0000
	Y	0.9489	0.0000	0.0000	0.6652	0.0000	0.0000	0.9260	0.0000	0.0000
	W	0.7494	0.0000	0.0000	0.2914	0.0002	0.0000	0.7089	0.0005	0.0000
Lithuania	C	0.9967	0.0000	0.0000	0.4374	0.0000	0.0000	0.9542	0.0001	0.0000
	Y	0.9798	0.0000	0.0000	0.4040	0.0000	0.0000	0.9830	0.0001	0.0000
	W	0.7804	0.0000	0.0000	0.3909	0.0005	0.0000	0.7430	0.0025	0.0000
Poland	C	1.0000	0.0036	0.0000	0.8544	0.0000	0.0000	0.0853	0.0000	0.0000
	Y	0.9733	0.0035	0.0000	0.9776	0.0138	0.0000	0.3490	0.0275	0.0000
	W	0.5965	0.0000	0.0000	0.3126	0.0001	0.0000	0.5544	0.0008	0.0000
Russia	C	0.9905	0.0000	0.0000	0.9661	0.0000	0.0000	0.0409	0.0000	0.0000
	Y	0.9769	0.0013	0.0000	0.9716	0.0001	0.0000	0.0407	0.0003	0.0000
	W	0.6103	0.0000	0.0000	0.5445	0.0000	0.0000	0.1794	0.0000	0.0000
Slovakia	C	0.9788	0.0000	0.0000	0.7697	0.0000	0.0000	0.1147	0.0000	0.0000
	Y	0.9132	0.0000	0.0000	0.4331	0.0000	0.0000	0.0058	0.0001	0.0000
	W	0.4729	0.0000	0.0000	0.5822	0.0000	0.0000	0.8592	0.0001	0.0000
Ukraine	C	0.9998	0.0625	0.0000	0.6036	0.0000	0.0000	0.6735	0.0000	0.0000
	Y	0.9966	0.0000	0.0000	0.3899	0.0000	0.0000	0.5793	0.0000	0.0000
	W	0.7338	0.0000	0.0000	0.2199	0.0006	0.0000	0.9534	0.0012	0.0000

Notes: p values, H_0: a variable has a unit root.

Table 2

Phillips Perron Unit root test

Country	Variable	None			Constant			Constant and trend		
		Level	1st diff.	2nd diff	Level	1st diff.	2nd diff	Level	1st diff.	2nd diff
Bulgaria	C	0.9882	0.0000	0.0000	0.3030	0.0000	0.0001	0.7098	0.0000	0.0000
	Y	1.0000	0.0000	0.0000	0.4886	0.0000	0.0001	0.2780	0.0000	0.0000
	W	0.6858	0.0004	0.0000	0.4506	0.0079	0.0000	0.7853	0.0101	0.0000
Czech Republic	C	0.9973	0.0000	0.0000	0.2228	0.0000	0.0001	0.9980	0.0000	0.0001
	Y	0.9913	0.0000	0.0000	0.6780	0.0000	0.0001	0.9572	0.0000	0.0001
	W	0.6889	0.0000	0.0000	0.5261	0.0000	0.0001	0.7575	0.0000	0.0001
Estonia	C	0.9017	0.0000	0.0000	0.5258	0.0000	0.0001	0.9390	0.0000	0.0000
	Y	0.9557	0.0000	0.0000	0.6125	0.0000	0.0001	0.9446	0.0000	0.0000
	W	0.8052	0.0000	0.0000	0.5213	0.0001	0.0001	0.7971	0.0003	0.0000
Hungary	C	0.9412	0.0000	0.0000	0.7056	0.0000	0.0000	0.9800	0.0000	0.0001
	Y	0.9216	0.0000	0.0000	0.7100	0.0000	0.0001	0.9850	0.0000	0.0001
	W	0.8658	0.0000	0.0000	0.0646	0.0000	0.0001	0.3171	0.0000	0.0001
Latvia	C	0.9627	0.0000	0.0000	0.7200	0.0000	0.0001	0.5347	0.0000	0.0000
	Y	0.9232	0.0000	0.0000	0.6041	0.0000	0.0001	0.6124	0.0000	0.0000
	W	0.7490	0.0000	0.0000	0.3672	0.0001	0.0001	0.8064	0.0004	0.0000
Lithuania	C	0.9856	0.0000	0.0000	0.4932	0.0000	0.0001	0.9047	0.0000	0.0000
	Y	0.9697	0.0000	0.0000	0.4953	0.0000	0.0000	0.9495	0.0000	0.0000
	W	0.7906	0.0000	0.0000	0.5309	0.0004	0.0001	0.8565	0.0026	0.0000
Poland	C	1.0000	0.0000	0.0000	0.8392	0.0000	0.0001	0.1109	0.0000	0.0000
	Y	0.9782	0.0000	0.0000	0.9422	0.0000	0.0001	0.0596	0.0000	0.0000
	W	0.6501	0.0000	0.0000	0.3643	0.0001	0.0000	0.6853	0.0007	0.0000
Russia	C	0.9951	0.0000	0.0000	0.9681	0.0000	0.0001	0.1351	0.0000	0.0001
	Y	0.9480	0.0000	0.0000	0.9382	0.0001	0.0001	0.0422	0.0003	0.0001
	W	0.5924	0.0000	0.0000	0.3738	0.0000	0.0000	0.0827	0.0000	0.0000
Slovakia	C	0.9809	0.0000	0.0000	0.7772	0.0000	0.0001	0.1262	0.0000	0.0001
	Y	0.9177	0.0000	0.0000	0.3951	0.0000	0.0001	0.0052	0.0001	0.0001
	W	0.4532	0.0000	0.0000	0.5587	0.0000	0.0000	0.8383	0.0001	0.0000
Ukraine	C	0.9998	0.0000	0.0000	0.5962	0.0000	0.0000	0.6381	0.0000	0.0000
	Y	0.9984	0.0000	0.0000	0.3899	0.0000	0.0001	0.6148	0.0000	0.0000
	W	0.6783	0.0000	0.0000	0.2714	0.0004	0.0000	0.8818	0.0010	0.0000

