The Hare and the Tortoise. How Older Generations Are Replaced By Young One on the Labour Market: Signals and Insights from the Relationship between Shadow Economy and Active Ageing

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ABSTRACT
The paper aims to analyze the relationship between the size of Romanian shadow economy expressed as % of official GDP and active ageing in order to see if the shadow economy represents a social buffer for active ageing phenomena using Granger causality analysis.
The size of Romanian shadow economy is estimated previously using a revised version of the currency demand approach based on autoregressive distributed lag (ARDL) approach to cointegration analysis.
Using Granger causality tests, we examine the relationship between employment rate for older people and the size of Romanian shadow economy covering the period between 2000 and 2010.
The empirical results revealed the existence of a long-run unidirectional causality that runs shadow economy to employment rate for elderly and do not support the existence of any short-run relationship between employment rate for older people and shadow economy.

KEYWORDS: *shadow economy, currency demand approach, active ageing, Granger causality, Romania.*

JEL CLASSIFICATION: *C51, E26, H20, H50, O17.*

INTRODUCTION

Active ageing has been developed as a strategy to leverage the potential of individuals to improve awareness of what every one of us can do to keep fit and healthy for as long as possible. Physical activity, healthy eating, life-long learning and staying integrated in the work life as a paid employee, as an entrepreneur or as a volunteer – all these are elements of an active life style that should characterize the whole life-course.

The World Health Organization (WHO) and the UNECE use the term "active ageing" in such a way to include different ageing trajectories and diverse groups of older people. "Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age" (WHO, 2002, p. 12).

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Two main characteristics of active ageing are gainful employment and volunteering. While people are living longer (and will have a longer working life in the future), fewer young people are entering the labour market. In the future, people aged between 55 and 64 will comprise a large share of the workforce. From an economic standpoint, it makes sense to encourage older workers to stay active and to utilize their skills and experience.

The need to increase labour market participation of older workers was growing among the last decade. In 2000, the European Council set a target employment rate for older workers (aged 55-64) of 50 % in 2010 and, from 2000 to 2010, both the Lisbon Strategy and the European Employment Strategy highlighted the promotion of employment of older workers as a clear objective. The year 2012 has been proclaimed the *European year for active ageing and solidarity between generations, having as main goal increasing* awareness of the contribution of older workers to society and mobilizes the potential of the rapidly growing population in their late 50s and over.

1. THE RELATIONSHIP BETWEEN ACTIVE AGEING AND SHADOW
ECONOMY AND OFFICIAL ECONOMY IN ROMANIA.
A GRANGER CAUSALITY ANALYSIS

The low employment rates among older individuals – especially among those aged 60 and above – are an important concern in most European countries. While about 60 % of Europeans aged 55-59 are employed, this percentage is halved for those aged 60-64 – in one third of Member States, no more than one out of five workers in this age group is employed. For the age group 65-74 years, the average for EU-28 is only 8.5% of employment rate.
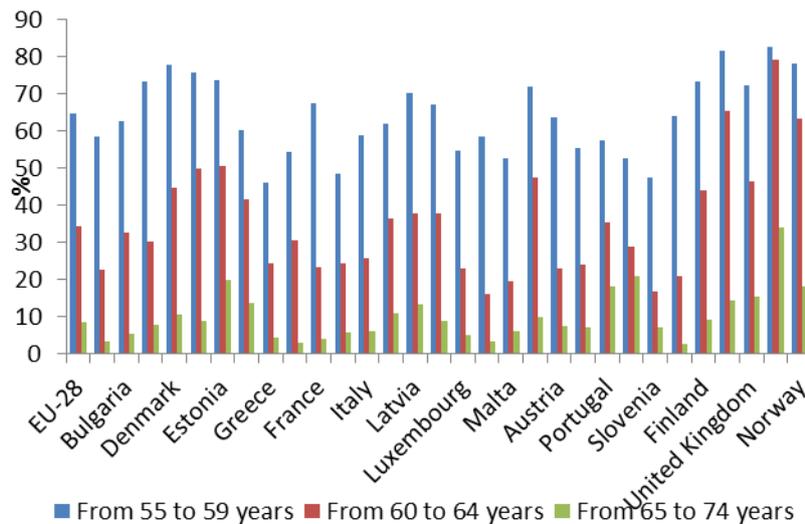
Fig.1. Employment rates for older workers in 2013
Source: LFS Eurostat database [lfsa_ergan]

The low qualifications and skills of older groups creates disadvantage in the context in which workers are expected to engage in a continual process of training and retraining and to prioritize the development of IT and other transferable skills.

