

## ECONOMIC AND DEMOGRAPHIC PROFILES OF CZECH HOUSEHOLDS

Tomáš Pivoňka – Kornélia Cséfalvaiová – Darya Korlyakova

---

### Abstract

Although cross-cultural differences in individual rationality have been investigated at least in a few studies, their results are contradictory. Therefore, it is not clear if some nations are more rational (in the traditional economic sense) than others. In addition, Czech researchers have insufficiently used two-sided approach (i.e. combination of neoclassical and behavioral economic theories) to gain insights into individual decision-making. This paper, which is aimed at examining dependence between gross income and socio-demographic characteristics of Czech households on the one hand and different kinds of Czech households' income and consumption on the other hand, is the first step toward narrowing the above research gap. On the basis of EU-SILC data set, we have constructed the distribution of Czech households selecting different economic features, like household type or income level. From the demographic perspective, age and gender belong among the most important characteristics. As Czech population gets older, people live longer, the share of single-person households is increasing. For this reason, development related to one-person households and gross money income is shown in this article. We have also analyzed dynamics of Czech households' income and consumption over the life cycle. As a result, we have found that younger people are prone to overconsumption while the older ones behave more prudently. In addition, age-income profiles differ for the employed and retired households. The findings of this paper will be used in our subsequent research whose purpose is described above.

**Key words:** Czech households, income, demographic characteristics.

**JEL Code:** D14, D30, J1

---

### Introduction

In this paper we analyze differences in Czech households' earnings and households' savings by describing socio-demographic determinants of savings, mainly age and gender. Age plays

an important role in households' savings and expenses, young people have the tendency to have higher expenses than income, people in the middle ages put money aside and make savings and old people have the tendency to spend money without making money savings. Savings are from the macroeconomic view an important variable because it represents the potential source of investments and subsequently economic growth. On the other hand, households are heterogeneous in terms of age profile, income, educational level, size, and economic activity. Therefore, analysing households' savings behaviour is important for understanding economic growth (Beckmann *et al.*, 2013).

In the first part of the paper we give a theoretical introduction to interconnection of income, consumption, and savings. For the sake of brevity, we consider only one approach.

### 1. Permanent income hypothesis

According to the hypothesis, an individual, who lives for T periods, has life-time utility represented by sum of utilities from consumption till time T. The equation of utility function can be written as

$$U = \sum_{t=1}^T u(C_t),$$

where  $u(\cdot)$  is a utility function and  $C_t$  is consumption in period t. The individual has initial endowment  $A_0$  and has some labour income expressed as  $Y_t$ . The person takes labour income in T period of his/her life as given. The individual faces a consumption decision how many of his/her total income (initial plus labour earnings) will be consumed. The income can be consumed completely or some portion of it can be saved as a savings. On the other hand, the individual can borrow some money to finance his/her higher consumption which can be higher than his/her income. Budget constraint can be written in the following form, where we expect that a representative agent will not consume more than his/her income plus its initial endowment:

$$\sum_{t=1}^T C_t \geq A_0 + \sum_{t=1}^T Y_t$$

The very simple maximization problem can be solved when a representative agent will maximize utility from consumption under given budget constraint. The Lagrangian for his/her maximization problem is

$$L = \sum_{t=1}^T u(C_t) + \lambda(A_0 + \sum_{t=1}^T Y_t - \sum_{t=1}^T C_t).$$

Because the first-order condition for  $C_t$  is  $u'(C_t) = \lambda$  which holds in every period, marginal utility of consumption is constant. As the level of consumption is determined by its marginal utility, consumption must be constant too. We can thus rewrite budget constraint in the following form, using the above mentioned statements:

$$C_t = \frac{1}{T} \left( A_0 + \sum_{t=1}^T Y_t \right)$$

Consumption of the representative agent is thus a sum of his/her income and initial endowment, which is divided by the length of expected life-time. Changes in transitory income are spread between numbers of years till the end of life and thus these changes do not affect consumption. It means that only permanent changes of income are sufficient to change consumption.