Notes: p values, H_0: a variable has a unit root.

Empirical results

Following the previous studies, initially, we test the existence of the asymmetric co-integration using the TAR and M-TAR adjustment with zero thresholds. The test results which are not presented here for space reasons show that the null hypothesis of no co-integration ($\rho_1=\rho_2=0$) is rejected, but the null hypothesis of symmetric adjustment ($\rho_1=\rho_2$) is accepted for all countries. The failure to find asymmetry in the adjustment mechanisms should not be surprising because in the presence of adjustment costs and possibility of measurement errors, setting the threshold value to zero is not reasonable (Enders and Dibooglu, 2001). Indeed, the picture changes when we use the consistent estimates of the thresholds obtained through Chan's (1993) methodology. Table 3 reports the coefficients along with F-statistics for the co-integration and asymmetry tests for the TAR and M-TAR models with the consistent estimates of the threshold values. The lag length for each specification was determined based on the diagnostics checking of the residuals: the number of lags is increased from 0 to a certain number unless the LM test finds serial correlation in residuals.

Both specifications of all ten countries satisfy the necessary conditions for convergence ($\rho1<0$ and $\rho2<0$). Since inference made from the co-integration test based on the usual critical values can be incorrect, the values of the F-statistic for the null hypothesis ($\rho1=\rho2=0$) are compared with the critical values specially tabulated for the case of three variables in Enders and Dibooglu (2001). It is concluded that the null hypothesis of no co-integration is rejected at least at the 5% significance level in all cases except the TAR specification of Russia in which the null hypothesis is rejected only at the 10% level. Once co-integrating relationships are found, we can proceed to testing for asymmetry using the usual F statistic. In the case of Bulgaria, we fail to reject the null hypothesis of symmetric adjustment for both TAR and M-TAR specifications, and in the Latvian case, we cannot reject the null hypothesis only for the TAR specification, whereas for all other countries, we accept the alternative hypothesis for both specifications at the conventional levels. Since for Bulgaria no evidence for asymmetric adjustment in both specifications is found, this country is excluded from the subsequent analysis. In fact, the symmetric adjustment of the Bulgarian households to both negative and positive deviations implies that they follow an income trend and therefore are considered to be myopic.

Further, based on SC, we determine that the M-TAR process provides the better fit for Czech Republic, Hungary, Latvia, Lithuania, Russia, and Ukraine, whereas the TAR process fits the data better for Estonia, Poland, and Slovakia.

