List of abstracts

Current Economic and Social Topics 2015

List of abstracts: Current Economic and Social Topics 2015

Published January 2017,
Copyright © 2017 pielaszek research

Revision: 1.0.38, 2017-01-19 13:49 GMT

Table of Contents

Symposia 1
Current Economic and Social Topics 2015, Plenary Track 3
Current Economic and Social Topics 2015, Plenary Track 7
Current Economic and Social Topics 2015, Plenary Track 11
Current Economic and Social Topics 2015, Plenary Track 15
Current Economic and Social Topics 2015, Plenary Track 19
Current Economic and Social Topics 2015, Plenary Track 23
Index 27

Symposia

Current Economic and Social Topics 2015, Plenary Track

Presentations waiting for acceptance

Poster

Rachunek wektorowy w badaniu cykliczności szeregów finansowych

Joanna Chrostowska, Krzysztof T. Kompa

Warsaw University of Life Sciences, Nowoursynowska 159C, Warsaw 02-787, Poland

e-mail: joanna.chrostowska1@gmail.com

Jednym z trzech fundamentalnych założeń analizy technicznej jest przesłanka o powtarzającej się historii. Powtarzalność na rynku finansowym, jest zgodnie z tym założeniem zdeterminowana przez niezmienne schematy zachowań jego uczestników. Odzwierciedleniem owych zachowań, są ruchy cen. Na wykresach przedstawiających notowania papierów wartościowych, obserwuje się pewne znane układy notowań zwane formacjami. Powtarzalność formacji jest cechą, która pozwala na prognozowanie przyszłych zachowań rynku. Podczas analizy i prognozowania ruchów cen warto pochylić się również nad zagadnieniem ich rytmu. Badanie zjawiska cykliczności zachowań rynków może przynieść wymierne korzyści, służące poprawie trafności prognoz i pozwalające na dogłębne zrozumienie natury zachowań rynków.

Celem pracy jest weryfikacja założenia o występowaniu cykliczności na rynkach CEE oraz badanie charakteru występującej cykliczności. W analizach zjawiska cykliczności wykorzystano metodę zaproponowaną przez prof. Mariusza Borawskiego i prof. Kesrę Nermenda opartą na własnościach rachunku wektorowego.

Idea metody

Podstawa□ do wyjaśniania idei badania cykliczności z wykorzystaniem rachunku wektorowego odtwarzanie wektora A za pomoca□ wektora B. Jeśli wektory te sa□ równoległe, to moz□na wyznaczyć taka□ stała□ c, z□e A= cB, co oznacza, z□e otworzenie wektora za pomoca□ wektora równoległego nie jest obarczone błe□dem. W przypadku gdy ka□t mie□dzy wektorami A i B jest wie□kszy od zera otworzenie wektora A be□dzie suma□ wektorów: cB i wektora odzwierciedlaja□cego bła□d odtworzenia.

Moz□liwe jest wyznaczenie nieskończenie wielu stałych c, za pomoca□ których moz□na wektor A. Celem jest jednak wyznaczenie takiej stałej, aby bła□d otworzenia był najmniejszy z moz□liwych. Bła□d ten be□dzie najmniejszy, gdy jego wektor (Ve) be□dzie prostopadły do wektora B. Stała c dla której wartość błe□du jest najmniejsza przyjmuje postać:

c= (A,B)/(B,B)

Wektor B po pomnoz□eniu przez stała□ C jest wie□c przybliz□eniem wektora A.

Oral

Comparative Investment Performance of Pension Funds

Jennifer P. Foo[1], Dorota Witkowska[2]

1. *Stetson University (SU), 421 N. Woodland Blvd, Deland, FL, Orlando, FL 32723, United States* **2.** *University of Lodz, Faculty of Management (UL), Matejki 22/26, Lodz 90-237, Poland*

e-mail: jfoo@stetson.edu

Pension funds are important retirement investment savings vehicles for workers as the demographic bulge of baby boomers are expected to retire en masse with profound economic consequences. Unless pension funds are efficient and sufficient to fund the generation of baby boomers whose life expectancy is increasing, the economic burden on the future generations, the government, and society will be heavy. Therefore the global trend has been moving from defined benefits to defined contributions pension fund systems that are backed by assets.

The growth and diversity of pension funds and sectors offered domestically and globally also adds to a positive outlook depending on how pension funds perform. In 2012, of the U$78.2 trillion under institutional investment management in OECD countries, pension funds comprised U$21.8 trillion (OECD, 2013). Given its prominence as the third largest institutional investment funds, after investment and insurance funds, the performance and efficiency of pension funds to fund beneficiaries are therefore crucial to alleviating the looming economic threat since for many retirees the funds are the sole source of retirement. This has importance significance in tying how much retirement terminal benefits investors will receive to the performance of the pension assets, more so after the substantial decline in retirement asset value in the aftermath of the 2008 Financial Crisis.

The question of interest is whether pension funds are efficient in providing the terminal wealth necessary for its beneficiaries to retire. Also of interest is whether there is a difference in efficiency and performance between US and European pension funds in developed countries like the US and in Europe facing an inverted demographic pyramid of aging population. Further, research on pension fund performance and efficiency would provide insights for providers of pension funds to offer better management and designs of investment retirement plans and alternatives. In today's integrated and globalized financial markets it is possible for investors to invest their retirement funds in global pension markets that offer better returns than their domestic markets. The aim of our research* is to compare the performance of pension funds in USA and selected European countries for the period 2002-2013, applying Sharpe ratio, information (or generalized Sharpe's) ratio, Sortino ratio and Sharpe's alpha.

The European pension fund market is highly diversified geographically among many different countries with different structure and investment vehicles. Our study, therefore, focuses on four European representatives of pension fund markets, UK, Germany, Poland and "Europe" in comparing them to the U.S. pension fund market. The

"Europe" is an aggregate representative constructed as a weighted average of the 19 European countries. The most developed pension fund markets in our comparison study is the U.S. and UK in Europe. The biggest European economy is the German economy. However, Germany has a defined benefit system and Pay-As-You-Go (PAYG) system which result in an underdeveloped pension funds market. Poland represents the biggest transitional economy among EU members.

Our paper finds that Poland and U.S. achieved the highest average returns for the benchmarks in the period 2002-2013, while the pension funds in Poland and Germany achieved the highest average returns. Poland with the highest average returns also has the highest risk. For the shorter period 2008-2013, U.S. had the highest return for both pension funds and the benchmarks while Poland and UK experienced losses. On the other hand, the smallest risk is observed for British and German pension funds.

* This research is made possible from a grant "Analysis of Open Pension Funds Market as Compared to the Open Investment Funds Market Functioning in Poland" 2013/09/B/HS4/00493 provided by the National Science Center, Warsaw, Poland.

Oral

Professional activity of polish women on the real estate market

Iwona A. Forys

University of Szczecin, Faculty of Economics and Management (US), ul. Mickiewicza 64, Szczecin 71-101, Poland

e-mail: forys@wneiz.pl

Today's labour market sees a trend of feminisation which is developing with varying intensity in individual segments of economy. Its shape in individual countries is influenced by local economic, social and cultural environment. The phenomenon strengthened representation of women in certain industries is referred to as horizontal occupational segregation (Zwiech 2010). In the EU the most feminized industries are education, health and social care. The aim of this study is to assess the level and range of changes over time in the process of feminisation of regulated professions on the Polish real estate market. With this aim in view, I used data on the number of professional licenses granted by the relevant Minister between 1990–2014 broken down by gender and geographical location (voivodships). The study verifies a hypothesis of growing women's participation in the Polish real estate market in three professions that had been regulated before 2014.

Therefore, I determined the dynamics of the feminisation ratios observed in the professions of appraisal (valuer), property manager and real estate broker in voivodships. I also classified voivodships according to their level of feminisation in the real estate service sector by means of the k-means method and Ward's method.

In order to assess the structural changes over time in the group of women engaged in the above mentioned regulated professions I used simple structure diversity measures based on the proportions of the share of a given component in the structure over the time intervals t and $t+1$. The values of the structure diversity measures lie within <0;1>, where the value approaching zero means that the diversity is weak, while the measure value close to one indicates strong structure diversification. The measures proposed in the literature differ in terms of their sensitivity to changes in components having different share in the structure [Kukuła 1996, Walesiak 1983]. In this paper I determine three measures which respond to a varying degree to the proportion of components within the structure:

V_1 – a measure that responds to the changes in the proportion of component in a balanced way;

V_2 – Clark's divergence coefficient, a measure which responds the strongest to the deviations of minor components;

V_3 – a coefficient proposed by M. Walesiak, a measure which responds the strongest to the deviations of principal components;

When we found our study on the base time period, we can assess the monotonicity of changes occurring in a given structure by means of the structure monotonicity measure [Kukuła 1996].

After over twenty years of market economy, the Polish real estate market has stabilised in terms of economic mechanisms. However, it is still subject to some social processes, such as feminisation of individual professions related with the real estate services, even those requiring expertise in exact and technical science. These changes manifest themselves in the growing number of licenses obtained by women and, consequently, by their growing share in the total number of licensed professionals.

Reference

Zwiech P., Segregacja zawodowa kobiet w Polsce, w: Gawrycka M., Wasilczuk j., Zwiech P., Szklany sufit i ruchome schody – kobieta na rynku pracy, CeDeWu, Warszawa 2010, s. 29-44.

Kukuła K. (1996). *Statystyczne metody analizy struktur ekonomicznych*, Wydawnictwo Edukacyjne, Kraków.

Walesiak M. (1983). *Propozycje miar odległości struktur udziałowych*, Wiadomości Statystyczne, Nr 10.

Oral

Sustainability and Sufficiency of the Spanish Pension System

Jose M. Montero[1], Javier Santacruz Cano[2]

1. *University of Castilla-La Mancha, Cobertizo de S. Pedro Martir, S/N, Toledo 45071, Spain* **2.** *Universidad Complutense de Madrid, Avda. de la Complutense s/n, Madrid 28040, Spain*

e-mail: jscano@ucm.es

It was in February de 1908 that it was created the first Spanish official institution responsible for pensions and health care. Since then, the Spanish pension system has suffered diverse vicissitudes and has overcome many difficulties. One of the biggest challenges that the Spanish pension system has faced has been the sustainability and sufficiency problem arising from the Spanish demographic trends, and more specifically from the increase in life expectancy of old people the low birth rate, which have caused a reversal in the structure of the population pyramid. This is why in 2011 and 2013 two important reforms have taken place in the Spanish pension system. This article addresses both reforms, presents demographic evidence, projections, modeling and simulation affecting the sustainability and

sufficiency of the system in the future, and discusses some specific problems still to be resolved.

Invited Oral

Emotions meet financial decision making

Alojzy Nowak[1], Yochanan Shachmurove[2], Jacob Weisberg[3]

1. *University of Warsaw (UW), Krakowskie Przedmieście 26/28, Warsaw 00-927, Poland* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States* **3.** *Bar-Ilan University, Ramat-Gan 52900, Israel*

e-mail: yochanan@ssc.upenn.edu

Emotions are important. Yet, they are ignored by most economists, and by almost all economic and financial models. Therefore, it is interesting to ask an internationally diversified body of students how important is emotions in their decision making for different scenarios. This paper explores the role of emotions in financial decision making.

