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Macroeconomic analysis of the capital market  
effects of ageing: asset meltdown, implications  
for pension systems and the government Ponzi-  
game

Theses of PhD dissertation

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## **1. Premises and motivation**

As an analyst and researcher of the government securities market examination of domestic capital markets stands in focus of my activity. Hungarian experiences show that institutional investors on the domestic capital market, such as pension funds, play a significant role in domestic financing. The behaviour of pension funds and the decisions of regulators strongly affect both the stability of the government securities market and the funding process.

Economic policy and regulatory aims regarding pension funds caused some conflicts on the government securities market. As it was later confirmed, concerns about stability were reasonable, although usually we were confronted with pressure from the financial sector and the disputes of market actors (eg. Pension Funds and Government Securities Market – Facts and Misbeliefs, portfolio.hu, 27 August 2009).

This reveals the importance of the long run examination of different investment opportunities and the analysis of stock market returns and government bond yields. Pension funds in advanced economies invest mainly in stocks, while government bond investment is weak in „Anglo-Saxon”

markets. In the developed countries stock returns were significantly outperforming government securities yields until the end of the 90's. However, yields on stocks were underperformers as an average in the last 15-20 years, due to stock market bubbles bursting in 1999-2001 and in 2008. Until the end of first decade of the 2000s the long term stock market returns decreased to the level of long term government securities yields in advanced countries as well (eg. Visco, 2008).

This has led to the rethinking of some basic issues of the funded pension system. The three-pillar pension scheme in Hungary fit well with the paradigm of the „Washington Consensus”. Mária Augusztinovics called the arguments supporting the funded pension scheme the „new pension orthodoxy” (Augusztinovics, 2002). The “funded pillar school” has had a significant effect on Hungarian economic literature in the last 20 years and has been largely unquestioned (with only a few exceptions). The mainstream theory suggested that

- the problems of the pay-as-you-go pension system caused by ageing could be avoided by savings accumulation in pension funds,
- investment in stocks in the funded pillar provides extra yield and gives protection against the ageing of society.

I have debated the ideas of the generation of economists cultured by the „Washington Consensus”. The basic question has been whether funded pension schemes themselves really do protect against ageing. „My pension depends on what assets I accumulated, and how effectively I invested them, and doesn't depend on demographic factors like the active population and the number of pensioners” – they stated. In contrast, an important methodological innovation of my paper is that it confronts the accumulation process of individuals with the macroeconomic saving processes. This means that temporal (longitudinal) processes are compared and checked with cross-sectional processes. I treated individual accumulation as a part of generational accumulation, and so it is clear, that on a macro level there is an income and wealth transfer between generations. In other words, the cohort of pensioners can use their wealth (sell their assets) only if the subsequent active population buys them. The value of the assets also depends on the propensity to save of this later active population. If active generation is small, or if it has fewer savings than the previous active generation, then this savings amount will be the base of consumption of the pensioner generation. The macroeconomic equality between pensioner consumption and active population savings will be realized by a decrease of the real value of these assets, when

these assets are sold. In the literature the reduction of asset values on a large scale is called an asset meltdown. Therefore the proportion of actives and pensioners is important not only in the social security system but also in the funded (accumulation based) pension system. Since ageing is a general process the effects of which cannot be eliminated by choosing among types of pension systems themselves. In this paper I systematize the main arguments supporting this statement and back them with references from the literature.

The paper presents the complex way how ageing affects macroeconomic processes. This demographic phenomenon influences the conditions of growth, the relation of consumption, savings and income, the capital flow, and the balance of payments flows between regions as well. The capital market effect and asset meltdown is only one particular aspect of ageing with solid macroeconomic factors in their background.

The paper deals with details of the demographic background of government securities market processes. A very special phenomenon also came into the focus of the study, the possibility of a Ponzi scheme. Many governments, like that of the United States, have for a long time experienced that nominal interest payouts on government debt are lower than the nominal rate of GDP growth. Consequently it could seem

to be the case that over the time of several generations growth in government debt has not produced a real burden to society. In the paper I examine this issue as well. Applying an overlapping generations (OLG) model I show how ageing systematically devastates the stability of the government securities market. The funding need increases, whereas funding capacity decreases resulting in an increase of yields, which makes funding even more difficult. Below I present the main hypotheses of the paper.