Having found support for asymmetric co-integration and determined the appropriate adjustment mechanisms, we proceed to the estimation of the error correction models. The estimates of the asymmetric error correction models and the results of the diagnostic tests are displayed in Table 4. The LM, ARCH, and Jarque-Bera tests show that the residuals of all estimated equations do not suffer from both serial correlation and heteroskedasticity and follow normal distribution. At the first glance, it can be surprising to see positive adjustment coefficients in some models since a positive error correction term implies divergence rather than convergence; however, these phenomena should not raise concerns since they are statistically insignificant at the conventional levels. Furthermore, the statistical insignificance of the error correction terms should in no way be interpreted as the absence of the co-integration relationship. In fact, the insignificance of the error correction term implies that the adjustment of household consumption to shocks takes place within one period (Paiella, 2009).

Table 3

Asymmetric co-integration test with the threshold estimates

Country	Type	ρ_1	ρ_2	$\Phi(\rho_1=\rho_2=0)$, statistic	$\Phi(\rho_1=\rho_2)$, p-value	Lag	SC	LM test, p-value	τ
Bulgaria	TAR	-0.764	-0.077	9.930**	0.143	0	-4.338	0.310	-0.022
		(-4.453)	(-0.179)						
	M-TAR	-0.562	-1.187	9.894**	0.148	0	-4.311	0.0502	-0.268
		(-3.211)	(-3.079)						
Czech Republic	TAR	-0.034	-0.706	19.194***	0.001	0	-6.459	0.273	0.010
		(-0.219)	(-6.192)						
	M-TAR	-0.944	-0.239	19.920***	0.001	0	-6.473	0.533	0.012
		(-5.942)	(-2.130)						
Estonia	TAR	-0.815	-0.023	15.452***	0.002	0	-3.403	0.397	-0.037
		(-5.558)	(-0.119)						
	M-TAR	-1.308	-0.196	9.302**	0.001	-2	-3.369	0.263	0.045
		(-4.257)	(-1.315)						
Hungary	TAR	-0.059	-0.486	9.908**	0.018	0	-5.276	0.613	0.017
		(-0.431)	(-4.431)						
	M-TAR	-0.183	-0.897	13.284***	0.001	0	-5.351	0.352	-0.018
		(-1.991)	(-4.754)						
Latvia	TAR	-0.993	-0.835	10.270**	0.758	0	-1.708	0.057	0.093
		(-2.144)	(-3.993)						
	M-TAR	-1.587	-0.608	27.540***	0.002	0	-1.913	0.265	0.074
		(-6.326)	(-3.881)						
Lithuania	TAR	-0.156	-0.905	16.757***	0.025	0	-4.488	0.463	0.022
		(-0.553)	(-5.763)						
	M-TAR	-1.421	-0.473	20.518***	0.002	0	-4.577	0.299	0.027
		(-5.616)	(-3.082)						
Poland	TAR	-0.004	-0.311	9.127**	0.015	-2	-5.071	0.944	0.017
		(-0.045)	(-4.271)						
	M-TAR	-0.359	-0.085	8.454**	0.026	-2	-5.050	0.491	0.023
		(-4.001)	(-1.062)						
Russia	TAR	-0.386	-0.008	6.609*	0.033	0	-4.615	0.585	-0.022
		(-3.636)	(-0.057)						
	M-TAR	-0.048	-0.665	11.389***	0.001	0	-4.744	0.9784	-0.022
		(-0.499)	(-4.746)						
Slovakia	TAR	-0.050	-0.872	9.659**	0.003	-6	-3.782	0.459	0.032
		(-0.192)	(-4.085)						
	M-TAR	-1.104	-0.259	12.706***	0.001	-1	-3.751	0.071	0.027
		(-4.734)	(-2.171)						
Ukraine	TAR	-0.148	-0.725	10.636***	0.047	0	-3.820	0.561	0.027
		(-0.638)	(-4.568)						
	M-TAR	-0.950	-0.252	12.820***	0.010	0	-3.888	0.516	0.027
		(-4.828)	(-1.525)						