It can be argued that emotion colors our decisions in a multitude of ways, from helping decision makers to choose relatively quickly among alternatives to allowing for contemplating future emotional states. Through fear of regret and desire of relief one is capable to weigh decisions and discern her own desires more easily as opposed to a cold calculation of payoffs under risk. It seems that emotions give a decision maker a way to pursue a path of actions in the large grey area between rule-like reflex behavior to and a perfectly rational decision. The human intellectual rational is, and should be, sweetened by and intertwined with the expressions of emotions, like our reactions to performing or listening to music, dancing or watching dancing, producing art works or observing art.

Many perfectly rational mutually beneficial deals and negotiations fail because both the participants and outside observers do not seriously and endogenously consider the emotional part of any deal. While we all recognize that love, like, respect etc., are key to successes or failures of negotiation, individual experts, including economists, social scientists, policy makers, etc. by and large, assume away the important ingredient to any human interactions, namely what we call "emotion."

Furthermore, law and emotions are intertwined, yet emotions are ignored in economic analysis of the law. The current study of law and economics focuses nearly entirely on the idea of efficiency and incentivizing people to make the socially efficient decision. How can truly one measure the true loss to a plaintiff without taking emotions into account?

The paper utilizes responses of a survey by 184 individuals. The majority of the current sample is born and resides in Poland, though the first 64 surveys are respondents from countries all over the world. These countries include but are not limited to India, China, the Philippines, Tunisia, and Turkey. Around half of the sample is not currently working, but most have held a job at some point. In terms of income and wealth, most participants marked themselves as average or above average and relatively few identifying as poor. While the participants listed a variety of majors, the most common types dealt with are business and economics. After business-related majors, the next most common types of majors were science and engineering.

Oral

Venture Capital Investment Meets Geography

Etienne Duchâtel[1], Jean-François Gajewski[1], Yochanan Shachmurove[2]

1. *Université Savoie Mont Blanc, 27 Rue Marcoz, Chambéry 73000, France* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States*

e-mail: yochanan@ssc.upenn.edu

The geographical concentration of venture capital investments is an important concern for researchers and policy makers. This paper analyzes the geographical concentration of venture capital at the city level from 1970 until 2013 in forty major developing economies. Results show four evolutionary paths representing four groups of countries. The quantity of investment deals and the dot-com crisis increase the geographical concentration of venture capital while the level of financial development decreases it.

The European Commission and the Organization for Economic Co-operation and Development (OECD) disagree as to whether or not it is desirable to concentrate the activities of ventures. While the European Commission is in favor of more regional clusters, the OECD advocates the development of an even geographical distribution. In the case of uneven geographical allocation, some small and even medium companies have difficulty in finding sources of funding. Regional equity gaps exist but no consensus has yet emerged about their efficiency. Conversely, Silicon Valley and Route 128 in the United States of America (USA) are examples of geographic regions with very high levels of venture capital concentration. In the USA, venture capital investment spanned 160 cities in 2014, which is the highest number of metropolitan areas since 2009. In the first quarter of 2015, venture capital investment exceeds $17 billion for the first time since the fourth quarter of 2000. The paper raises the following questions: How has the geographical concentration of venture capital investments evolved from 1970 until 2013? What are the macro determinants of this evolution?

Furthermore, the literature review highlights a gap in regards to the macro determinants of concentration. To date, few researchers have analyzed the reasons for geographical concentration in venture capital using empirical studies, while there are currently no studies on the macro determinants. Consequently, this paper assesses four factors explaining concentration at the macro level, in addition to the number of investment deals, the dot-com and the 2008 financial crises, the national technological intensity, and the level of financial development.

Oral

Pension System and the Empirical Study of Pension Annuity's MWR in China

Qingyao Wan, Deyi Cheng

Shanghai Fiannce University, Shanghai 201209, China

e-mail: wanqingyao@aliyun.com

Pension System and the Empirical Study of Pension Annuity MWR in China Qingyao WAN Deyi CHENG □Abstract□China has exper-

ienced the kind of fertility transition over the past 40 years that typically took more than 100 years in developed countries. With rising life expectancy and the sharp fall in total fertility to only around 1.5, it has “grown old before growing rich”. The share of people aged 60 and over to total population will accelerate in coming decades, from only around 12 percent in 2010 to almost one quarter by 2030 and over a third by 2050. This would by 2030 give China a population share over 60 only just under the OECD average. As a result, the old age dependency ratio in China will increase at an almost unprecedented rate over the coming decades, with the rural old age dependency ratio rising to over 34 percent and the urban rate to around 21 percent by 2030. The emerging “4-2-1”extended family pattern of four grandparents, two parents and one child will put deepening strains on family support networks. Aging will also challenge social programs, in particular pensions and health care. There are three-pillar pension system in China, but the second and third pillar are in the infant stage. It’s reviewed the development of China pension system, it’s opportunities and challenges. Annuity can hedge longevity risk but not popular in China. Beyond the constrains of low insurance literacy etc., what is the Money’s Worth Ratio(MWR) of annuity in China? It’s the first time to set up the analysis structure of the Money’s Worth Ratio of Annuity, and uses unique macro and micro data from China market to calculate MWR of annuity in China. We find that: (1) It’s obvious that annuity is fairly priced in China with the law of MWR no less than 0.9. (2) It is available for the insured with average life expectancy in some big cities to get the premium back in China. (3) There are some big differences of MWR among different annuity products, the lifelong annuity without any payment guarantee has the highest MWR. The best age to buy annuity exists with the highest MWR. It’s highly recommended to improve the annuity supply. □Key words□Pension System, Annuity, Money’s Worth Ratio, Longevity Risk

Current Economic and Social Topics 2015, Plenary Track

Presentations waiting for acceptance

Poster

Rachunek wektorowy w badaniu cykliczności szeregów finansowych

Joanna Chrostowska, Krzysztof T. Kompa

Warsaw University of Life Sciences, Nowoursynowska 159C, Warsaw 02-787, Poland

e-mail: joanna.chrostowska1@gmail.com

Jednym z trzech fundamentalnych założeń analizy technicznej jest przesłanka o powtarzającej się historii. Powtarzalność na rynku finansowym, jest zgodnie z tym założeniem zdeterminowana przez niezmienne schematy zachowań jego uczestników. Odzwierciedleniem owych zachowań, są ruchy cen. Na wykresach przedstawiających notowania papierów wartościowych, obserwuje się pewne znane układy notowań zwane formacjami. Powtarzalność formacji jest cechą, która pozwala na prognozowanie przyszłych zachowań rynku. Podczas analizy i prognozowania ruchów cen warto pochylić się również nad zagadnieniem ich rytmu. Badanie zjawiska cykliczności zachowań rynków może przynieść wymierne korzyści, służące poprawie trafności prognoz i pozwalające na dogłębne zrozumienie natury zachowań rynków.

Celem pracy jest weryfikacja założenia o występowaniu cykliczności na rynkach CEE oraz badanie charakteru występującej cykliczności. W analizach zjawiska cykliczności wykorzystano metodę zaproponowaną przez prof. Mariusza Borawskiego i prof. Kesrę Nermenda opartą na własnościach rachunku wektorowego.

Idea metody

Podstawa□ do wyjaśniania idei badania cykliczności z wykorzystaniem rachunku wektorowego odtwarzanie wektora A za pomoca□ wektora B. Jeśli wektory te sa□ równoległe, to moz□na wyznaczyć taka□ stała□ c, z□e A= cB, co oznacza, z□e otworzenie wektora za pomoca□ wektora równoległego nie jest obarczone błe□dem. W przypadku gdy ka□t mie□dzy wektorami A i B jest wie□kszy od zera otworzenie wektora A be□dzie suma□ wektorów: cB i wektora odzwierciedlaja□cego bła□d odtworzenia.

Moz□liwe jest wyznaczenie nieskończenie wielu stałych c, za pomoca□ których moz□na wektor A. Celem jest jednak wyznaczenie takiej stałej, aby bła□d otworzenia był najmniejszy z moz□liwych. Bła□d ten be□dzie najmniejszy, gdy jego wektor (Ve) be□dzie prostopadły do wektora B. Stała c dla której wartość błe□du jest najmniejsza przyjmuje postać:

c= (A,B)/(B,B)

Wektor B po pomnoz□eniu przez stała□ C jest wie□c przybliz□eniem wektora A.

Oral

Comparative Investment Performance of Pension Funds

Jennifer P. Foo[1], Dorota Witkowska[2]

1. *Stetson University (SU), 421 N. Woodland Blvd, Deland, FL, Orlando, FL 32723, United States* **2.** *University of Lodz, Faculty of Management (UL), Matejki 22/26, Lodz 90-237, Poland*

e-mail: jfoo@stetson.edu

Pension funds are important retirement investment savings vehicles for workers as the demographic bulge of baby boomers are expected to retire en masse with profound economic consequences. Unless pension funds are efficient and sufficient to fund the generation of baby boomers whose life expectancy is increasing, the economic burden on the future generations, the government, and society will be heavy. Therefore the global trend has been moving from defined benefits to defined contributions pension fund systems that are backed by assets.

The growth and diversity of pension funds and sectors offered domestically and globally also adds to a positive outlook depending on how pension funds perform. In 2012, of the U$78.2 trillion under institutional investment management in OECD countries, pension funds comprised U$21.8 trillion (OECD, 2013). Given its prominence as the third largest institutional investment funds, after investment and insurance funds, the performance and efficiency of pension funds to fund beneficiaries are therefore crucial to alleviating the looming economic threat since for many retirees the funds are the sole source of retirement. This has importance significance in tying how much retirement terminal benefits investors will receive to the performance of the pension assets, more so after the substantial decline in retirement asset value in the aftermath of the 2008 Financial Crisis.

The question of interest is whether pension funds are efficient in providing the terminal wealth necessary for its beneficiaries to retire. Also of interest is whether there is a difference in efficiency and performance between US and European pension funds in developed countries like the US and in Europe facing an inverted demographic pyramid of aging population. Further, research on pension fund performance and efficiency would provide insights for providers of pension funds to offer better management and designs of investment retirement plans and alternatives. In today's integrated and globalized financial markets it is possible for investors to invest their retirement funds in global pension markets that offer better returns than their domestic markets. The aim of our research* is to compare the performance of pension funds in USA and selected European countries for the period 2002-2013, applying Sharpe ratio, information (or generalized Sharpe's) ratio, Sortino ratio and Sharpe's alpha.

The European pension fund market is highly diversified geographically among many different countries with different structure and investment vehicles. Our study, therefore, focuses on four European representatives of pension fund markets, UK, Germany, Poland and "Europe" in comparing them to the U.S. pension fund market. The

"Europe" is an aggregate representative constructed as a weighted average of the 19 European countries. The most developed pension fund markets in our comparison study is the U.S. and UK in Europe. The biggest European economy is the German economy. However, Germany has a defined benefit system and Pay-As-You-Go (PAYG) system which result in an underdeveloped pension funds market. Poland represents the biggest transitional economy among EU members.

Our paper finds that Poland and U.S. achieved the highest average returns for the benchmarks in the period 2002-2013, while the pension funds in Poland and Germany achieved the highest average returns. Poland with the highest average returns also has the highest risk. For the shorter period 2008-2013, U.S. had the highest return for both pension funds and the benchmarks while Poland and UK experienced losses. On the other hand, the smallest risk is observed for British and German pension funds.