## **2. Hypotheses of the dissertation**

Ageing has a complex effect on the economy. The economic literature deals in great depth with the phenomenon's long run real economic effects, such as the necessary adaptation process of the micro, and macroeconomic sphere, and the role of regional differences. Analyses of capital markets in which demographic aspects play a significant role suggest that ageing would strongly affect long term processes of capital markets.

In this framework I deal with the asset meltdown hypothesis (AMH). According to the AMH the retirement of the populous baby boom (BB) generation (born after world war II between 1946 and 1964) will lead to a decrease of households' asset

demand in advanced countries in following decades causing asset prices to drop and return on capital to fall sharply. Consequently, the value of accumulated assets of the BB generation will also plummet. The baby boom phenomenon is observed in the majority of advanced countries. In Hungary the so-called Ratkó children represent a similar demographic shock.

In the aspect of AMH, a dominant element in the macroeconomic background of ageing is the flow of macro level savings.

*H1. After the retirement of the BB generation macro level savings will decrease.*

According to life-cycle theory, wage income is not even through a lifetime: at the beginning it is low, and then it starts to increase, whereas at the end of the life-cycle there is no wage income. Willingness to save also changes during the life: in young and elderly age it is low, while in the middle of the life-cycle it is high. In young age a constant level of consumption can be ensured by credits, while in elder age it can be achieved by sale of securities. The ageing and retiring of the BB population will reduce macro level savings, which implies more intensive selling of assets and consequently a

decrease in asset prices. The hypothesis was verified by my research. Main references:

*BÖRSCH-SUPPAN, A.–LUSARDI, A. (2003): Saving: cross-national perspective = Lyfe cycle saving and public policy.. Ed BÖRSCH-SUPPAN, A. HOLZMAN, R. (2007): Making Pension Reform Work: The Link to Labor and Financial Market Reforms. World Bank, Washington. MANKIW, N. G. (2005): Makroökonomia. Bp.*

*H2. The retirement of the populous BB generation will cause the demography-based asset depreciation.*

Every generation wants to sell its accumulated savings to the subsequent one. If the following generation is more populous than the current one, then the current savers may sell their savings on higher prices. That was mainly the situation in the second half of the 20th century. The retirement of the BB generation could break this trend. As the BB generation will start to decumulate its savings (i.e. to convert its assets to current consumption), it is expected to lead to a decrease of savings on macro level as well - if no other conditions changed. That will cause a rise in real interest rates, a fall in stock and bond prices, and in house prices as well. This will result in a meltdown of accumulated wealth. Accordingly, through the retirement of the BB generation, the household demand on assets will decrease during the following decades,

asset prices will drop, and return on capital will fall. Therefore the value of the accumulated assets of the BB generation will drop (asset meltdown). In case of particular types of assets, the proportion of different age groups is relevant within the population. The “saving population” (proportion of those between 40 and 64 years) can influence the price of any kind of assets. Though the proportion of the population between 20 and 39 years could be an important factor for house prices, the state of the stock markets is again mostly determined by the 40 to 64 year-old population, while the buyers of bonds are rather the elder people, because their risk aversion is higher. Thus, if there is an especially large generation by population number, which is succeeded by a smaller one, it generates a specific run of asset prices. In the beginning, the BB generation raises house prices, then it fuels share prices, and later it increases bond prices as well. Of course, as the generation gets old, this will then lead to a fall in house prices, then in share prices, and bond indices. The demographic waves are reflected in the prices of capital market instruments especially, in countries where capital markets have a big role in funding the economy. In the demographic sense, asset markets can be seen as a part of a Ponzi scheme. Citing the famous words of Samuelson: "A growing nation is the greatest Ponzi game ever contrived." (World Bank, 1994. p.105). He meant that as a criticism of

social security pension system. I will demonstrate that it stands also for the funded pension scheme.