Notes: *, **, *** indicate significance at the 10, 5 and 1% levels respectively

Table 4

The estimated error correction equations using the threshold estimates

Country	Type	ρ_1	ρ_2	Lag	SC	LM test, p-value	ARCH test, p-value	JB, p-value	τ
Czech Republic	M-TAR	-0.505** (-2.095)	-0.205 (-1.449)	2	-6.107	0.206	0.847	0.329	0.012
Estonia	TAR	-0.568*** (-2.968)	0.253 (1.094)	1	-3.162	0.916	0.370	0.724	-0.037
Hungary	M-TAR	0.173 (1.647)	-0.308 (-1.438)	1	-5.127	0.642	0.218	0.996	-0.018
Latvia	M-TAR	-0.851*** (-3.356)	-0.012 (-0.068)	1	-1.975	0.536	0.288	0.796	0.074
Lithuania	M-TAR	-0.659 (-1.525)	-0.480* (-1.723)	1	-3.657	0.392	0.755	0.315	0.027
Poland	TAR	-0.096 (-1.239)	0.008 (0.178)	1	-5.941	0.985	0.399	0.072	0.017
Russia	M-TAR	-0.063 (-0.636)	-0.079 (-0.404)	6	-4.352	0.957	0.673	0.095	-0.022
Slovakia	TAR	-0.533** (-2.435)	-0.398** (-2.356)	1	-3.383	0.164	0.583	0.609	0.032
Ukraine	M-TAR	0.637 (1.569)	0.680 (1.689)	7	-2.822	0.671	0.687	0.917	0.027

Notes: *, **, *** indicate significance at the 10, 5 and 1% levels respectively

The Czech model indicates that the adjustment term is statistically significant for a deviation above the long-run equilibrium but not for a deviation below the equilibrium. The magnitude of the adjustment coefficient implies that consumption converges by 50% of a positive deviation from the equilibrium within one quarter. At the same time, the insignificance of the adjustment coefficient for a negative discrepancy suggests that the Czech households adjust completely to a negative deviation within one quarter.

In the case of Estonia similar to the Czech model, only the adjustment term for a positive deviation is statistically significant at the conventional levels. It appears that within one period households adjust by 57% of a positive discrepancy. The insignificance of the negative adjustment term implies that the Estonian households complete the adjustment process within one quarter.

The results of the M-TAR model of Hungary show that the adjustment coefficients for both negative and positive deviations from the long-run equilibrium are not statistically significant at the 5% level. The insignificant error correction terms suggest that households fully correct negative and positive discrepancies within a quarter.

The estimation output of the Latvian M-TAR model indicates that the adjustment term for a positive discrepancy is significant at the 1% level, whereas for a negative discrepancy, it is insignificant. Thus, the Latvian households adjust 85% of a positive deviation in one quarter and adjust fully to a negative deviation within one quarter.

In the case of Lithuania, the error correction term for a positive deviation is not significant and for a negative deviation, the term is significant only at the 10% level. Hence, it can be assumed that the Lithuanian households adjust completely to both positive and negative deviations from the long-term equilibrium within one quarter.

The results of the Polish model show that the adjustment coefficients for positive and negative deviations are insignificant. The insignificance of the adjustment terms suggests that the adjustment process for deviations above and below the equilibrium level is completed within one quarter.

For Russia, it is found that the adjustment terms for both negative and positive deviations are not significant at the conventional levels. The results allow us to conclude that the Russian households correct negative and positive discrepancies completely in one quarter.

The Slovak results differ from the results of the other countries because in the Slovak model, the adjustment terms for negative and positive deviations are statistically significant at the 5% level. Meanwhile, the magnitudes of the terms suggest that the speed of adjustment is faster for positive than for negative discrepancies. Numerically, we can say that 53% of positive and 40% of negative discrepancies are corrected in one quarter.