* This research is made possible from a grant "Analysis of Open Pension Funds Market as Compared to the Open Investment Funds Market Functioning in Poland" 2013/09/B/HS4/00493 provided by the National Science Center, Warsaw, Poland.

Oral

Professional activity of polish women on the real estate market

Iwona A. Forys

University of Szczecin, Faculty of Economics and Management (US), ul. Mickiewicza 64, Szczecin 71-101, Poland

e-mail: forys@wneiz.pl

Today's labour market sees a trend of feminisation which is developing with varying intensity in individual segments of economy. Its shape in individual countries is influenced by local economic, social and cultural environment. The phenomenon strengthened representation of women in certain industries is referred to as horizontal occupational segregation (Zwiech 2010). In the EU the most feminized industries are education, health and social care. The aim of this study is to assess the level and range of changes over time in the process of feminisation of regulated professions on the Polish real estate market. With this aim in view, I used data on the number of professional licenses granted by the relevant Minister between 1990–2014 broken down by gender and geographical location (voivodships). The study verifies a hypothesis of growing women's participation in the Polish real estate market in three professions that had been regulated before 2014.

Therefore, I determined the dynamics of the feminisation ratios observed in the professions of appraisal (valuer), property manager and real estate broker in voivodships. I also classified voivodships according to their level of feminisation in the real estate service sector by means of the k-means method and Ward's method.

In order to assess the structural changes over time in the group of women engaged in the above mentioned regulated professions I used simple structure diversity measures based on the proportions of the share of a given component in the structure over the time intervals t and $t+1$. The values of the structure diversity measures lie within <0;1>, where the value approaching zero means that the diversity is weak, while the measure value close to one indicates strong structure diversification. The measures proposed in the literature differ in terms of their sensitivity to changes in components having different share in the structure [Kukuła 1996, Walesiak 1983]. In this paper I determine three measures which respond to a varying degree to the proportion of components within the structure:

V_1 – a measure that responds to the changes in the proportion of component in a balanced way;

V_2 – Clark's divergence coefficient, a measure which responds the strongest to the deviations of minor components;

V_3 – a coefficient proposed by M. Walesiak, a measure which responds the strongest to the deviations of principal components;

When we found our study on the base time period, we can assess the monotonicity of changes occurring in a given structure by means of the structure monotonicity measure [Kukuła 1996].

After over twenty years of market economy, the Polish real estate market has stabilised in terms of economic mechanisms. However, it is still subject to some social processes, such as feminisation of individual professions related with the real estate services, even those requiring expertise in exact and technical science. These changes manifest themselves in the growing number of licenses obtained by women and, consequently, by their growing share in the total number of licensed professionals.

Reference

Zwiech P., Segregacja zawodowa kobiet w Polsce, w: Gawrycka M., Wasilczuk j., Zwiech P., Szklany sufit i ruchome schody – kobieta na rynku pracy, CeDeWu, Warszawa 2010, s. 29-44.

Kukuła K. (1996). *Statystyczne metody analizy struktur ekonomicznych*, Wydawnictwo Edukacyjne, Kraków.

Walesiak M. (1983). *Propozycje miar odległości struktur udziałowych*, Wiadomości Statystyczne, Nr 10.

Oral

Sustainability and Sufficiency of the Spanish Pension System

Jose M. Montero[1], Javier Santacruz Cano[2]

1. *University of Castilla-La Mancha, Cobertizo de S. Pedro Martir, S/N, Toledo 45071, Spain* **2.** *Universidad Complutense de Madrid, Avda. de la Complutense s/n, Madrid 28040, Spain*

e-mail: jscano@ucm.es

It was in February de 1908 that it was created the first Spanish official institution responsible for pensions and health care. Since then, the Spanish pension system has suffered diverse vicissitudes and has overcome many difficulties. One of the biggest challenges that the Spanish pension system has faced has been the sustainability and sufficiency problem arising from the Spanish demographic trends, and more specifically from the increase in life expectancy of old people the low birth rate, which have caused a reversal in the structure of the population pyramid. This is why in 2011 and 2013 two important reforms have taken place in the Spanish pension system. This article addresses both reforms, presents demographic evidence, projections, modeling and simulation affecting the sustainability and

sufficiency of the system in the future, and discusses some specific problems still to be resolved.

Invited Oral

Emotions meet financial decision making

Alojzy Nowak[1], Yochanan Shachmurove[2], Jacob Weisberg[3]

1. *University of Warsaw (UW), Krakowskie Przedmieście 26/28, Warsaw 00-927, Poland* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States* **3.** *Bar-Ilan University, Ramat-Gan 52900, Israel*

e-mail: yochanan@ssc.upenn.edu

Emotions are important. Yet, they are ignored by most economists, and by almost all economic and financial models. Therefore, it is interesting to ask an internationally diversified body of students how important is emotions in their decision making for different scenarios. This paper explores the role of emotions in financial decision making.

It can be argued that emotion colors our decisions in a multitude of ways, from helping decision makers to choose relatively quickly among alternatives to allowing for contemplating future emotional states. Through fear of regret and desire of relief one is capable to weigh decisions and discern her own desires more easily as opposed to a cold calculation of payoffs under risk. It seems that emotions give a decision maker a way to pursue a path of actions in the large grey area between rule-like reflex behavior to and a perfectly rational decision. The human intellectual rational is, and should be, sweetened by and intertwined with the expressions of emotions, like our reactions to performing or listening to music, dancing or watching dancing, producing art works or observing art.

Many perfectly rational mutually beneficial deals and negotiations fail because both the participants and outside observers do not seriously and endogenously consider the emotional part of any deal. While we all recognize that love, like, respect etc., are key to successes or failures of negotiation, individual experts, including economists, social scientists, policy makers, etc. by and large, assume away the important ingredient to any human interactions, namely what we call "emotion."

Furthermore, law and emotions are intertwined, yet emotions are ignored in economic analysis of the law. The current study of law and economics focuses nearly entirely on the idea of efficiency and incentivizing people to make the socially efficient decision. How can truly one measure the true loss to a plaintiff without taking emotions into account?

The paper utilizes responses of a survey by 184 individuals. The majority of the current sample is born and resides in Poland, though the first 64 surveys are respondents from countries all over the world. These countries include but are not limited to India, China, the Philippines, Tunisia, and Turkey. Around half of the sample is not currently working, but most have held a job at some point. In terms of income and wealth, most participants marked themselves as average or above average and relatively few identifying as poor. While the participants listed a variety of majors, the most common types dealt with are business and economics. After business-related majors, the next most common types of majors were science and engineering.

Oral

Venture Capital Investment Meets Geography

Etienne Duchâtel[1], Jean-François Gajewski[1], Yochanan Shachmurove[2]

1. *Université Savoie Mont Blanc, 27 Rue Marcoz, Chambéry 73000, France* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States*

e-mail: yochanan@ssc.upenn.edu

The geographical concentration of venture capital investments is an important concern for researchers and policy makers. This paper analyzes the geographical concentration of venture capital at the city level from 1970 until 2013 in forty major developing economies. Results show four evolutionary paths representing four groups of countries. The quantity of investment deals and the dot-com crisis increase the geographical concentration of venture capital while the level of financial development decreases it.

The European Commission and the Organization for Economic Co-operation and Development (OECD) disagree as to whether or not it is desirable to concentrate the activities of ventures. While the European Commission is in favor of more regional clusters, the OECD advocates the development of an even geographical distribution. In the case of uneven geographical allocation, some small and even medium companies have difficulty in finding sources of funding. Regional equity gaps exist but no consensus has yet emerged about their efficiency. Conversely, Silicon Valley and Route 128 in the United States of America (USA) are examples of geographic regions with very high levels of venture capital concentration. In the USA, venture capital investment spanned 160 cities in 2014, which is the highest number of metropolitan areas since 2009. In the first quarter of 2015, venture capital investment exceeds $17 billion for the first time since the fourth quarter of 2000. The paper raises the following questions: How has the geographical concentration of venture capital investments evolved from 1970 until 2013? What are the macro determinants of this evolution?

Furthermore, the literature review highlights a gap in regards to the macro determinants of concentration. To date, few researchers have analyzed the reasons for geographical concentration in venture capital using empirical studies, while there are currently no studies on the macro determinants. Consequently, this paper assesses four factors explaining concentration at the macro level, in addition to the number of investment deals, the dot-com and the 2008 financial crises, the national technological intensity, and the level of financial development.

Oral

Pension System and the Empirical Study of Pension Annuity's MWR in China

Qingyao Wan, Deyi Cheng

Shanghai Fiannce University, Shanghai 201209, China

e-mail: wanqingyao@aliyun.com

Pension System and the Empirical Study of Pension Annuity MWR in China Qingyao WAN Deyi CHENG □Abstract□China has exper-

ienced the kind of fertility transition over the past 40 years that typically took more than 100 years in developed countries. With rising life expectancy and the sharp fall in total fertility to only around 1.5, it has “grown old before growing rich”. The share of people aged 60 and over to total population will accelerate in coming decades, from only around 12 percent in 2010 to almost one quarter by 2030 and over a third by 2050. This would by 2030 give China a population share over 60 only just under the OECD average. As a result, the old age dependency ratio in China will increase at an almost unprecedented rate over the coming decades, with the rural old age dependency ratio rising to over 34 percent and the urban rate to around 21 percent by 2030. The emerging “4-2-1”extended family pattern of four grandparents, two parents and one child will put deepening strains on family support networks. Aging will also challenge social programs, in particular pensions and health care. There are three-pillar pension system in China, but the second and third pillar are in the infant stage. It’s reviewed the development of China pension system, it’s opportunities and challenges. Annuity can hedge longevity risk but not popular in China. Beyond the constrains of low insurance literacy etc., what is the Money’s Worth Ratio(MWR) of annuity in China? It’s the first time to set up the analysis structure of the Money’s Worth Ratio of Annuity, and uses unique macro and micro data from China market to calculate MWR of annuity in China. We find that: (1) It’s obvious that annuity is fairly priced in China with the law of MWR no less than 0.9. (2) It is available for the insured with average life expectancy in some big cities to get the premium back in China. (3) There are some big differences of MWR among different annuity products, the lifelong annuity without any payment guarantee has the highest MWR. The best age to buy annuity exists with the highest MWR. It’s highly recommended to improve the annuity supply. □Key words□Pension System, Annuity, Money’s Worth Ratio, Longevity Risk

Current Economic and Social Topics 2015, Plenary Track

Presentations waiting for acceptance

Poster

Rachunek wektorowy w badaniu cykliczności szeregów finansowych

Joanna Chrostowska, Krzysztof T. Kompa

Warsaw University of Life Sciences, Nowoursynowska 159C, Warsaw 02-787, Poland

e-mail: joanna.chrostowska1@gmail.com

Jednym z trzech fundamentalnych założeń analizy technicznej jest przesłanka o powtarzającej się historii. Powtarzalność na rynku finansowym, jest zgodnie z tym założeniem zdeterminowana przez niezmienne schematy zachowań jego uczestników. Odzwierciedleniem owych zachowań, są ruchy cen. Na wykresach przedstawiających notowania papierów wartościowych, obserwuje się pewne znane układy notowań zwane formacjami. Powtarzalność formacji jest cechą, która pozwala na prognozowanie przyszłych zachowań rynku. Podczas analizy i prognozowania ruchów cen warto pochylić się również nad zagadnieniem ich rytmu. Badanie zjawiska cykliczności zachowań rynków może przynieść wymierne korzyści, służące poprawie trafności prognoz i pozwalające na dogłębne zrozumienie natury zachowań rynków.