Another important indicator is savings. We can determine savings as a difference between income and consumption. Using the simple model of permanent income, savings can be written as

$$S_t = Y_t - C_t = Y_t - \frac{1}{T} \left( A_0 + \sum_{t=1}^T Y_t \right)$$

$$S_t = \left( Y_t - \frac{1}{T} \sum_{t=1}^T Y_t \right) - \frac{1}{T} A_0$$

The expression in the parentheses is the difference between current income and average income. It is clear that current income affects savings positively as individuals in economy save the surplus of their earnings. These savings can be used in future and thus savings are deferred consumption.

Next we consider such features of households which will give the reader concise overview about recent financial and population-related changes in Czech society.

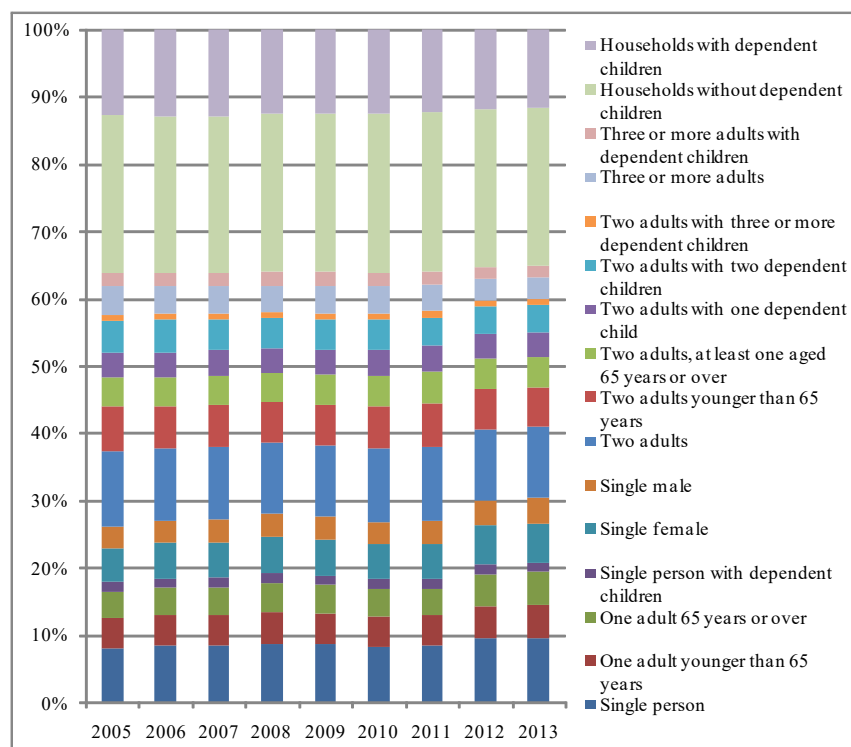
## 2. Economic and Demographic Characteristics of Households

Population change and dynamics have a significant impact on the development of various characteristics at the macroeconomic level. From analyzing and monitoring the demographic aspects of households, national policies may obtain useful scenarios and projections about their future development. Age and gender belong among the most important demographic attributes. In our research we focused on the distribution of Czech households selecting

different features, like household type or income level. Data have been obtained from the database of EU-SILC (Survey on Income and Living Conditions).