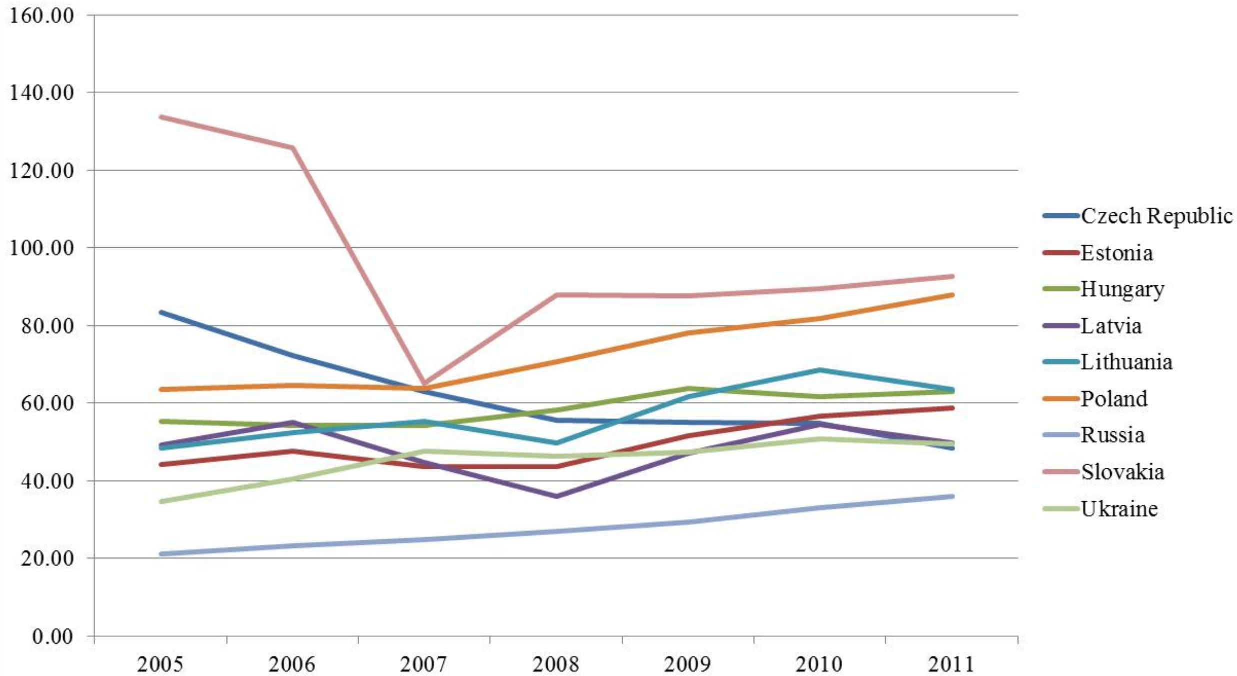
Finally, the output of the Ukrainian model shows that both adjustment terms are statistically insignificant at the conventional levels. Thus, the results suggest that the households adjust completely to positive and negative deviations within one period.

Generalizing the aforementioned empirical results, we can conclude that the Czech, Estonian, Hungarian, Latvian, Lithuanian, Polish, Russian, and Ukrainian households are loss averse as they immediately adjust to negative deviations of consumption from the long-run equilibrium levels. The Slovak households, on the contrary, are liquidity constrained since they do not correct downward disequilibria immediately. Furthermore, the immediate and full adjustment of households in Hungary, Lithuania, Poland, Russia, and Ukraine to positive discrepancies allows us to suggest that households in these countries prefer to translate increases in income and wealth into savings. In Czech Republic, Estonia, Latvia and Slovakia, on the contrary, households do not hurry to put extra money into savings.

Overall these findings only partially agree with the findings of Sonje et al. (2012). For example, if for Estonia, our results are the same, for Bulgaria and Czech Republic, the results are different. The differences in the findings can be explained by the differences in terms of time periods, definitions of consumption and income, proxies for wealth, and use of event dummy variables.

The conclusion that households in all CEE countries but Slovakia are loss averse while the financial systems in these countries fall behind their high income counterparts is surprising. The plausible explanation of this finding is that under the condition of limited liquidity, households dissave to maintain the same level of consumption. Indeed, Figure 3 shows that the households deposits/compensation to employee ratio in CEE countries where households are loss averse are lower than in Slovakia where households are liquidity constrained.

Figure 3. **Household deposits to compensation of employees, %**



Sources: The Central Banks of CEE countries and Eurostat

Conclusions

The ability of households to smooth consumption in times of negative shocks largely depends on their ability to borrow which is subject to the development of the domestic banking sector. Households in countries with relatively underdeveloped banking sectors will encounter difficulties in obtaining loans, and they will decrease consumption, whereas households in countries with relatively developed banking sectors will exhibit loss aversion and maintain the same consumption level through easy credit access.

Given that the banking sectors in CEE countries are immature in comparison with those of high income countries, we can expect that CEE households are liquidity constrained; hence, they will be unable to smooth consumption. To test this hypothesis, we use TAR and M-TAR models and find that, on contrary to our initial expectation, households in all CEE but Bulgaria and Slovakia demonstrate loss aversion and adjust to negative deviations of consumption from the equilibrium level within one period. Since households' opportunities to maintain consumption through borrowing are limited, they do it through depleting own savings.