The participation of older workers in the labour market are strongly influenced by the national policy environment, particularly in relation to the pension framework, employment protection legislation, wage policies, occupational and wider health care provisions and education and training and active labour market policy provisions. One possible explanation for current lower employment among older workers can derive from the use of public early retirement schemes in previous decades.

The results of Eurobarometer survey highlights the fact that the majority of Europeans believe that their country and local area are 'age-friendly', 70 % of respondents believe that they would be capable of carrying out their current work until the age of 60-64, and one third stated that they would like to continue working after they reach the legal retirement age. This suggests that there is a large scope for the adoption of measures encouraging 'active ageing'.

The paper aims to investigate the relationship between the size of the shadow economy (SE) and the phenomenon of active ageing for the case of Romanian data using the Granger causality analysis for quarterly data covering the period 2000-2010. The size of Romanian shadow economy was estimated using a revised version of the currency demand approach based on bounds testing approach to cointegration and error correction models, developed within an autoregressive distributed lag (ARDL) framework. A detailed description of the shadow economy estimation is presented in (Davidescu and Dobre 2013). Thus, the size of the shadow economy as % of official GDP measures approximately 45% at the end of 2000 and achieving the value of 37.4% in the last quarters of the period.

1.1 Methodology and data

In the econometrical demarche of the investigation of the relationship between active ageing and shadow economy, the size of Romanian shadow economy as % of official GDP has been obtained using a revised version of the currency demand approach based on bounds testing approach to cointegration and error correction models, developed within an autoregressive distributed lag (ARDL) framework. A detailed description of the shadow economy estimation is presented in (Davidescu & Dobre, 2013). The phenomena of active ageing were quantified using a more comprehensive indicator: the employment rate for older workers (50 years and over), expressed in %. The data source was LFS database of Eurostat.

The aim of the paper is to investigate the nature of the relationship between active ageing and the size of the Romanian shadow economy and to identify the direction of causality between them using Granger causality approach for quarterly data covering the period 2000-2010. A detailed description of econometrical VECM models and Granger causality approach is presented in (Davidescu &Dobre, 2013).

1.2 Empirical results

The correlation analysis of variables revealed the existence of a strong positive relationship between shadow economy and employment rate for older people (50 years and over) quantified by a value of 0.63 of correlation coefficient.

The analysis of non-stationarity using ADF and PP unit root tests revealed that the variables are non-stationary at their levels but stationary at their first differences, being integrated of order one, I(1). In order to estimate a VAR model and to test cointegration for the relationship between shadow economy and active ageing, the optimal lag length is required.
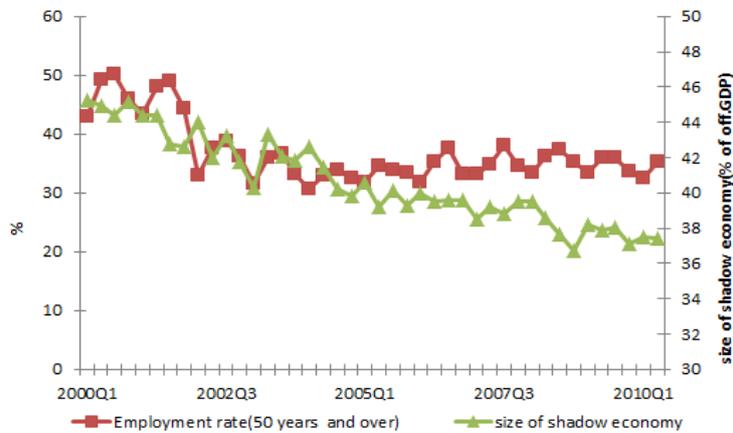
Fig.2. The size of the shadow economy vs. employment rates for older workers in Romania
Source: LFS Eurostat database

Since the total number of observations is only 42, we used a maximum number of 4 lags, eliminating the serial autocorrelation of residuals. Also VAR model verify the stability condition and the hypothesis concerning non-autocorrelation, homoscedasticity and normality of the residuals. According to LR, FPE, AIC SBC and HQ criterions the optimal number of lags was chosen to be 3.

In order to determine de optimal model for the deterministic components in the system, we have applied Pantula's (1989) principle. The results suggest the choice of model 1 (no intercept (no trend) in cointegrating equation and no intercept in VAR) and empirical results point out the existence of a unique cointegrating relationship (a long run relationship) between the variables. Because a long run equilibrium relationship is found between the variables, a VECM model is constructed to determine the direction of causality.