### 1.1 Distribution of Czech Households

**Fig. 1: Distribution of households by household type and income level in the Czech Republic**

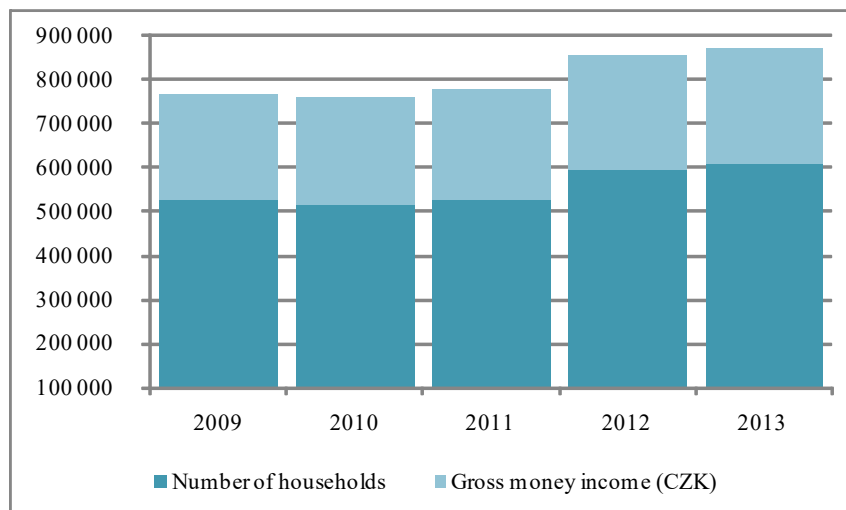


Source: Source: Eurostat Database, EU-SILC, authors' construction

Distribution of households concerning different aspects changes in time. It is strongly influenced by population structure and age structure, not mentioning economic and financial situation of individuals. As a result of changes in demographic and social behavior, decreasing number of marriages and increasing number of alternative forms of partnership, the household types are also affected by ongoing trends.

The share of single-person households has increased from 22.8% in 2005 to 27.8% in 2013. The difference takes 5%. Another significant increase is visible for households inhabited by people aged 65 and over, single females or single males (Fig. 1). Group of seniors (65 years and over) will grow by 66% in the upcoming decades according to conventional measurement (Stejskal, 2014).

**Fig. 2: One-person households under 65 years and gross money income in the Czech Republic**

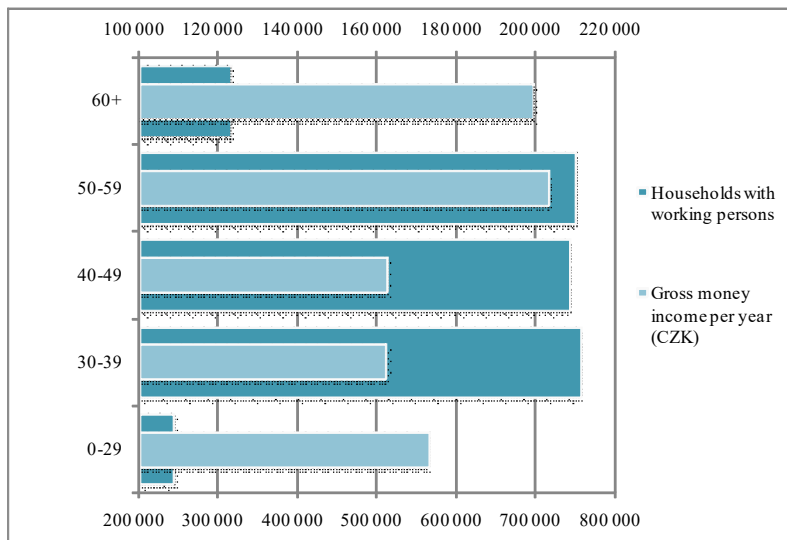


Source: Czech Statistical Office, authors' construction

From Fig. 2 it is also evident that the proportion of one person households under 65 years has increased during the followed period (the difference takes 80 290 households).Gross money income per year has also risen by 23 908 CZK.

Currently, the phenomenon of households with older people seems to be relevant for future research. In the beginning of the 20th century, increasing age was usually associated with susceptibility to poverty as the ability to work and incomes fell. Recently, older people have significantly higher income in retirement than the general population. The main source of their income is comprised of state pensions and other forms of social transfers (O'Sullivan, Layte, 2011).