Celem pracy jest weryfikacja założenia o występowaniu cykliczności na rynkach CEE oraz badanie charakteru występującej cykliczności. W analizach zjawiska cykliczności wykorzystano metodę zaproponowaną przez prof. Mariusza Borawskiego i prof. Kesrę Nermenda opartą na własnościach rachunku wektorowego.

Idea metody

Podstawa□ do wyjaśniania idei badania cykliczności z wykorzystaniem rachunku wektorowego odtwarzanie wektora A za pomoca□ wektora B. Jeśli wektory te sa□ równoległe, to moz□na wyznaczyć taka□ stała□ c, z□e A= cB, co oznacza, z□e otworzenie wektora za pomoca□ wektora równoległego nie jest obarczone błe□dem. W przypadku gdy ka□t mie□dzy wektorami A i B jest wie□kszy od zera otworzenie wektora A be□dzie suma□ wektorów: cB i wektora odzwierciedlaja□cego bła□d odtworzenia.

Moz□liwe jest wyznaczenie nieskończenie wielu stałych c, za pomoca□ których moz□na wektor A. Celem jest jednak wyznaczenie takiej stałej, aby bła□d otworzenia był najmniejszy z moz□liwych. Bła□d ten be□dzie najmniejszy, gdy jego wektor (Ve) be□dzie prostopadły do wektora B. Stała c dla której wartość błe□du jest najmniejsza przyjmuje postać:

c= (A,B)/(B,B)

Wektor B po pomnoz□eniu przez stała□ C jest wie□c przybliz□eniem wektora A.

Oral

Comparative Investment Performance of Pension Funds

Jennifer P. Foo[1], Dorota Witkowska[2]

1. *Stetson University (SU), 421 N. Woodland Blvd, Deland, FL, Orlando, FL 32723, United States* **2.** *University of Lodz, Faculty of Management (UL), Matejki 22/26, Lodz 90-237, Poland*

e-mail: jfoo@stetson.edu

Pension funds are important retirement investment savings vehicles for workers as the demographic bulge of baby boomers are expected to retire en masse with profound economic consequences. Unless pension funds are efficient and sufficient to fund the generation of baby boomers whose life expectancy is increasing, the economic burden on the future generations, the government, and society will be heavy. Therefore the global trend has been moving from defined benefits to defined contributions pension fund systems that are backed by assets.

The growth and diversity of pension funds and sectors offered domestically and globally also adds to a positive outlook depending on how pension funds perform. In 2012, of the U$78.2 trillion under institutional investment management in OECD countries, pension funds comprised U$21.8 trillion (OECD, 2013). Given its prominence as the third largest institutional investment funds, after investment and insurance funds, the performance and efficiency of pension funds to fund beneficiaries are therefore crucial to alleviating the looming economic threat since for many retirees the funds are the sole source of retirement. This has importance significance in tying how much retirement terminal benefits investors will receive to the performance of the pension assets, more so after the substantial decline in retirement asset value in the aftermath of the 2008 Financial Crisis.

The question of interest is whether pension funds are efficient in providing the terminal wealth necessary for its beneficiaries to retire. Also of interest is whether there is a difference in efficiency and performance between US and European pension funds in developed countries like the US and in Europe facing an inverted demographic pyramid of aging population. Further, research on pension fund performance and efficiency would provide insights for providers of pension funds to offer better management and designs of investment retirement plans and alternatives. In today's integrated and globalized financial markets it is possible for investors to invest their retirement funds in global pension markets that offer better returns than their domestic markets. The aim of our research* is to compare the performance of pension funds in USA and selected European countries for the period 2002-2013, applying Sharpe ratio, information (or generalized Sharpe's) ratio, Sortino ratio and Sharpe's alpha.

The European pension fund market is highly diversified geographically among many different countries with different structure and investment vehicles. Our study, therefore, focuses on four European representatives of pension fund markets, UK, Germany, Poland and "Europe" in comparing them to the U.S. pension fund market. The

"Europe" is an aggregate representative constructed as a weighted average of the 19 European countries. The most developed pension fund markets in our comparison study is the U.S. and UK in Europe. The biggest European economy is the German economy. However, Germany has a defined benefit system and Pay-As-You-Go (PAYG) system which result in an underdeveloped pension funds market. Poland represents the biggest transitional economy among EU members.

Our paper finds that Poland and U.S. achieved the highest average returns for the benchmarks in the period 2002-2013, while the pension funds in Poland and Germany achieved the highest average returns. Poland with the highest average returns also has the highest risk. For the shorter period 2008-2013, U.S. had the highest return for both pension funds and the benchmarks while Poland and UK experienced losses. On the other hand, the smallest risk is observed for British and German pension funds.

* This research is made possible from a grant "Analysis of Open Pension Funds Market as Compared to the Open Investment Funds Market Functioning in Poland" 2013/09/B/HS4/00493 provided by the National Science Center, Warsaw, Poland.

Oral

Professional activity of polish women on the real estate market

Iwona A. Forys

University of Szczecin, Faculty of Economics and Management (US), ul. Mickiewicza 64, Szczecin 71-101, Poland

e-mail: forys@wneiz.pl

Today's labour market sees a trend of feminisation which is developing with varying intensity in individual segments of economy. Its shape in individual countries is influenced by local economic, social and cultural environment. The phenomenon strengthened representation of women in certain industries is referred to as horizontal occupational segregation (Zwiech 2010). In the EU the most feminized industries are education, health and social care. The aim of this study is to assess the level and range of changes over time in the process of feminisation of regulated professions on the Polish real estate market. With this aim in view, I used data on the number of professional licenses granted by the relevant Minister between 1990–2014 broken down by gender and geographical location (voivodships). The study verifies a hypothesis of growing women's participation in the Polish real estate market in three professions that had been regulated before 2014.

Therefore, I determined the dynamics of the feminisation ratios observed in the professions of appraisal (valuer), property manager and real estate broker in voivodships. I also classified voivodships according to their level of feminisation in the real estate service sector by means of the k-means method and Ward's method.

In order to assess the structural changes over time in the group of women engaged in the above mentioned regulated professions I used simple structure diversity measures based on the proportions of the share of a given component in the structure over the time intervals t and $t+1$. The values of the structure diversity measures lie within <0;1>, where the value approaching zero means that the diversity is weak, while the measure value close to one indicates strong structure diversification. The measures proposed in the literature differ in terms of their sensitivity to changes in components having different share in the structure [Kukuła 1996, Walesiak 1983]. In this paper I determine three measures which respond to a varying degree to the proportion of components within the structure:

V_1 – a measure that responds to the changes in the proportion of component in a balanced way;

V_2 – Clark's divergence coefficient, a measure which responds the strongest to the deviations of minor components;

V_3 – a coefficient proposed by M. Walesiak, a measure which responds the strongest to the deviations of principal components;

When we found our study on the base time period, we can assess the monotonicity of changes occurring in a given structure by means of the structure monotonicity measure [Kukuła 1996].

After over twenty years of market economy, the Polish real estate market has stabilised in terms of economic mechanisms. However, it is still subject to some social processes, such as feminisation of individual professions related with the real estate services, even those requiring expertise in exact and technical science. These changes manifest themselves in the growing number of licenses obtained by women and, consequently, by their growing share in the total number of licensed professionals.

Reference

Zwiech P., Segregacja zawodowa kobiet w Polsce, w: Gawrycka M., Wasilczuk j., Zwiech P., Szklany sufit i ruchome schody – kobieta na rynku pracy, CeDeWu, Warszawa 2010, s. 29-44.

Kukuła K. (1996). *Statystyczne metody analizy struktur ekonomicznych*, Wydawnictwo Edukacyjne, Kraków.

Walesiak M. (1983). *Propozycje miar odległości struktur udziałowych*, Wiadomości Statystyczne, Nr 10.

Oral

Sustainability and Sufficiency of the Spanish Pension System

Jose M. Montero[1], Javier Santacruz Cano[2]

1. *University of Castilla-La Mancha, Cobertizo de S. Pedro Martir, S/N, Toledo 45071, Spain* **2.** *Universidad Complutense de Madrid, Avda. de la Complutense s/n, Madrid 28040, Spain*

e-mail: jscano@ucm.es

It was in February de 1908 that it was created the first Spanish official institution responsible for pensions and health care. Since then, the Spanish pension system has suffered diverse vicissitudes and has overcome many difficulties. One of the biggest challenges that the Spanish pension system has faced has been the sustainability and sufficiency problem arising from the Spanish demographic trends, and more specifically from the increase in life expectancy of old people the low birth rate, which have caused a reversal in the structure of the population pyramid. This is why in 2011 and 2013 two important reforms have taken place in the Spanish pension system. This article addresses both reforms, presents demographic evidence, projections, modeling and simulation affecting the sustainability and

sufficiency of the system in the future, and discusses some specific problems still to be resolved.

Invited Oral

Emotions meet financial decision making

Alojzy Nowak[1], Yochanan Shachmurove[2], Jacob Weisberg[3]

1. *University of Warsaw (UW), Krakowskie Przedmieście 26/28, Warsaw 00-927, Poland* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States* **3.** *Bar-Ilan University, Ramat-Gan 52900, Israel*

e-mail: yochanan@ssc.upenn.edu

Emotions are important. Yet, they are ignored by most economists, and by almost all economic and financial models. Therefore, it is interesting to ask an internationally diversified body of students how important is emotions in their decision making for different scenarios. This paper explores the role of emotions in financial decision making.

It can be argued that emotion colors our decisions in a multitude of ways, from helping decision makers to choose relatively quickly among alternatives to allowing for contemplating future emotional states. Through fear of regret and desire of relief one is capable to weigh decisions and discern her own desires more easily as opposed to a cold calculation of payoffs under risk. It seems that emotions give a decision maker a way to pursue a path of actions in the large grey area between rule-like reflex behavior to and a perfectly rational decision. The human intellectual rational is, and should be, sweetened by and intertwined with the expressions of emotions, like our reactions to performing or listening to music, dancing or watching dancing, producing art works or observing art.

Many perfectly rational mutually beneficial deals and negotiations fail because both the participants and outside observers do not seriously and endogenously consider the emotional part of any deal. While we all recognize that love, like, respect etc., are key to successes or failures of negotiation, individual experts, including economists, social scientists, policy makers, etc. by and large, assume away the important ingredient to any human interactions, namely what we call "emotion."

Furthermore, law and emotions are intertwined, yet emotions are ignored in economic analysis of the law. The current study of law and economics focuses nearly entirely on the idea of efficiency and incentivizing people to make the socially efficient decision. How can truly one measure the true loss to a plaintiff without taking emotions into account?

The paper utilizes responses of a survey by 184 individuals. The majority of the current sample is born and resides in Poland, though the first 64 surveys are respondents from countries all over the world. These countries include but are not limited to India, China, the Philippines, Tunisia, and Turkey. Around half of the sample is not currently working, but most have held a job at some point. In terms of income and wealth, most participants marked themselves as average or above average and relatively few identifying as poor. While the participants listed a variety of majors, the most common types dealt with are business and economics. After business-related majors, the next most common types of majors were science and engineering.