The hypothesis was verified by my research. The decrease in future return on investments (and so the future decrease in the value of assets) was pointed out by econometric studies. The debate rather concerns the size of that meltdown effect. Main references:

*MANKIW, N. G.–WEIL, D. N. (1988): The Baby Boom, The Baby Bust, and the Housing Market. NBER. WORKING PAPER. NO. 2794, BERGANTINO, S. (1998): Lifecycle Investment Behavior, Demographics, and Asset Prices. MARTIN F.R.(2005/b): Baby boom predictability in house price and interest rates. Board of Governors of Fed, BÖRSCH-SUPPAN, A.–LUDWIG, A.–SOMMER, M. (2005): Aging and Asset Price., BROOKS, R. (2000): What Will Happen to Financial Markets when the Baby Boomers Retire? IMF WP/00/18, SCHICH, S. (2008): Revisiting the Asset-Meltdown Hypothesis. OECD TAKÁTS Előd (2010): Aging and asset prices. BIS WP. No. 318, WHEN THE GOLDEN EGGS ... (2008): Economist, December 4.*

*H3. Demographic trends can play the role of specific leading indicators in forecasting long term processes of particular countries, or regions. Demography may help to identify not only real economic, but also capital market trends.*

In the following decades capital market trends can change, due to demographic effects. Regarding demographic effects it seems possible that the rally of major stock exchanges seen in

the 90's will end, and low real interest rates in advanced markets will experience a long-term rise. It is not forecasting function of conjunctures what is meant here, but prediction of major turning points and trend switches can fit.

Important features of demographic processes are that

- demographic processes of particular countries change slowly and permanently,
- in contrast with several other economic factors, long term predictability and determination of demographic processes is much stronger, therefore quite reliable forecasts can be given in the 50 to 100-year horizon.

Demographic processes are thus one of the most important basis for long term economic forecasts. From this aspect, the proportion of the working population plays a significant role, especially that of the age groups of 20 to 40 and 40 to 64 years, because saving and spending peculiarities of these groups influence asset prices as well. The hypothesis was verified by my research.

Main references:

*Mankiw, N. G.–Weil, D. N. (1988): The Baby Boom, The Baby Bust, and the Housing Market. NBER. Working Paper. No. 2794.,Brooks, R. (2000): What Will Happen to Financial Markets when the Baby Boomers Retire? IMF WP/00/18, Barclays Capital (2010): Equity guilt study. February, Holzman, R. (2007): Making Pension Reform Work: The Link to Labor and Financial Market Reforms. World Bank,*

*Washington. Mosolygó Zsuzsa (2009/b): Tőkepiacok - demográfiai hullámvölgy előtt. =Portfolio. hu. 2009. október 20. TAKÁTS Előd (2010): Aging and asset prices. BIS WP. No. 318.*

*H4. Due to the change in macro level savings, demographic conditions can strongly influence international capital flows, and balances of payments. With ageing of advanced countries, the direction of capital flows can even turn over.*

Where the proportion of net saving age group (40 to 64 years) within the population - ceteris paribus - is higher, macro level savings are also higher, while where the proportion is lower, savings are lower too. A change in demographic structure - ceteris paribus - changes macro level savings as well. Domestic savings equal foreign excess spending. Where net savings are higher balance of payments usually has a surplus, whereas in cases where savings are lower the balance rather has a deficit only because of demographic reasons. The hypothesis was verified by my research.

Main references:

*BROOKS, R. (2003): Population Aging and Global Capital Flows in a Parallel Universe. IMF Staff Papers, vol. 50, no. 2, BÖRSCH-SUPAN, A.- KRÜGER, D.- LUDWIG, A. (2007): Demographic Change, Relative Factor Prices, International Capital Flows, and their Differential Effects on the Welfare of Generations. HOLZMAN, R. (2007): Making Pension Reform*

*Work: The Link to Labor and Financial Market Reforms.*  
*World Bank, Washington.*

*H5. Ageing decreases potential economic growth, because it decreases the proportion of population in working age. Ageing also affects productivity prospects.*

I examine also the real economic background of the previously discussed capital market, and savings processes. Global ageing worsens the real economic growth outlook, because a decrease of the proportion of the working age population will cut back potential GDP growth in the following 40-50 years. In fact, that is the background of capital market processes in the real economy. In forecasts of long term real economic processes analyses also use demographic forecasts, but extension to capital markets also becomes available by this new approach. Capital market investigations conclude, that it is not only the population size, but also the change in the age structure of the society that affect macroeconomic processes (like macro level savings, productivity, etc.), and so the long-term growth outlook. Behind capital market processes, there are strong macroeconomic factors. So we present also the real economic reflection of the previously discussed savings, and capital market processes.