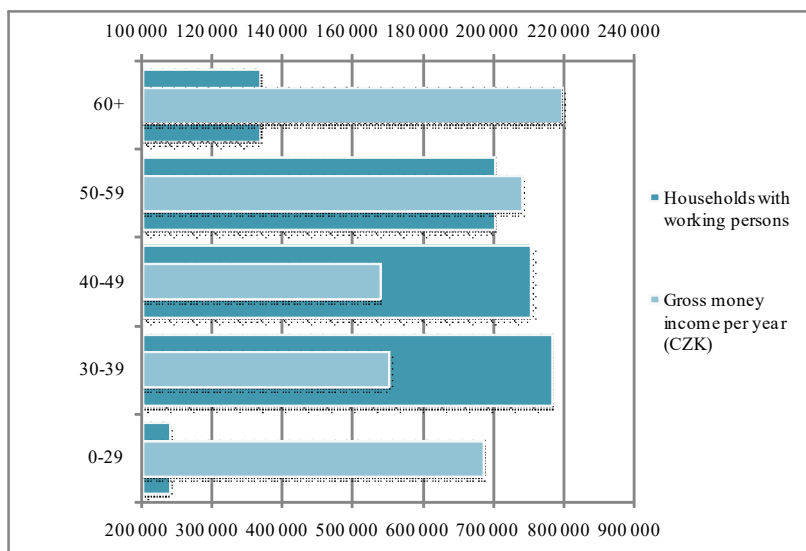
**Fig. 3: Households by age of household head and gross money income in the Czech Republic, 2009**



Source: Czech Statistical Office, authors' construction

The view of old age and older population has changed completely and with the increasing life expectancy more and more people aged 65+ are staying at the labour market, receiving their pension as well as the salary. Therefore, old age is no longer considered to be the phase of low income.

**Fig. 4: Households by age of a household head and gross money income in the Czech Republic, 2013**



Source: Czech Statistical Office, authors' construction

When looking at households by age of household head and gross money income in the Czech Republic in 2009 and 2013, some movements are visible. In both studied years, the contribution of the age category 30–39 was the most significant from the view of number of households with economically active people. Gross money income was the highest for people aged 50–59 in 2009 and it has moved upon the age interval 60+ in 2013. Again, we proved the variability of age structures in the context of gross money income.

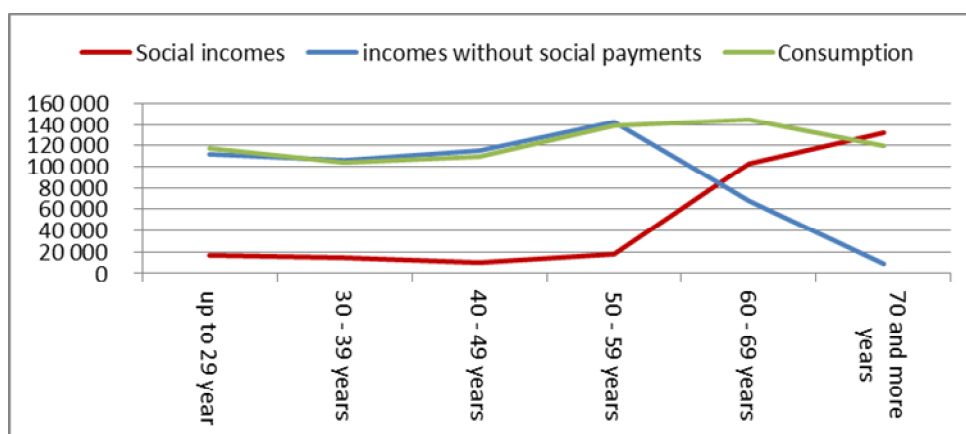
### 3. Life-cycle changes of Czech households' financial behavior

In this part we describe dynamics of Czech households' income and consumption during the life cycle. As theory suggests, consumption should be constant because movements of temporary income are spread over the length of household's life. On the basis of the below graph, we can conclude that younger people consume more than they can afford. People in productive age pay back their debts created in the past and also save some money in order to finance their consumption in retirement. We show here the situation of Czech households in 2013 as statistics from this period are the most recent data available.

Consumption is more or less constant with slight increase around the 50<sup>th</sup> year of life. Incomes are divided into social incomes which are paid by the government and personal earnings. A household aged below 60 years has consumption equal to income without social payments and social payments are relatively low. As individuals are getting older, social incomes are increasing. This fact is not surprising because older people move into the retirement phase and draw just a pension. However, we can emphasize here that people rely

on the help from the state, because an average household has only a small amount of savings from the productive life and finances its consumption in the retirement mainly from pensions.