Oral

Venture Capital Investment Meets Geography

Etienne Duchâtel[1], Jean-François Gajewski[1], Yochanan Shachmurove[2]

1. *Université Savoie Mont Blanc, 27 Rue Marcoz, Chambéry 73000, France* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States*

e-mail: yochanan@ssc.upenn.edu

The geographical concentration of venture capital investments is an important concern for researchers and policy makers. This paper analyzes the geographical concentration of venture capital at the city level from 1970 until 2013 in forty major developing economies. Results show four evolutionary paths representing four groups of countries. The quantity of investment deals and the dot-com crisis increase the geographical concentration of venture capital while the level of financial development decreases it.

The European Commission and the Organization for Economic Co-operation and Development (OECD) disagree as to whether or not it is desirable to concentrate the activities of ventures. While the European Commission is in favor of more regional clusters, the OECD advocates the development of an even geographical distribution. In the case of uneven geographical allocation, some small and even medium companies have difficulty in finding sources of funding. Regional equity gaps exist but no consensus has yet emerged about their efficiency. Conversely, Silicon Valley and Route 128 in the United States of America (USA) are examples of geographic regions with very high levels of venture capital concentration. In the USA, venture capital investment spanned 160 cities in 2014, which is the highest number of metropolitan areas since 2009. In the first quarter of 2015, venture capital investment exceeds $17 billion for the first time since the fourth quarter of 2000. The paper raises the following questions: How has the geographical concentration of venture capital investments evolved from 1970 until 2013? What are the macro determinants of this evolution?

Furthermore, the literature review highlights a gap in regards to the macro determinants of concentration. To date, few researchers have analyzed the reasons for geographical concentration in venture capital using empirical studies, while there are currently no studies on the macro determinants. Consequently, this paper assesses four factors explaining concentration at the macro level, in addition to the number of investment deals, the dot-com and the 2008 financial crises, the national technological intensity, and the level of financial development.

Oral

Pension System and the Empirical Study of Pension Annuity's MWR in China

Qingyao Wan, Deyi Cheng

Shanghai Fiannce University, Shanghai 201209, China

e-mail: wanqingyao@aliyun.com

Pension System and the Empirical Study of Pension Annuity MWR in China Qingyao WAN Deyi CHENG □Abstract□China has exper-

ienced the kind of fertility transition over the past 40 years that typically took more than 100 years in developed countries. With rising life expectancy and the sharp fall in total fertility to only around 1.5, it has “grown old before growing rich”. The share of people aged 60 and over to total population will accelerate in coming decades, from only around 12 percent in 2010 to almost one quarter by 2030 and over a third by 2050. This would by 2030 give China a population share over 60 only just under the OECD average. As a result, the old age dependency ratio in China will increase at an almost unprecedented rate over the coming decades, with the rural old age dependency ratio rising to over 34 percent and the urban rate to around 21 percent by 2030. The emerging “4-2-1”extended family pattern of four grandparents, two parents and one child will put deepening strains on family support networks. Aging will also challenge social programs, in particular pensions and health care. There are three-pillar pension system in China, but the second and third pillar are in the infant stage. It’s reviewed the development of China pension system, it’s opportunities and challenges. Annuity can hedge longevity risk but not popular in China. Beyond the constrains of low insurance literacy etc., what is the Money’s Worth Ratio(MWR) of annuity in China? It’s the first time to set up the analysis structure of the Money’s Worth Ratio of Annuity, and uses unique macro and micro data from China market to calculate MWR of annuity in China. We find that: (1) It’s obvious that annuity is fairly priced in China with the law of MWR no less than 0.9. (2) It is available for the insured with average life expectancy in some big cities to get the premium back in China. (3) There are some big differences of MWR among different annuity products, the lifelong annuity without any payment guarantee has the highest MWR. The best age to buy annuity exists with the highest MWR. It’s highly recommended to improve the annuity supply. □Key words□Pension System, Annuity, Money’s Worth Ratio, Longevity Risk

Current Economic and Social Topics 2015, Plenary Track

Presentations waiting for acceptance

Poster

Rachunek wektorowy w badaniu cykliczności szeregów finansowych

Joanna Chrostowska, Krzysztof T. Kompa

Warsaw University of Life Sciences, Nowoursynowska 159C, Warsaw 02-787, Poland

e-mail: joanna.chrostowska1@gmail.com

Jednym z trzech fundamentalnych założeń analizy technicznej jest przesłanka o powtarzającej się historii. Powtarzalność na rynku finansowym, jest zgodnie z tym założeniem zdeterminowana przez niezmienne schematy zachowań jego uczestników. Odzwierciedleniem owych zachowań, są ruchy cen. Na wykresach przedstawiających notowania papierów wartościowych, obserwuje się pewne znane układy notowań zwane formacjami. Powtarzalność formacji jest cechą, która pozwala na prognozowanie przyszłych zachowań rynku. Podczas analizy i prognozowania ruchów cen warto pochylić się również nad zagadnieniem ich rytmu. Badanie zjawiska cykliczności zachowań rynków może przynieść wymierne korzyści, służące poprawie trafności prognoz i pozwalające na dogłębne zrozumienie natury zachowań rynków.

Celem pracy jest weryfikacja założenia o występowaniu cykliczności na rynkach CEE oraz badanie charakteru występującej cykliczności. W analizach zjawiska cykliczności wykorzystano metodę zaproponowaną przez prof. Mariusza Borawskiego i prof. Kesrę Nermenda opartą na własnościach rachunku wektorowego.

Idea metody

Podstawa□ do wyjaśniania idei badania cykliczności z wykorzystaniem rachunku wektorowego odtwarzanie wektora A za pomoca□ wektora B. Jeśli wektory te sa□ równoległe, to moz□na wyznaczyć taka□ stała□ c, z□e A= cB, co oznacza, z□e otworzenie wektora za pomoca□ wektora równoległego nie jest obarczone błe□dem. W przypadku gdy ka□t mie□dzy wektorami A i B jest wie□kszy od zera otworzenie wektora A be□dzie suma□ wektorów: cB i wektora odzwierciedlaja□cego bła□d odtworzenia.

Moz□liwe jest wyznaczenie nieskończenie wielu stałych c, za pomoca□ których moz□na wektor A. Celem jest jednak wyznaczenie takiej stałej, aby bła□d otworzenia był najmniejszy z moz□liwych. Bła□d ten be□dzie najmniejszy, gdy jego wektor (Ve) be□dzie prostopadły do wektora B. Stała c dla której wartość błe□du jest najmniejsza przyjmuje postać:

c= (A,B)/(B,B)

Wektor B po pomnoz□eniu przez stała□ C jest wie□c przybliz□eniem wektora A.

Oral

Comparative Investment Performance of Pension Funds

Jennifer P. Foo[1], Dorota Witkowska[2]

1. *Stetson University (SU), 421 N. Woodland Blvd, Deland, FL, Orlando, FL 32723, United States* **2.** *University of Lodz, Faculty of Management (UL), Matejki 22/26, Lodz 90-237, Poland*

e-mail: jfoo@stetson.edu

Pension funds are important retirement investment savings vehicles for workers as the demographic bulge of baby boomers are expected to retire en masse with profound economic consequences. Unless pension funds are efficient and sufficient to fund the generation of baby boomers whose life expectancy is increasing, the economic burden on the future generations, the government, and society will be heavy. Therefore the global trend has been moving from defined benefits to defined contributions pension fund systems that are backed by assets.

The growth and diversity of pension funds and sectors offered domestically and globally also adds to a positive outlook depending on how pension funds perform. In 2012, of the U$78.2 trillion under institutional investment management in OECD countries, pension funds comprised U$21.8 trillion (OECD, 2013). Given its prominence as the third largest institutional investment funds, after investment and insurance funds, the performance and efficiency of pension funds to fund beneficiaries are therefore crucial to alleviating the looming economic threat since for many retirees the funds are the sole source of retirement. This has importance significance in tying how much retirement terminal benefits investors will receive to the performance of the pension assets, more so after the substantial decline in retirement asset value in the aftermath of the 2008 Financial Crisis.

The question of interest is whether pension funds are efficient in providing the terminal wealth necessary for its beneficiaries to retire. Also of interest is whether there is a difference in efficiency and performance between US and European pension funds in developed countries like the US and in Europe facing an inverted demographic pyramid of aging population. Further, research on pension fund performance and efficiency would provide insights for providers of pension funds to offer better management and designs of investment retirement plans and alternatives. In today's integrated and globalized financial markets it is possible for investors to invest their retirement funds in global pension markets that offer better returns than their domestic markets. The aim of our research* is to compare the performance of pension funds in USA and selected European countries for the period 2002-2013, applying Sharpe ratio, information (or generalized Sharpe's) ratio, Sortino ratio and Sharpe's alpha.

The European pension fund market is highly diversified geographically among many different countries with different structure and investment vehicles. Our study, therefore, focuses on four European representatives of pension fund markets, UK, Germany, Poland and "Europe" in comparing them to the U.S. pension fund market. The

"Europe" is an aggregate representative constructed as a weighted average of the 19 European countries. The most developed pension fund markets in our comparison study is the U.S. and UK in Europe. The biggest European economy is the German economy. However, Germany has a defined benefit system and Pay-As-You-Go (PAYG) system which result in an underdeveloped pension funds market. Poland represents the biggest transitional economy among EU members.

Our paper finds that Poland and U.S. achieved the highest average returns for the benchmarks in the period 2002-2013, while the pension funds in Poland and Germany achieved the highest average returns. Poland with the highest average returns also has the highest risk. For the shorter period 2008-2013, U.S. had the highest return for both pension funds and the benchmarks while Poland and UK experienced losses. On the other hand, the smallest risk is observed for British and German pension funds.

* This research is made possible from a grant "Analysis of Open Pension Funds Market as Compared to the Open Investment Funds Market Functioning in Poland" 2013/09/B/HS4/00493 provided by the National Science Center, Warsaw, Poland.

Oral

Professional activity of polish women on the real estate market

Iwona A. Forys

University of Szczecin, Faculty of Economics and Management (US), ul. Mickiewicza 64, Szczecin 71-101, Poland

e-mail: forys@wneiz.pl

Today's labour market sees a trend of feminisation which is developing with varying intensity in individual segments of economy. Its shape in individual countries is influenced by local economic, social and cultural environment. The phenomenon strengthened representation of women in certain industries is referred to as horizontal occupational segregation (Zwiech 2010). In the EU the most feminized industries are education, health and social care. The aim of this study is to assess the level and range of changes over time in the process of feminisation of regulated professions on the Polish real estate market. With this aim in view, I used data on the number of professional licenses granted by the relevant Minister between 1990–2014 broken down by gender and geographical location (voivodships). The study verifies a hypothesis of growing women's participation in the Polish real estate market in three professions that had been regulated before 2014.

Therefore, I determined the dynamics of the feminisation ratios observed in the professions of appraisal (valuer), property manager and real estate broker in voivodships. I also classified voivodships according to their level of feminisation in the real estate service sector by means of the k-means method and Ward's method.

In order to assess the structural changes over time in the group of women engaged in the above mentioned regulated professions I used simple structure diversity measures based on the proportions of the share of a given component in the structure over the time intervals t and $t+1$. The values of the structure diversity measures lie within <0;1>, where the value approaching zero means that the diversity is weak, while the measure value close to one indicates strong structure diversification. The measures proposed in the literature differ in terms of their sensitivity to changes in components having different share in the structure [Kukuła 1996, Walesiak 1983]. In this paper I determine three measures which respond to a varying degree to the proportion of components within the structure:

V_1 – a measure that responds to the changes in the proportion of component in a balanced way;

V_2 – Clark's divergence coefficient, a measure which responds the strongest to the deviations of minor components;

V_3 – a coefficient proposed by M. Walesiak, a measure which responds the strongest to the deviations of principal components;

When we found our study on the base time period, we can assess the monotonicity of changes occurring in a given structure by means of the structure monotonicity measure [Kukuła 1996].