The hypothesis was verified by my research. Main references:

*BÖRSCH-SUPPAN, A.–DÜZGÜN, I.–WEISS, M. (2007): Age and productivity in work teams: Evidence from the assembly line. MEA Discussion Paper, VAN OURS, J.C. (2009): Will you still need me: When I am 64? IZA.DP. No.4264. Jan, VAN OURS, J.C.—STOELDRAIJER, L. (2010): Age, wage and productivity. IZA DP. No.4765.*

*H6. Ageing creates similar tensions for the funded pension system just like for the social security system. A demographic Ponzi scheme cannot be avoided by either system.*

AMH has important conclusions for the mainstream management of ageing problems in society. If AMH is verified, then the effectiveness of mainstream therapies comes into question. The most important question is, whether fully funded pension scheme can provide a real solution for the macro level tensions caused by ageing? Examination of capital market processes from a demographic aspect puts the issues of the pension system in a different view. Therefore it is important to overview the consequences in the pension system. A shift towards funded pension schemes worldwide was partly explained by the belief that the funded scheme is capable of resolving the problems caused by ageing (eg. World Bank, 1994), and so the funding and sustainability tensions in pay-as-you-go (PAYG) systems. But if AMH is true, the previous

statement becomes questionable as well. Finally the fully funded pension system does not mean a solution for the problems of ageing, because it does not automatically avoid the decrease in consumption capacity of the BB pensioners. In both systems, the swap of accumulated savings takes place between different generations, and it is problematic in both system if the active population does not regenerate in number. Thus, while on individual level we can talk about a temporal process, on macro level cross-section equilibrium is what counts, which means actives have to have enough savings (obligatory in PAYG schemes, and voluntary in funded ones), that covers current consumption of pensioners. „Current consumption can only come from current production.” (Tóth, 2006). Therefore, it is an illusion to expect the funded scheme to resolve tensions stemming from ageing. If AMH is true, then fully funded system restores cross-sectional equilibrium (which was hurt by decreasing macro savings) through declining asset prices. Hence, it becomes obvious that the transformation itself of pension system into a funded based one does not resolve the demographic tension in the pension system. The problem that macroeconomic savings decline due to the ageing of population emerges in the funded scheme as well, while these savings are the base of the consumption capacity of the pensioners.

The hypothesis was verified by my research. Main references:

*BARR, N. (2000): Reforming Pensions: Myth, Truths, and Policy Choice. IMF. WP/00/139, BARR, N. (2001): The Truth about Pension Reform. IMF, Finance and Development, Vol. 38. No. 3., BARR, N. (2009): A jóléti állam gazdaságtana. Akadémia Kiadó. BARR, N. – DIAMOND, P.: (2008): Reforming pensions. Principles and policy choices. Oxford University Press. MOSOLYGÓ ZSUZSA (2010): A tőkefedezeti rendszer alapkérdéseinek új megközelítése. Közgazdasági Szemle. 7-8. sz., ORSZAG, P. R.–STIGLITZ, J. [1999]: Rethinking Pension Reform. Ten Myths about Social Security Systems. World Bank*

*H7. As globalisation evolves a new subject of examination is whether ageing countries can really ease the tension by increasing capital outflow into countries with younger population? In this situation, we change from the model of closed economy to an open one. According to my assumptions, capital flows can only play a weak role in increasing pension payouts in ageing countries.*

One of the most important arguments against AMH points out the unclear role of regional differences. Ageing is a general phenomenon, but the speed of the process alters by regions in the world. The question is, whether ageing countries with declining future yields can avoid the fall in yields through foreign investment. In case of individual countries this could be possible, but for the world as a whole it is definitely not

true, if ageing is a dominant characteristic. If there are more and much richer countries with an ageing population than with a more young society, then incidentally growing savings of younger countries can only partly offset strongly declining savings in rapidly ageing countries. This was presented by models in the following papers:

*MACKELLAR, L.–REISEN, H. (1998): A Simulation Model of Global Pension Investment. OECD, Development Centre, Working Paper, No. 137. HOLZMANN, R. (2000): Can Investments in Emerging Markets Help to Solve the Aging Problem? CESifo Working Paper, No. 304.*

*OECD (1998): The macroeconomic implication of aging in a global economy.*

According to the current global demographic and world economic situation, I found the thesis to be verified.