The long-run coefficient is positive and strongly significant inferring that a 1% increase in the size of shadow economy would imply in the long-run an estimated increase of almost 0.76% of employment rate of older workers. The short-run coefficients are negative and statistically not significant; revealing that lagged size of shadow economy has no effect on employment rate in the short-run.

Due to the fact that the lagged error term -0.148 (0.07) is negative and highly significant, we can admit that we have causality in the long-run from shadow economy to employment rate of elderly. The value of lagged error term indicates that deviation from the long-term equilibrium is corrected by 14.8 % over each quarter.

Table 1 reports the F-statistics and t-statistics for error correction term defined for the null hypothesis of no-causality.

The empirical results conclude that there is a unidirectional Granger causality that runs from shadow economy to active ageing but only on long-run (t-ratio of ECT is negative and statistically significant at 5% levels, but the Wald-tests for the short-run coefficients of shadow economy are not statistically significant).

Table 1. Granger Causality test results

Null hypothesis	Lag level 3	
	Wald test	$t_{ECT_{t-1}}$
SE does not Granger cause employment rate of older workers	**0.65**	**-0.148****

Notes: ** and * denote significance for 1% and 5% levels.

CONCLUSIONS

The paper have investigated the relationship between active ageing and the size of the Romanian shadow economy the Granger causality analysis for quarterly time series data from 2000-2010.

The size of Romanian shadow economy was estimated previously using a revised version of the currency demand approach based on autoregressive distributed lag (ARDL) approach to cointegration analysis. The size of the shadow economy as % of official GDP measures approximately 45% at the end of 2000 and achieving the value of 37.4% in the last quarters of the period. As possible indicator for active ageing it was used the employment rate for older workers (50 years and over).

Cointegration results revealed the existence of a positive relationship between shadow economy and active ageing stating that a positive shock in shadow economy will increase the employment rate of older workers with almost 0.76% in the long-run.

The empirical results of Granger causality results revealed the existence of a uni-directional causality that runs shadow economy to employment rate of elderly but only on long-run, suggesting that unofficial sector works as a buffer for some workers who have few alternative labour market opportunities.

Everybody in the world or almost everybody knows the small tale of the tortoise and the hare. In the tale as such, the rush-hare is overtaken by the slow and presumably wise(r) tortoise. The story as such is meant to serve as teaching to the young and rush who instead of braving and bouncing ahead like the hare does should rather wait patiently in line and follow the older and the wise, if they want to reach their ultimate goals. It is a tale that summarizes very well the teachings of a linear world whereby seniority was everything, where wisdom and success, and money, were coming with the advance of age and where young had always to wait in line and patiently follow the lead of the old and wise. It was a

world of linear and limited, if not scarce information. One could not be smarter than the teacher, nor could she or he be better than the boss.

Therefore promotion was coming with and young could hardly hope to outpace or, God forbid, displace the old. They simply had to wait in line until the old and wise tortoises were gently moving into retirement and actually until the young hares were becoming themselves old and wise tortoises. In such a world, youngsters were the most vulnerable when cycle was changing while generally the elderly, due to their acquired wisdom, could reasonably hope to weather the storm or simply slide gently into the safe-haven of retirement.

But this world is changing fast and we could even assume that for all purposes is already dead. Information age has brought changes unprecedented by altering beyond belief processes along the whole of the chain of production. Information, once a scarce resource and the propriety of the old and wise is now more than abundant and can be procured from practically everywhere.

Therefore the young do no longer need to stay in line and wait until they get grey and wise. Wisdom is now a click away and young can easily outsmart and outpace the world. Hares can bounce their way ahead of the slow tortoise and easily not only outpace it but also, eventually, displace it. Young have the skills and the knowledge of the new world of abundant information and digital technology which the old barely muster.

Therefore the young are displacing increasingly the old from the labour market (or so it should be if rigid regulation tweaked for an age of scarce information would not prevent it), they can take their jobs which change shape and substance due to the advent of digital technologies and thus force the old tortoises, which no longer can cling nor claim to the monopoly of wisdom, into labour market irrelevance.

Increasingly therefore in a world that is dominated by digital technologies, the old tortoises have to cede their long coved places to the young as the latter outsmart them and outwit them due to their prowess of the digital tech. The student therefore is now in a position unique in history, of being able to teach his or her teacher, while the subordinate (the hare) can finally outsmart his or her boss (the wise tortoise). The immense structural change that has been brought about in the economy and on the labour market by the advent, during the last 25 years or so, of the digital tech is forcing more rapidly out of the market the older generation while increasingly making place for the young.