After over twenty years of market economy, the Polish real estate market has stabilised in terms of economic mechanisms. However, it is still subject to some social processes, such as feminisation of individual professions related with the real estate services, even those requiring expertise in exact and technical science. These changes manifest themselves in the growing number of licenses obtained by women and, consequently, by their growing share in the total number of licensed professionals.

Reference

Zwiech P., Segregacja zawodowa kobiet w Polsce, w: Gawrycka M., Wasilczuk j., Zwiech P., Szklany sufit i ruchome schody – kobieta na rynku pracy, CeDeWu, Warszawa 2010, s. 29-44.

Kukuła K. (1996). *Statystyczne metody analizy struktur ekonomicznych*, Wydawnictwo Edukacyjne, Kraków.

Walesiak M. (1983). *Propozycje miar odległości struktur udziałowych*, Wiadomości Statystyczne, Nr 10.

Oral

Sustainability and Sufficiency of the Spanish Pension System

Jose M. Montero[1], Javier Santacruz Cano[2]

1. *University of Castilla-La Mancha, Cobertizo de S. Pedro Martir, S/N, Toledo 45071, Spain* **2.** *Universidad Complutense de Madrid, Avda. de la Complutense s/n, Madrid 28040, Spain*

e-mail: jscano@ucm.es

It was in February de 1908 that it was created the first Spanish official institution responsible for pensions and health care. Since then, the Spanish pension system has suffered diverse vicissitudes and has overcome many difficulties. One of the biggest challenges that the Spanish pension system has faced has been the sustainability and sufficiency problem arising from the Spanish demographic trends, and more specifically from the increase in life expectancy of old people the low birth rate, which have caused a reversal in the structure of the population pyramid. This is why in 2011 and 2013 two important reforms have taken place in the Spanish pension system. This article addresses both reforms, presents demographic evidence, projections, modeling and simulation affecting the sustainability and

sufficiency of the system in the future, and discusses some specific problems still to be resolved.

Invited Oral

Emotions meet financial decision making

Alojzy Nowak[1], Yochanan Shachmurove[2], Jacob Weisberg[3]

1. *University of Warsaw (UW), Krakowskie Przedmieście 26/28, Warsaw 00-927, Poland* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States* **3.** *Bar-Ilan University, Ramat-Gan 52900, Israel*

e-mail: yochanan@ssc.upenn.edu

Emotions are important. Yet, they are ignored by most economists, and by almost all economic and financial models. Therefore, it is interesting to ask an internationally diversified body of students how important is emotions in their decision making for different scenarios. This paper explores the role of emotions in financial decision making.

It can be argued that emotion colors our decisions in a multitude of ways, from helping decision makers to choose relatively quickly among alternatives to allowing for contemplating future emotional states. Through fear of regret and desire of relief one is capable to weigh decisions and discern her own desires more easily as opposed to a cold calculation of payoffs under risk. It seems that emotions give a decision maker a way to pursue a path of actions in the large grey area between rule-like reflex behavior to and a perfectly rational decision. The human intellectual rational is, and should be, sweetened by and intertwined with the expressions of emotions, like our reactions to performing or listening to music, dancing or watching dancing, producing art works or observing art.

Many perfectly rational mutually beneficial deals and negotiations fail because both the participants and outside observers do not seriously and endogenously consider the emotional part of any deal. While we all recognize that love, like, respect etc., are key to successes or failures of negotiation, individual experts, including economists, social scientists, policy makers, etc. by and large, assume away the important ingredient to any human interactions, namely what we call "emotion."

Furthermore, law and emotions are intertwined, yet emotions are ignored in economic analysis of the law. The current study of law and economics focuses nearly entirely on the idea of efficiency and incentivizing people to make the socially efficient decision. How can truly one measure the true loss to a plaintiff without taking emotions into account?

The paper utilizes responses of a survey by 184 individuals. The majority of the current sample is born and resides in Poland, though the first 64 surveys are respondents from countries all over the world. These countries include but are not limited to India, China, the Philippines, Tunisia, and Turkey. Around half of the sample is not currently working, but most have held a job at some point. In terms of income and wealth, most participants marked themselves as average or above average and relatively few identifying as poor. While the participants listed a variety of majors, the most common types dealt with are business and economics. After business-related majors, the next most common types of majors were science and engineering.

Oral

Venture Capital Investment Meets Geography

Etienne Duchâtel[1], Jean-François Gajewski[1], Yochanan Shachmurove[2]

1. *Université Savoie Mont Blanc, 27 Rue Marcoz, Chambéry 73000, France* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States*

e-mail: yochanan@ssc.upenn.edu

The geographical concentration of venture capital investments is an important concern for researchers and policy makers. This paper analyzes the geographical concentration of venture capital at the city level from 1970 until 2013 in forty major developing economies. Results show four evolutionary paths representing four groups of countries. The quantity of investment deals and the dot-com crisis increase the geographical concentration of venture capital while the level of financial development decreases it.

The European Commission and the Organization for Economic Co-operation and Development (OECD) disagree as to whether or not it is desirable to concentrate the activities of ventures. While the European Commission is in favor of more regional clusters, the OECD advocates the development of an even geographical distribution. In the case of uneven geographical allocation, some small and even medium companies have difficulty in finding sources of funding. Regional equity gaps exist but no consensus has yet emerged about their efficiency. Conversely, Silicon Valley and Route 128 in the United States of America (USA) are examples of geographic regions with very high levels of venture capital concentration. In the USA, venture capital investment spanned 160 cities in 2014, which is the highest number of metropolitan areas since 2009. In the first quarter of 2015, venture capital investment exceeds $17 billion for the first time since the fourth quarter of 2000. The paper raises the following questions: How has the geographical concentration of venture capital investments evolved from 1970 until 2013? What are the macro determinants of this evolution?

Furthermore, the literature review highlights a gap in regards to the macro determinants of concentration. To date, few researchers have analyzed the reasons for geographical concentration in venture capital using empirical studies, while there are currently no studies on the macro determinants. Consequently, this paper assesses four factors explaining concentration at the macro level, in addition to the number of investment deals, the dot-com and the 2008 financial crises, the national technological intensity, and the level of financial development.

Oral

Pension System and the Empirical Study of Pension Annuity's MWR in China

Qingyao Wan, Deyi Cheng

Shanghai Fiannce University, Shanghai 201209, China

e-mail: wanqingyao@aliyun.com

Pension System and the Empirical Study of Pension Annuity MWR in China Qingyao WAN Deyi CHENG □Abstract□China has exper-

ienced the kind of fertility transition over the past 40 years that typically took more than 100 years in developed countries. With rising life expectancy and the sharp fall in total fertility to only around 1.5, it has “grown old before growing rich”. The share of people aged 60 and over to total population will accelerate in coming decades, from only around 12 percent in 2010 to almost one quarter by 2030 and over a third by 2050. This would by 2030 give China a population share over 60 only just under the OECD average. As a result, the old age dependency ratio in China will increase at an almost unprecedented rate over the coming decades, with the rural old age dependency ratio rising to over 34 percent and the urban rate to around 21 percent by 2030. The emerging “4-2-1”extended family pattern of four grandparents, two parents and one child will put deepening strains on family support networks. Aging will also challenge social programs, in particular pensions and health care. There are three-pillar pension system in China, but the second and third pillar are in the infant stage. It’s reviewed the development of China pension system, it’s opportunities and challenges. Annuity can hedge longevity risk but not popular in China. Beyond the constrains of low insurance literacy etc., what is the Money’s Worth Ratio(MWR) of annuity in China? It’s the first time to set up the analysis structure of the Money’s Worth Ratio of Annuity, and uses unique macro and micro data from China market to calculate MWR of annuity in China. We find that: (1) It’s obvious that annuity is fairly priced in China with the law of MWR no less than 0.9. (2) It is available for the insured with average life expectancy in some big cities to get the premium back in China. (3) There are some big differences of MWR among different annuity products, the lifelong annuity without any payment guarantee has the highest MWR. The best age to buy annuity exists with the highest MWR. It’s highly recommended to improve the annuity supply. □Key words□Pension System, Annuity, Money’s Worth Ratio, Longevity Risk

Current Economic and Social Topics 2015, Plenary Track

Presentations waiting for acceptance

Poster

Rachunek wektorowy w badaniu cykliczności szeregów finansowych

Joanna Chrostowska, Krzysztof T. Kompa

Warsaw University of Life Sciences, Nowoursynowska 159C, Warsaw 02-787, Poland

e-mail: joanna.chrostowska1@gmail.com

Jednym z trzech fundamentalnych założeń analizy technicznej jest przesłanka o powtarzającej się historii. Powtarzalność na rynku finansowym, jest zgodnie z tym założeniem zdeterminowana przez niezmienne schematy zachowań jego uczestników. Odzwierciedleniem owych zachowań, są ruchy cen. Na wykresach przedstawiających notowania papierów wartościowych, obserwuje się pewne znane układy notowań zwane formacjami. Powtarzalność formacji jest cechą, która pozwala na prognozowanie przyszłych zachowań rynku. Podczas analizy i prognozowania ruchów cen warto pochylić się również nad zagadnieniem ich rytmu. Badanie zjawiska cykliczności zachowań rynków może przynieść wymierne korzyści, służące poprawie trafności prognoz i pozwalające na dogłębne zrozumienie natury zachowań rynków.

Celem pracy jest weryfikacja założenia o występowaniu cykliczności na rynkach CEE oraz badanie charakteru występującej cykliczności. W analizach zjawiska cykliczności wykorzystano metodę zaproponowaną przez prof. Mariusza Borawskiego i prof. Kesrę Nermenda opartą na własnościach rachunku wektorowego.

Idea metody

Podstawa□ do wyjaśniania idei badania cykliczności z wykorzystaniem rachunku wektorowego odtwarzanie wektora A za pomoca□ wektora B. Jeśli wektory te sa□ równoległe, to moz□na wyznaczyć taka□ stała□ c, z□e A= cB, co oznacza, z□e otworzenie wektora za pomoca□ wektora równoległego nie jest obarczone błe□dem. W przypadku gdy ka□t mie□dzy wektorami A i B jest wie□kszy od zera otworzenie wektora A be□dzie suma□ wektorów: cB i wektora odzwierciedlaja□cego bła□d odtworzenia.

Moz□liwe jest wyznaczenie nieskończenie wielu stałych c, za pomoca□ których moz□na wektor A. Celem jest jednak wyznaczenie takiej stałej, aby bła□d otworzenia był najmniejszy z moz□liwych. Bła□d ten be□dzie najmniejszy, gdy jego wektor (Ve) be□dzie prostopadły do wektora B. Stała c dla której wartość błe□du jest najmniejsza przyjmuje postać:

c= (A,B)/(B,B)

Wektor B po pomnoz□eniu przez stała□ C jest wie□c przybliz□eniem wektora A.