*H8. Debt ratio alone does not show the healthiness of government funding. A favourable relationship between interest rates and growth can hide real tensions in times characterized by low debt ratios.*

In the paper I also discuss connection between ageing and government debt finance. I begin to examine the effects of ageing with a theoretical approach of government debt. Researchers were interested in the issue of inter-generational income distribution already before the foundation of economic

sciences. The main question was which generation is hurt by the growth of government debt. In connection with this, I examine, if it is possible to always shift the debt burden to the following generation via a Ponzi scheme. I examine, whether there is a „free lunch”, in other words, whether it is possible to raise debt without causing the need to raise future taxes, or to cut future expenses for any of the next generations. I also examine the issue of sustainability of debt from this aspect.

The most important question is, what the relationship between the interest rate on debt, and the rate of economic growth is. Macroeconomic models usually use the „No Ponzi Game” assumption, i.e. interest on government debt is higher than the rate of economic growth. But with this assumption they cannot examine economic processes like bubbles. The possibility of a Ponzi game strongly contributes to the formation of bubbles. Increasing the debt ratio is obviously unsustainable. But the existence or the possible end of a Ponzi game can suddenly cause the debt to soar even in countries with a declining debt ratio history. By the evaluation of debt processes, countries would have to monitor not only the expected change of the debt ratio, but also the sensitivity of government accounts to worst case scenarios in growth and in interest rate.

The hypothesis was verified by my research. Main references:

*BLANCHARD, O. –WEIL, P.H. (2001) : Dynamic Efficiency, the Riskless Rate, and Debt Ponzi Games Under Uncertainty. NBER Working Paper No.3992. ELMENDORF, D.W.-MANKIW, N.G. (1998): Government debt. NBER. WP. No.6470. BALL, L., -Elmendorf, D.W.-Mankiw, N.G. (1995) (B-E-M): The deficit gamble. NBER. WP. No.5015. OBSTFELD, L.–ROGOFF, C [1996]: The foundation of international macroeconomics. Published Cambridge, Mass.London . MIT Press.*

*H9. Countries can play Ponzi games on long term. However the favourable relation between interest rate and growth can easily revert. Thus, on an infinite time horizon, a „free lunch” for government is not possible.*

Historical studies showed the possibilities of playing Ponzi games on long term especially in case of the USA or convergence states in the European Union. In accordance with these processes, it is possible to think that this is a normal condition of debt financing for a long period. This expectation is similar to gambling, since it has quite a big risk that the favourable relation between interest rate and growth reverses. If it does government debt immediately becomes unsustainable. Therefore taking an infinite horizon there is no possibility for a „free lunch” Main references:

*ABEL, A.B.(1992): Can the government roll over its debt forever?= Business Review. November/December. 3-15.o. ESCOLANO, J. (2010): A practical guide to public debt dynamics, fiscal sustainability, and cyclical adjustment of budgetary aggregates. IMF. MINSKY, H.P. (1992): The*

*financial instability hypothesis. The Levy Economics Institute of Bard College. May. WP. No.74.*

*H10. Debt ratio will strongly increase on the long term due to ageing. I expect the funding conditions of government debt to worsen drastically as a consequence of ageing.*