**Fig. 5: Czech households' income and consumption, 2013**



Source: Czech Statistical Office, authors' construction

## Conclusion

Nowadays the connection between households' earnings savings and consumption is a frequently discussed area. One of the possible explanations can be found in increasing costs of living. In the presented article we have verified the permanent income hypothesis using the data from the Czech Statistical Office. In addition, we have considered life-cycle movements in different types of household income. Also, we have discussed the distribution of Czech households from economic and demographic perspectives. We describe here the composition of an average Czech family by the types of its members and the same statistics of households'



income. Further research should be undertaken in the area of one-person households – related to changes in the age structure of the Czech population.

## Acknowledgment

This article was supported by Internal Grant Agency of the University of Economics, Prague (No. 41/2015) under the title „Rationality of Czech Consumers“ and was processed with contribution of long term institutional support of research activities by Faculty of Informatics and Statistics, University of Economics, Prague.

## References

Milton Friedman (1956) A Theory of the Consumption Function, Princeton University Press

Romer D., (2012) Advanced Macroeconomics, Fourth edition, McGraw-Hill Irwin

Gerlach-Kristen, Petra (2014) "Testing the Permanent Income Hypothesis for Irish

Households, 1994 to 2005" ECONOMIC AND SOCIAL REVIEW Volume: 45 Issue: 4  
Pages: 511-535 Published: WIN 2014

Laibson, D., Repetto, A., & Tobacman, J. (2000). A debt puzzle. The National Bureau of Economic Research. Working Paper 7879. 71 pp.

Carroll, Christopher D. (1997): “Buffer Stock Saving and the Life Cycle/Permanent Income Hypothesis,” Quarterly Journal of Economics, CXII(1), 1-56,<http://econ.jhu.edu/people/ccarroll/BSLCPIH.zip>. -

Beckmann, E., Hake, M., Urvova, J. (2013). *Determinants of Households' Savings in Central, Eastern and Southeastern Europe*. Focus on European Economic Integration Q3/2013. <http://www.oenb.at/Publikationen/Volkswirtschaft/Focus-on-European-Economic-Integration/2013/Focus-on-European-Economic-Integration-Q3-13.html>

Czech Statistical Office.(2013). *Příjmy a životní podmínky domácností – 2013*. <https://www.czso.cz/csu/czso/prijmy-a-zivotni-podminky-domacnosti-2013-8regfcpn5e>

European Statistical Office. EUROSTAT Database. *Distribution of households by household type and income level*. <http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/themes>

O'Sullivan, V., Layte, R. (2011). *Income And Asset Levels Of Older People*. In: A. Barrett, G. Savva, V. Timonen & R. Kenny (eds), Fifty Plus in Ireland 2011: First Results from the Irish Longitudinal Study on Ageing, p. 243-264. <http://tilda.tcd.ie/assets/pdf/glossy/Chapter9.pdf>

Stejskal, J., Bartošová, J. (2014). *Innovative Approaches Focused on Population Ageing in the Czech Republic*. International Days of Statistics and Economics. Prague. [http://msed.vse.cz/msed\\_2014/article/395-Stejskal-Jakub-paper.pdf](http://msed.vse.cz/msed_2014/article/395-Stejskal-Jakub-paper.pdf)

**Contact**

Tomáš Pivoňka

University of Economics, Prague

W. Churchill Sq. 4

130 67 Prague 3

[tomas.pivonka@vse.cz](mailto:tomas.pivonka@vse.cz)

Kornélia Cséfalvaiová

University of Economics, Prague

W. Churchill Sq. 4

130 67 Prague 3

[kornelia.csefalvaiova@vse.cz](mailto:kornelia.csefalvaiova@vse.cz)

Darya Korlyakova

University of Economics, Prague

W. Churchill Sq. 4

130 67 Prague 3

[korlyakova.d@gmail.com](mailto:korlyakova.d@gmail.com)