Oral

Comparative Investment Performance of Pension Funds

Jennifer P. Foo[1], Dorota Witkowska[2]

1. *Stetson University (SU), 421 N. Woodland Blvd, Deland, FL, Orlando, FL 32723, United States* **2.** *University of Lodz, Faculty of Management (UL), Matejki 22/26, Lodz 90-237, Poland*

e-mail: jfoo@stetson.edu

Pension funds are important retirement investment savings vehicles for workers as the demographic bulge of baby boomers are expected to retire en masse with profound economic consequences. Unless pension funds are efficient and sufficient to fund the generation of baby boomers whose life expectancy is increasing, the economic burden on the future generations, the government, and society will be heavy. Therefore the global trend has been moving from defined benefits to defined contributions pension fund systems that are backed by assets.

The growth and diversity of pension funds and sectors offered domestically and globally also adds to a positive outlook depending on how pension funds perform. In 2012, of the U$78.2 trillion under institutional investment management in OECD countries, pension funds comprised U$21.8 trillion (OECD, 2013). Given its prominence as the third largest institutional investment funds, after investment and insurance funds, the performance and efficiency of pension funds to fund beneficiaries are therefore crucial to alleviating the looming economic threat since for many retirees the funds are the sole source of retirement. This has importance significance in tying how much retirement terminal benefits investors will receive to the performance of the pension assets, more so after the substantial decline in retirement asset value in the aftermath of the 2008 Financial Crisis.

The question of interest is whether pension funds are efficient in providing the terminal wealth necessary for its beneficiaries to retire. Also of interest is whether there is a difference in efficiency and performance between US and European pension funds in developed countries like the US and in Europe facing an inverted demographic pyramid of aging population. Further, research on pension fund performance and efficiency would provide insights for providers of pension funds to offer better management and designs of investment retirement plans and alternatives. In today's integrated and globalized financial markets it is possible for investors to invest their retirement funds in global pension markets that offer better returns than their domestic markets. The aim of our research* is to compare the performance of pension funds in USA and selected European countries for the period 2002-2013, applying Sharpe ratio, information (or generalized Sharpe's) ratio, Sortino ratio and Sharpe's alpha.

The European pension fund market is highly diversified geographically among many different countries with different structure and investment vehicles. Our study, therefore, focuses on four European representatives of pension fund markets, UK, Germany, Poland and "Europe" in comparing them to the U.S. pension fund market. The

"Europe" is an aggregate representative constructed as a weighted average of the 19 European countries. The most developed pension fund markets in our comparison study is the U.S. and UK in Europe. The biggest European economy is the German economy. However, Germany has a defined benefit system and Pay-As-You-Go (PAYG) system which result in an underdeveloped pension funds market. Poland represents the biggest transitional economy among EU members.

Our paper finds that Poland and U.S. achieved the highest average returns for the benchmarks in the period 2002-2013, while the pension funds in Poland and Germany achieved the highest average returns. Poland with the highest average returns also has the highest risk. For the shorter period 2008-2013, U.S. had the highest return for both pension funds and the benchmarks while Poland and UK experienced losses. On the other hand, the smallest risk is observed for British and German pension funds.

* This research is made possible from a grant "Analysis of Open Pension Funds Market as Compared to the Open Investment Funds Market Functioning in Poland" 2013/09/B/HS4/00493 provided by the National Science Center, Warsaw, Poland.

Oral

Professional activity of polish women on the real estate market

Iwona A. Forys

University of Szczecin, Faculty of Economics and Management (US), ul. Mickiewicza 64, Szczecin 71-101, Poland

e-mail: forys@wneiz.pl

Today's labour market sees a trend of feminisation which is developing with varying intensity in individual segments of economy. Its shape in individual countries is influenced by local economic, social and cultural environment. The phenomenon strengthened representation of women in certain industries is referred to as horizontal occupational segregation (Zwiech 2010). In the EU the most feminized industries are education, health and social care. The aim of this study is to assess the level and range of changes over time in the process of feminisation of regulated professions on the Polish real estate market. With this aim in view, I used data on the number of professional licenses granted by the relevant Minister between 1990–2014 broken down by gender and geographical location (voivodships). The study verifies a hypothesis of growing women's participation in the Polish real estate market in three professions that had been regulated before 2014.

Therefore, I determined the dynamics of the feminisation ratios observed in the professions of appraisal (valuer), property manager and real estate broker in voivodships. I also classified voivodships according to their level of feminisation in the real estate service sector by means of the k-means method and Ward's method.

In order to assess the structural changes over time in the group of women engaged in the above mentioned regulated professions I used simple structure diversity measures based on the proportions of the share of a given component in the structure over the time intervals t and $t+1$. The values of the structure diversity measures lie within <0;1>, where the value approaching zero means that the diversity is weak, while the measure value close to one indicates strong structure diversification. The measures proposed in the literature differ in terms of their sensitivity to changes in components having different share in the structure [Kukuła 1996, Walesiak 1983]. In this paper I determine three measures which respond to a varying degree to the proportion of components within the structure:

V_1 – a measure that responds to the changes in the proportion of component in a balanced way;

V_2 – Clark's divergence coefficient, a measure which responds the strongest to the deviations of minor components;

V_3 – a coefficient proposed by M. Walesiak, a measure which responds the strongest to the deviations of principal components;

When we found our study on the base time period, we can assess the monotonicity of changes occurring in a given structure by means of the structure monotonicity measure [Kukuła 1996].

After over twenty years of market economy, the Polish real estate market has stabilised in terms of economic mechanisms. However, it is still subject to some social processes, such as feminisation of individual professions related with the real estate services, even those requiring expertise in exact and technical science. These changes manifest themselves in the growing number of licenses obtained by women and, consequently, by their growing share in the total number of licensed professionals.

Reference

Zwiech P., Segregacja zawodowa kobiet w Polsce, w: Gawrycka M., Wasilczuk j., Zwiech P., Szklany sufit i ruchome schody – kobieta na rynku pracy, CeDeWu, Warszawa 2010, s. 29-44.

Kukuła K. (1996). *Statystyczne metody analizy struktur ekonomicznych*, Wydawnictwo Edukacyjne, Kraków.

Walesiak M. (1983). *Propozycje miar odległości struktur udziałowych*, Wiadomości Statystyczne, Nr 10.

Oral

Sustainability and Sufficiency of the Spanish Pension System

Jose M. Montero[1], Javier Santacruz Cano[2]

1. *University of Castilla-La Mancha, Cobertizo de S. Pedro Martir, S/N, Toledo 45071, Spain* **2.** *Universidad Complutense de Madrid, Avda. de la Complutense s/n, Madrid 28040, Spain*

e-mail: jscano@ucm.es

It was in February de 1908 that it was created the first Spanish official institution responsible for pensions and health care. Since then, the Spanish pension system has suffered diverse vicissitudes and has overcome many difficulties. One of the biggest challenges that the Spanish pension system has faced has been the sustainability and sufficiency problem arising from the Spanish demographic trends, and more specifically from the increase in life expectancy of old people the low birth rate, which have caused a reversal in the structure of the population pyramid. This is why in 2011 and 2013 two important reforms have taken place in the Spanish pension system. This article addresses both reforms, presents demographic evidence, projections, modeling and simulation affecting the sustainability and

sufficiency of the system in the future, and discusses some specific problems still to be resolved.

Invited Oral

Emotions meet financial decision making

Alojzy Nowak[1], Yochanan Shachmurove[2], Jacob Weisberg[3]

1. *University of Warsaw (UW), Krakowskie Przedmieście 26/28, Warsaw 00-927, Poland* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States* **3.** *Bar-Ilan University, Ramat-Gan 52900, Israel*

e-mail: yochanan@ssc.upenn.edu

Emotions are important. Yet, they are ignored by most economists, and by almost all economic and financial models. Therefore, it is interesting to ask an internationally diversified body of students how important is emotions in their decision making for different scenarios. This paper explores the role of emotions in financial decision making.

It can be argued that emotion colors our decisions in a multitude of ways, from helping decision makers to choose relatively quickly among alternatives to allowing for contemplating future emotional states. Through fear of regret and desire of relief one is capable to weigh decisions and discern her own desires more easily as opposed to a cold calculation of payoffs under risk. It seems that emotions give a decision maker a way to pursue a path of actions in the large grey area between rule-like reflex behavior to and a perfectly rational decision. The human intellectual rational is, and should be, sweetened by and intertwined with the expressions of emotions, like our reactions to performing or listening to music, dancing or watching dancing, producing art works or observing art.

Many perfectly rational mutually beneficial deals and negotiations fail because both the participants and outside observers do not seriously and endogenously consider the emotional part of any deal. While we all recognize that love, like, respect etc., are key to successes or failures of negotiation, individual experts, including economists, social scientists, policy makers, etc. by and large, assume away the important ingredient to any human interactions, namely what we call "emotion."

Furthermore, law and emotions are intertwined, yet emotions are ignored in economic analysis of the law. The current study of law and economics focuses nearly entirely on the idea of efficiency and incentivizing people to make the socially efficient decision. How can truly one measure the true loss to a plaintiff without taking emotions into account?

The paper utilizes responses of a survey by 184 individuals. The majority of the current sample is born and resides in Poland, though the first 64 surveys are respondents from countries all over the world. These countries include but are not limited to India, China, the Philippines, Tunisia, and Turkey. Around half of the sample is not currently working, but most have held a job at some point. In terms of income and wealth, most participants marked themselves as average or above average and relatively few identifying as poor. While the participants listed a variety of majors, the most common types dealt with are business and economics. After business-related majors, the next most common types of majors were science and engineering.

Oral

Venture Capital Investment Meets Geography

Etienne Duchâtel[1], Jean-François Gajewski[1], Yochanan Shachmurove[2]

1. *Université Savoie Mont Blanc, 27 Rue Marcoz, Chambéry 73000, France* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States*

e-mail: yochanan@ssc.upenn.edu

The geographical concentration of venture capital investments is an important concern for researchers and policy makers. This paper analyzes the geographical concentration of venture capital at the city level from 1970 until 2013 in forty major developing economies. Results show four evolutionary paths representing four groups of countries. The quantity of investment deals and the dot-com crisis increase the geographical concentration of venture capital while the level of financial development decreases it.

The European Commission and the Organization for Economic Co-operation and Development (OECD) disagree as to whether or not it is desirable to concentrate the activities of ventures. While the European Commission is in favor of more regional clusters, the OECD advocates the development of an even geographical distribution. In the case of uneven geographical allocation, some small and even medium companies have difficulty in finding sources of funding. Regional equity gaps exist but no consensus has yet emerged about their efficiency. Conversely, Silicon Valley and Route 128 in the United States of America (USA) are examples of geographic regions with very high levels of venture capital concentration. In the USA, venture capital investment spanned 160 cities in 2014, which is the highest number of metropolitan areas since 2009. In the first quarter of 2015, venture capital investment exceeds $17 billion for the first time since the fourth quarter of 2000. The paper raises the following questions: How has the geographical concentration of venture capital investments evolved from 1970 until 2013? What are the macro determinants of this evolution?

Furthermore, the literature review highlights a gap in regards to the macro determinants of concentration. To date, few researchers have analyzed the reasons for geographical concentration in venture capital using empirical studies, while there are currently no studies on the macro determinants. Consequently, this paper assesses four factors explaining concentration at the macro level, in addition to the number of investment deals, the dot-com and the 2008 financial crises, the national technological intensity, and the level of financial development.