Ageing projects a significant rise in fiscal burdens on the long run, so a drastic hike in government debt may be predicted in the vast majority of the countries determining world economic processes. A significant part of the burden is connected with pension obligations, while another one is related to the expected rise in health care expenses. It is important for the flow of government debt that a populous generation is preparing to retire in the next decade, which increases burdens for the government (as an effect of demographic structure), and that the proportion of economically active population decreases, and therefore the rate of potential GDP growth also declines. Thus, there is a double burden, the numerator of the debt ratio (debt) increases steeply, while the denominator (because of the decline in GDP-growth) rises only modestly. That shows the effect of the strong increase in the dependency ratio (the rate of 65 + year-old and 15 to 64 year-old population), which means that less and less active people fund

more and more pensioners. (The decline in the number of young population may partly stabilise the debt ratio, while debt burden per capita increases because of a shrinking population.) The situation may even become more serious, if the relation of interest rates and growth rate moves into an unfavourable direction because of ageing. Fiscal measures during the current crisis worsened debt outlooks. Still, long term growth in debt on a global scale is basically determined by demographic factors. I present, how conditions of funding government debt worsen by constructing an OLG (Overlapping Generations) model.

Main references:

*BARCLAYS CAPITAL (2010): Equity guilt study. February*  
*IMF. (2010): Navigating the fiscal challenges ahead. Fiscal monitor. May.14. CACCHETTI, G.–MOHANTY,M.S.–ZAMPOLLI, F. (2010): The future of public debt: prospects and implications. BIS. WORKING PAPERS. NO.300.*

### **3. Methodology**

In this paper I use new approaches in detecting the effects of ageing. I raise new questions about the functioning of pension systems, and I find new conclusions while also frequently confronting mainstream economics. I support the verification of hypotheses by introducing a new economical logic, based

on the analytical evaluation of the main directions of the literature and empirical examinations.

- In my paper, I use a new approach in analysing capital market processes. I check the conclusions of a longitudinal analysis with a cross-sectional approach. I built the cross-sectional analysis of inter-generational income transfer into the longitudinal examination of asset accumulation. So the individual accumulation, the price of the assets becomes dependent on the asset swap between actives and pensioners, and so on the savings of actives.
- An important contribution of my paper is that I use the theorem of the „fallacy of composition”, i.e. macroeconomic processes are not simple sums of micro level ones in the analysis of the aging process. On the individual level, there seems to be an opportunity to accumulate wealth, which makes it possible to convert present consumption to excess future consumption, and to avoid a sharp decline in elder age consumption also during a strong increase in the proportion of elders. However, global, and macro level processes refute this statement.
- System theory is one of the central elements of my paper. I put capital market processes into a wider frame of a macroeconomic (and global/regional) system. Capital market processes and asset meltdown are determined not

only by demand and supply of assets. The fundamental backgrounds are macro and real economic processes.

- I examine demographical effects in a regional aspect also. Tensions by ageing may be eased by regional effects, if the flow of capital and labour makes it possible. The regional aspect is therefore also presented in the paper. The easing role of capital flow has several barriers. Capital markets of the youngly populated emerging markets region are underdeveloped, while unpredictable economic and political environment causes significant sovereign risk.
- I present the changing funding conditions of government debt due to ageing by constructing an OLG model. This model shows the inevitable macro level changes.

#### **4. New results**

I summarise the new important economic results of the paper below:

- One of the main new achievements of my research is the organic integration of capital market processes into the economic examination of ageing. This approach leads to numerous further research topics, and so the complex

analysis of macroeconomic issues and emergent tensions becomes available.

- My important conclusion is that the funded pension system itself does not manage the issue of ageing better than the social security system does. A new contribution of the paper is the presentation of the mechanism, in which pension payouts in the funded scheme align with demographic conditions. In this approach, asset meltdown is the mechanism, which reflects the problem of ageing in the fully funded schemes.
- The analogue of „unsustainability” in the social security system is asset meltdown in the funded system. Both problems lead to the future uncertainty of pension incomes, due to the problem of ageing. That implies that neither asset accumulation system protects „better” against ageing.
- The discussion (i.e. the presentation and the synthetisation of literature) of several further money market effects of demographic processes such as on macroeconomic savings, government debt and balance of payments) is an important achievement.
- In respect of government debt it is important that the government Ponzi scheme can last for a long time period under particular conditions. As soon as this process

breaks, however, the government debt scenario can rapidly worsen. Ageing process generally contributes to unfavourable government debt perspectives. It makes debt financing even more difficult due to increasing funding needs and decreasing funding capacity.