The hare is bouncing, due to digital tech, its way forward in leaps that the poor old tortoise with all its linear, hard-acquired wit, cannot possibly match. Older generation are having difficulties in adapting to a brave new world for which they were never actually prepared, so huge is the difference created and brought about by digital tech (to be understood as the IT&C) in our life. As this structural change is sweeping through the world economy at an ever faster pace it has already displaced the so-called "middle of the economy" or that traditional area of the mass industrial production, characteristic to the first industrial revolution and which was generally the main employer of masses of workers, trained in secondary vocational schools (labelled here generically as the diversity of this form of education is vast in the world) and which were forming the large mass of medium-educated of the workforce, accounting for the bulk of what was the total employment of industrial nations.

This whole of the middle has been practically wiped out in the developed world. This structural change is forcing therefore tortoises out of the market with a large part of these tortoises being former medium educated members of the workforce. As active periods have been lengthened by legislators the world around to make for the shortfalls of pension schemes, early retirement for these large masses of workers may no longer be an option. Formal employment in the meantime, without prior training to update their rusty skills for the new world of digital tech led production processes, does not welcome them.

Therefore the only way they have to bridge towards and unsure and diminished pension is sometimes via informal employment. Informal economy generally tends to be less of productive than the formal one making up for the diminished productivity by dodging taxes and contributions. However, informal economy, through its use of techniques of production that are generally behind those used by the formal economy as well as by its recourse to workers that do no longer expect any sort of career but just want to make for needs end in any way possible and bridge their way to pension, is ideally suited for the displaced tortoises. It is here that their rusty skills are maybe still in some demand while their hard learnt conformism and obedience makes them the ideal employees for employers that do not like, obvious enough, much of noise around.

Therefore what our research points out is the effect of the structural change brought about in the economy and on the labour market by the rapid advent in all processes of production of the digital and related technologies. These technologies are rapidly forcing out entire segments of the labour force that were or are not habitual to them. Once forced out of the labour market, either totally or even partially, these old tortoises, in the absence of any policies to keep them afloat, to re-skills them or up-skills them, slowly sink into the marsh of informality. The shock of the digital tech did not make itself feel immediately.

However as time passes the structural change brought about takes a hold, production processes are changing, competition is getting stiffer and employers less and less disposed to hire or maintain in employment workers that do not have the right skills and are rather difficult to be taught. Wisdom is suddenly no longer precious, simply because is no longer the right one, bouncing ahead has become the latest fashion in town as it is only via bouncing that you can beat your competition (Boitan, 2014). Non-linearism (as epitomized by the rather erratic bouncing of the hare) has finally replaced the linearism (as epitomized by the slow advance of the tortoise) in the world economy and society.

From here one, in the longer run, as our researchers argues and as the effects of the shock brought about by the digital tech is more and more sifting into the real economy, and with no policies to make then bounce, tortoises (elderly workers) are more and more sliding into the informal economy which tends to become their only place of refuge, the only place where they may hope to earn some income that will allow them to bridge the gap onto an anyway unsure and not-at-all golden gilded retirement(Nedelcu et al., 2014).

However not all hope is lost for tortoises and here comes active ageing. Active ageing in itself has been brought about as a labour market policy less by the increasing difficult to finance pension schemes (actually there is no difficulty here as more productive economies will need less of workers and will anyway produce more thus being perfectly able to finance pension schemes even in ageing societies) but by the fact that more and more workers cannot make it towards retirement in the very crude sense of not being able to keep

in gainful employment or being able to do so only at the cost of a slow sink into informality.

Active ageing is therefore there or it has to be there to prevent this slide, to arrest it if possible. Active ageing policies should therefore pay increased attention to the rep-skilling and up-skilling of elderly workers. It is needles to provide employers with naked subsidies aimed at retaining their elderly workforce until close to retirement or up to it. If these workers do not possess the right skills for the new processes of production or if they cannot be trained, no amount of hiring subsidy will help (Strat, 2014, Popescu and Lazar, 2015). Skilling has to be therefore the almost sole aim of such policies.

Our argument goes therefore that without up-skilling and re-skilling, the shock of the digital tech, sifting through the economy at an ever faster pace will rather rapidly displace the elderly from the labour market. They may take shelter for a while in the informal economy. However, while this may be a safety valve of sorts, it is for surely not the solution for the long term.

The signal given by the developments in the shadow economy should be therefore taken abreast by decision makers out in the light. What boils there down deep usually signals a storm to come. A swift reaction via buttressing of the active ageing policy would be early response just by enough!

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