Obviously, there is a risk that if households continuously dissave to smooth consumption and their income does not increase in the future, the level of savings will be low. Low savings can hamper economic growth because savings determines investment and therefore economic growth.

References

Ando, A., and F. Modigliani. "The Life Cycle Hypothesis of Saving: Aggregate Implications and Tests." *American Economic Review* 53, no. 1 (March, 1963): 55-84.

Apergis, N. and S. M. Miller. "Consumption Asymmetry and the Stock Market: Empirical Evidence." *Economics Letters* 93, no. 3 (December, 2006): 337-342.

Beznoska M. and R. Ochmann. "Liquidity Constraints and the Permanent Income Hypothesis: Pseudo Panel Estimation with German Consumption Survey Data." Discussion Papers of DIW Berlin 1231, DIW Berlin, German Institute for Economic Research, (2012).

Bowman, D., D. Minehart and M. Rabin. "Loss Aversion in a Consumption–Savings Model." *Journal of Economic Behavior and Organization* 38, no. 2 (February, 1999): 155-178.

Chan, K.S. "Consistency and Limiting Distribution of the Least Squares Estimator of a Threshold Autoregressive Model." *The Annals of Statistics* 21, no. 1 (March, 1993): 520-533.

De Brouwer, G. "Consumption and Liquidity Constraints in Australia and East Asia: Does Financial Integration Matter?" Reserve Bank of Australia Research Discussion Papers 9602, (May, 1996).

Dickey, D.A., and W.A. Fuller. "Distributions of the Estimators for Autoregressive Time Series with a Unit Root." *Journal of American Statistical Association* 74, no. 366 (June, 1979): 427-431.

Enders, W. and P.L. Siklos. "Cointegration and Threshold Adjustment." *Journal of Business and Economic Statistics* 19, no. 2 (April, 2001):166-176.

Enders, W. and S. Dibooglu. "Long-run Purchasing Power Parity with Asymmetric Adjustment." *Southern Economic Journal* 68, no. 2 (October, 2001): 433-435.

Flavin, M. "Excess Sensitivity of Consumption to Current Income: Liquidity Constraints or Myopia?" *Canadian Journal of Economics* 18, no. 1 (February, 1985):117-136.

Gomez F.A.R. and L.S. Paz. "Consumption in South America: Myopia or Liquidity Constraints?" *Economia Aplicada* 14, no. 2 (2010): 129-145.

Hahm J, H.S. Shin, K. Shin. "Non-Core Bank Liabilities and Financial Vulnerability." NBER Working Paper no. 18428, (September, 2012).

Kahneman, D. and A. Tversky. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47, no. 2 (March, 1979): 263-291.

Kahneman, D., J.L. Knetsch and R.H. Thaler. "The Endowment Effect, Loss Aversion, and Status Quo Bias: Anomalies." *Journal of Economic Perspectives* 5, no. 1(winter, 1991):193-206.

Madsen, J.B. and M. Mcaleer. "Direct Tests of the Permanent Income Hypothesis under Uncertainty, Inflationary Expectations and Liquidity Constraints." *Journal of Macroeconomics* 22, no. 2 (April, 2000): 229-252.

Mehra, Y. P. "The Wealth Effect in Empirical Life-cycle Aggregate Consumption Equations." *Federal Reserve Bank of Richmond Economic Quarterly* 87, no. 2 (spring, 2001): 45-68.

Paiella, M. "The Stock Market, Housing, and Consumer Spending: A Survey of the Evidence on wealth effects." *Journal of Economic Surveys* 23, no. 5 (December, 2009): 947-973.

Patterson, K. D. "The Impact of Credit Constraints, Interest Rates and Housing Equity Withdrawal on the Intertemporal Pattern of Consumption -A Diagrammatic Analysis." *Scottish Journal of Political Economy* 40, no. 4 (November, 1993): 391-407.

Perron, P. "The Great Crash, the Oil Price Shock, and the Unit Root Hypothesis." *Econometrica* 57, no. 6 (November,1989): 1361-1401.

Phillips, P. C. B., and P. Perron. “Testing for a Unit Root in Time Series Regression.” *Biometrica* 75, no. 2 (June, 1988): 335-346.

Shea, J. “Myopia, Liquidity Constraints, and Aggregate Consumption: A Simple Test.”*Journal of Money, Credit, and Banking* 27, no. 3 (August, 1995): 798-805.