In summary, in my paper I create a synthesis of economic issues regarding ageing. The examination starts from the capital market effects of demographic factors. Then I add the most important macroeconomic aspects of ageing: the issues of saving, consumption, balance of payments, and government debt. Within the debt issue I discuss the topic of debt sustainability.

## **5. Main conclusions**

Examining capital market effects and analysing macroeconomic conditions show that the most important factor to address the problems raised by ageing is economic growth and more specifically the issue of maintaining elder age activity. If it is possible to stop the demographic based decline in employment, then it becomes possible to avoid capital market crashes and debt traps based on demographical issues, and to maintain economic growth. Under given

demographic conditions easing the above effects is only possible, if retirement age rises proportionally with the expected lifetime. However due to the productivity-lowering effect of ageing, not even this increase in elder activity can eliminate completely the unfavourable demographic effects.

Increasing elder activity requires a change in the present customary behaviour of both individuals and companies. Helping and motivating this process is an important task and basic interest of economic policy and state regulation. Economics as a science and education have a serious role in helping adaptation, because companies, citizens and the state have to be made capable to hold on in this epoch-making change. Elders have to be prepared to apply for, and to stay in jobs, while competing with other employees. This extends the tasks of education and health care. The pension system and the flow of life-cycle incomes have to motivate the extension of employment, while it has to ensure sustainability of the debt path. Workplaces also have to adapt to ageing, and have to be able to employ elders.

The central topic of the paper is the asset meltdown hypothesis. This hypothesis implies that monitoring demographic processes is negligible for neither the participants of capital markets, nor for decision makers of

economic policy. Demographic signs show that trends of the last 20-30 years may reverse in the following decades.

An important conclusion of the study is that we can calculate with less space in forming macroeconomic policy than earlier expected. Demographic effects extend to processes like the path of balance of payments, or capital flow.

The Ponzi game for government finance is not sustainable on the very long run. The favourable situation could revert easily. Deterioration of financing conditions is intensified by aging processes. Accordingly the prospects of debt crisis of the developed countries turn gloomy if aging aspects are taken into consideration.

## **6. What I deal with and what I don't...**

The analysis in general deals with theoretic models, and argues with basic economic logic. However, while checking the rule of hypotheses, I also reviewed effective economic processes. I concentrated mainly on advanced economies, because they have time series usually long enough for economic analyses. Where it was possible, I touched on regional differences, especially, where it had a significant role in the evaluation. I also examined Central East European

processes, in my references I focused on the Hungarian processes.

In the dissertation I did not deal fully with the „young” side of ageing, the absence of the willingness to have children, and the conclusions of that. I did not discuss the demographic problems of some emerging countries, which are related to an overweighted young population. These topics are feasible to be subjects of a separate paper on their own.

## **7. References of this thesis book**

AUGUSZTINOVICS MÁRIA: A nyugdíjrendszerekről. (About pension systems)= Magyar Tudomány. 2002. 4.sz. 447-460.o.

PENSION FUNDS AND GOVERNMENT SECURITIES MARKET – Facts and Misbeliefs= Portfolio.hu, 27 August 2009

TÓTH ISTVÁN (2006): Demográfia és nyugdíjrendszer. (Demography and pension system.)= Portfolio.hu. november 24.

VISCO, I. (2008): Retirement saving and pay out phase-how to get there and how to get the most out of it=BIS Review 137/2008

WORLD BANK (1994): Averting the Old Age Crisis: The World Bank Policy Research Report. Oxford University Press, New York.

## **8. Publication and other activities in the topic**

Államadósság és előregedés: A jövő elzálogosítása, vagy egy racionális Ponzi játék. Előadás az MKE éves konferenciáján. 2010. dec. 21.

A tőkefedezeti rendszer alapkérdéseinek új megközelítése.  
=Közgazdasági Szemle. 2010. 7-8. sz. 612-633. o.

Az előregedés hatása a tőkepiacokra- globális és hazai hatások= Előadás a Széchenyi István Egyetem Kautz Gyula emlékkonferenciáján 2010. június 1.

Vagyonsugorodási hipotézis: Összeomlanak-e a tőkepiacok a népességelőregedés hatására? Előadás az MKE éves konferenciáján. 2009. dec. 18.

Ageing and Financial Markets: Asset Meltdown Hypothesis.  
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