Sonje A.A., A.C. Casni and M. Vizek. "Does Housing Wealth Affect Private Consumption in European Post-Transition Countries? Evidence from Linear and Threshold Models." *Post-Communist Economies* 24, no. 1(June, 2012): 73-85.

Shirvani, H. and B. Wilbratte. “Does Consumption Respond More Strongly to Stock Market Declines Than to Increases?” *International Economic Journal* 14, no. 3(2000): 41-49.

Tversky, A. and D. Kahneman. "Loss Aversion in Riskless Choice: A Reference-Dependent Model." *The Quarterly Journal of Economics* 106, no. 4 (November, 1991): 1039-1061.

Van Treeck, Till. "Asymmetric Income and Wealth Effects in a Non-Linear Error Correction Model of US Consumer Spending." IMK Working Paper 06-2008, IMK at the Hans Boeckler Foundation, Macroeconomic Policy Institute, (June, 2008).

Zandi, M.R. “Wealth Worries.” *Regional Financial Review*, (August, 1999): 1-8.

DAVIDSON INSTITUTE WORKING PAPER SERIES - Most Recent Papers

The entire Working Paper Series may be downloaded free of charge at: www.wdi.umich.edu

CURRENT AS OF 9/23/14

Publication	Authors	Date
No. 1082: Liquidity Constraints, Loss Aversion, and Myopia: Evidence from Central and Eastern European Countries	Ramiz Rahmanov	Aug 2014
No. 1081: The Real Exchange Rate and Growth in Zimbabwe: Does the Currency Regime Matter?	Zuzana Brixiová and Mthuli Ncube	Aug 2014
No. 1080: Recent Estimates of Exchange Rate Pass-Through to Import Prices in the Euro Area	Nidhaleddine Ben Cheikh and Christophe Rault	Aug 2014
No. 1079: How smooth is the stock market integration of CEE-3?	Eduard Baumöhl and Štefan Lyócsa	June 2014
No. 1078: The Role of the Business Cycle in Exchange Rate Pass-Through: The Case of Finland	Nidhaleddine Ben Cheikh and Christophe Rault	June 2014
No. 1077: Skills and youth entrepreneurship in Africa: Analysis with evidence from Swaziland	Zuzana Brixiova, Mthuli Ncube & Zorobabel Bicaba	May 2014
No. 1076: Can Dreams Come True? Eliminating Extreme Poverty In Africa By 2030	Mthuli Ncube, Zuzana Brixiova & Zorobabel Bicaba	April 2014
No. 1074: Bridging the Gender Gap in Entrepreneurship: Evidence from Europe	Elvin Afandi & Majid Kermani	Feb 2014
No. 1073: Can Intra-Regional Trade Act as a Global Shock Absorber in Africa?	Mthuli Ncube, Zuzana Brixiova & Qingwei Meng	Feb 2014
No. 1072: The Dynamics of Firm Lobbying	William R. Kerr, William F. Lincoln and Prachi Mishra	Jan 2014
No. 1071: Skilled Immigration and the Employment Structures of U.S. Firms	Sari Pekkala Kerr, William R. Kerr and William F. Lincoln	Jan 2014
No. 1070: Exchange Rate Pass-Through to Domestic Prices under Different Exchange Rate Regimes	Rajmund Mirdala	Jan 2014
No. 1069: Ailing Mothers, Healthy Daughters? Contagion in the Central European Banking Sector	Tomas Fiala & Tomas Havranek	Jan 2014
No. 1068: The Real Exchange Rate and External Competitiveness in Egypt, Morocco and Tunisia	Zuzana Brixiova, Balázs Égert, and Thouraya Hadj Amor Essid	Jan 2014
No. 1067: Economic (In)Security And Gender Differences In Trade Policy Attitudes	Jeffrey Drope and Abdur Chowdhury	Jan 2014
No. 1066: Do business groups help or hinder technological progress in emerging markets? Evidence from India	Sumon K. Bhaumik and Ying Zhou	Jan 2014
No. 1065: Fiscal Imbalances and Current Account Adjustments in the European Transition Economies	Rajmund Mirdala	Nov 2013
No. 1064: Real Output and Prices Adjustments Under Different Exchange Rate Regimes	Rajmund Mirdala	Nov 2013
No. 1063: The Distribution Dynamics of Income in Central and Eastern Europe relative to the EU: A Nonparametric Analysis	Nickolay Nenovsky & Kiril Tochkov	Nov 2013