Oral

Pension System and the Empirical Study of Pension Annuity's MWR in China

Qingyao Wan, Deyi Cheng

Shanghai Fiannce University, Shanghai 201209, China

e-mail: wanqingyao@aliyun.com

Pension System and the Empirical Study of Pension Annuity MWR in China Qingyao WAN Deyi CHENG □Abstract□China has exper-

ienced the kind of fertility transition over the past 40 years that typically took more than 100 years in developed countries. With rising life expectancy and the sharp fall in total fertility to only around 1.5, it has “grown old before growing rich”. The share of people aged 60 and over to total population will accelerate in coming decades, from only around 12 percent in 2010 to almost one quarter by 2030 and over a third by 2050. This would by 2030 give China a population share over 60 only just under the OECD average. As a result, the old age dependency ratio in China will increase at an almost unprecedented rate over the coming decades, with the rural old age dependency ratio rising to over 34 percent and the urban rate to around 21 percent by 2030. The emerging “4-2-1”extended family pattern of four grandparents, two parents and one child will put deepening strains on family support networks. Aging will also challenge social programs, in particular pensions and health care. There are three-pillar pension system in China, but the second and third pillar are in the infant stage. It’s reviewed the development of China pension system, it’s opportunities and challenges. Annuity can hedge longevity risk but not popular in China. Beyond the constrains of low insurance literacy etc., what is the Money’s Worth Ratio(MWR) of annuity in China? It’s the first time to set up the analysis structure of the Money’s Worth Ratio of Annuity, and uses unique macro and micro data from China market to calculate MWR of annuity in China. We find that: (1) It’s obvious that annuity is fairly priced in China with the law of MWR no less than 0.9. (2) It is available for the insured with average life expectancy in some big cities to get the premium back in China. (3) There are some big differences of MWR among different annuity products, the lifelong annuity without any payment guarantee has the highest MWR. The best age to buy annuity exists with the highest MWR. It’s highly recommended to improve the annuity supply. □Key words□Pension System, Annuity, Money’s Worth Ratio, Longevity Risk

Current Economic and Social Topics 2015, Plenary Track

Presentations waiting for acceptance

Poster

Rachunek wektorowy w badaniu cykliczności szeregów finansowych

Joanna Chrostowska, Krzysztof T. Kompa

Warsaw University of Life Sciences, Nowoursynowska 159C, Warsaw 02-787, Poland

e-mail: joanna.chrostowska1@gmail.com

Jednym z trzech fundamentalnych założeń analizy technicznej jest przesłanka o powtarzającej się historii. Powtarzalność na rynku finansowym, jest zgodnie z tym założeniem zdeterminowana przez niezmienne schematy zachowań jego uczestników. Odzwierciedleniem owych zachowań, są ruchy cen. Na wykresach przedstawiających notowania papierów wartościowych, obserwuje się pewne znane układy notowań zwane formacjami. Powtarzalność formacji jest cechą, która pozwala na prognozowanie przyszłych zachowań rynku. Podczas analizy i prognozowania ruchów cen warto pochylić się również nad zagadnieniem ich rytmu. Badanie zjawiska cykliczności zachowań rynków może przynieść wymierne korzyści, służące poprawie trafności prognoz i pozwalające na dogłębne zrozumienie natury zachowań rynków.

Celem pracy jest weryfikacja założenia o występowaniu cykliczności na rynkach CEE oraz badanie charakteru występującej cykliczności. W analizach zjawiska cykliczności wykorzystano metodę zaproponowaną przez prof. Mariusza Borawskiego i prof. Kesrę Nermenda opartą na własnościach rachunku wektorowego.

Idea metody

Podstawa□ do wyjaśniania idei badania cykliczności z wykorzystaniem rachunku wektorowego odtwarzanie wektora A za pomoca□ wektora B. Jeśli wektory te sa□ równoległe, to moz□na wyznaczyć taka□ stała□ c, z□e A= cB, co oznacza, z□e otworzenie wektora za pomoca□ wektora równoległego nie jest obarczone błe□dem. W przypadku gdy ka□t mie□dzy wektorami A i B jest wie□kszy od zera otworzenie wektora A be□dzie suma□ wektorów: cB i wektora odzwierciedlaja□cego bła□d odtworzenia.

Moz□liwe jest wyznaczenie nieskończenie wielu stałych c, za pomoca□ których moz□na wektor A. Celem jest jednak wyznaczenie takiej stałej, aby bła□d otworzenia był najmniejszy z moz□liwych. Bła□d ten be□dzie najmniejszy, gdy jego wektor (Ve) be□dzie prostopadły do wektora B. Stała c dla której wartość błe□du jest najmniejsza przyjmuje postać:

c= (A,B)/(B,B)

Wektor B po pomnoz□eniu przez stała□ C jest wie□c przybliz□eniem wektora A.

Oral

Comparative Investment Performance of Pension Funds

Jennifer P. Foo[1], Dorota Witkowska[2]

1. *Stetson University (SU), 421 N. Woodland Blvd, Deland, FL, Orlando, FL 32723, United States* **2.** *University of Lodz, Faculty of Management (UL), Matejki 22/26, Lodz 90-237, Poland*

e-mail: jfoo@stetson.edu

Pension funds are important retirement investment savings vehicles for workers as the demographic bulge of baby boomers are expected to retire en masse with profound economic consequences. Unless pension funds are efficient and sufficient to fund the generation of baby boomers whose life expectancy is increasing, the economic burden on the future generations, the government, and society will be heavy. Therefore the global trend has been moving from defined benefits to defined contributions pension fund systems that are backed by assets.

The growth and diversity of pension funds and sectors offered domestically and globally also adds to a positive outlook depending on how pension funds perform. In 2012, of the U$78.2 trillion under institutional investment management in OECD countries, pension funds comprised U$21.8 trillion (OECD, 2013). Given its prominence as the third largest institutional investment funds, after investment and insurance funds, the performance and efficiency of pension funds to fund beneficiaries are therefore crucial to alleviating the looming economic threat since for many retirees the funds are the sole source of retirement. This has importance significance in tying how much retirement terminal benefits investors will receive to the performance of the pension assets, more so after the substantial decline in retirement asset value in the aftermath of the 2008 Financial Crisis.

The question of interest is whether pension funds are efficient in providing the terminal wealth necessary for its beneficiaries to retire. Also of interest is whether there is a difference in efficiency and performance between US and European pension funds in developed countries like the US and in Europe facing an inverted demographic pyramid of aging population. Further, research on pension fund performance and efficiency would provide insights for providers of pension funds to offer better management and designs of investment retirement plans and alternatives. In today's integrated and globalized financial markets it is possible for investors to invest their retirement funds in global pension markets that offer better returns than their domestic markets. The aim of our research* is to compare the performance of pension funds in USA and selected European countries for the period 2002-2013, applying Sharpe ratio, information (or generalized Sharpe's) ratio, Sortino ratio and Sharpe's alpha.

The European pension fund market is highly diversified geographically among many different countries with different structure and investment vehicles. Our study, therefore, focuses on four European representatives of pension fund markets, UK, Germany, Poland and "Europe" in comparing them to the U.S. pension fund market. The

"Europe" is an aggregate representative constructed as a weighted average of the 19 European countries. The most developed pension fund markets in our comparison study is the U.S. and UK in Europe. The biggest European economy is the German economy. However, Germany has a defined benefit system and Pay-As-You-Go (PAYG) system which result in an underdeveloped pension funds market. Poland represents the biggest transitional economy among EU members.

Our paper finds that Poland and U.S. achieved the highest average returns for the benchmarks in the period 2002-2013, while the pension funds in Poland and Germany achieved the highest average returns. Poland with the highest average returns also has the highest risk. For the shorter period 2008-2013, U.S. had the highest return for both pension funds and the benchmarks while Poland and UK experienced losses. On the other hand, the smallest risk is observed for British and German pension funds.

* This research is made possible from a grant "Analysis of Open Pension Funds Market as Compared to the Open Investment Funds Market Functioning in Poland" 2013/09/B/HS4/00493 provided by the National Science Center, Warsaw, Poland.

Oral

Professional activity of polish women on the real estate market

Iwona A. Forys

University of Szczecin, Faculty of Economics and Management (US), ul. Mickiewicza 64, Szczecin 71-101, Poland

e-mail: forys@wneiz.pl

Today's labour market sees a trend of feminisation which is developing with varying intensity in individual segments of economy. Its shape in individual countries is influenced by local economic, social and cultural environment. The phenomenon strengthened representation of women in certain industries is referred to as horizontal occupational segregation (Zwiech 2010). In the EU the most feminized industries are education, health and social care. The aim of this study is to assess the level and range of changes over time in the process of feminisation of regulated professions on the Polish real estate market. With this aim in view, I used data on the number of professional licenses granted by the relevant Minister between 1990–2014 broken down by gender and geographical location (voivodships). The study verifies a hypothesis of growing women's participation in the Polish real estate market in three professions that had been regulated before 2014.

Therefore, I determined the dynamics of the feminisation ratios observed in the professions of appraisal (valuer), property manager and real estate broker in voivodships. I also classified voivodships according to their level of feminisation in the real estate service sector by means of the k-means method and Ward's method.

In order to assess the structural changes over time in the group of women engaged in the above mentioned regulated professions I used simple structure diversity measures based on the proportions of the share of a given component in the structure over the time intervals t and $t+1$. The values of the structure diversity measures lie within <0;1>, where the value approaching zero means that the diversity is weak, while the measure value close to one indicates strong structure diversification. The measures proposed in the literature differ in terms of their sensitivity to changes in components having different share in the structure [Kukuła 1996, Walesiak 1983]. In this paper I determine three measures which respond to a varying degree to the proportion of components within the structure:

V_1 – a measure that responds to the changes in the proportion of component in a balanced way;

V_2 – Clark's divergence coefficient, a measure which responds the strongest to the deviations of minor components;

V_3 – a coefficient proposed by M. Walesiak, a measure which responds the strongest to the deviations of principal components;

When we found our study on the base time period, we can assess the monotonicity of changes occurring in a given structure by means of the structure monotonicity measure [Kukuła 1996].

After over twenty years of market economy, the Polish real estate market has stabilised in terms of economic mechanisms. However, it is still subject to some social processes, such as feminisation of individual professions related with the real estate services, even those requiring expertise in exact and technical science. These changes manifest themselves in the growing number of licenses obtained by women and, consequently, by their growing share in the total number of licensed professionals.

Reference

Zwiech P., Segregacja zawodowa kobiet w Polsce, w: Gawrycka M., Wasilczuk j., Zwiech P., Szklany sufit i ruchome schody – kobieta na rynku pracy, CeDeWu, Warszawa 2010, s. 29-44.

Kukuła K. (1996). *Statystyczne metody analizy struktur ekonomicznych*, Wydawnictwo Edukacyjne, Kraków.

Walesiak M. (1983). *Propozycje miar odległości struktur udziałowych*, Wiadomości Statystyczne, Nr 10.

Oral

Sustainability and Sufficiency of the Spanish Pension System

Jose M. Montero[1], Javier Santacruz Cano[2]

1. *University of Castilla-La Mancha, Cobertizo de S. Pedro Martir, S/N, Toledo 45071, Spain* **2.** *Universidad Complutense de Madrid, Avda. de la Complutense s/n, Madrid 28040, Spain*

e-mail: jscano@ucm.es

It was in February de 1908 that it was created the first Spanish official institution responsible for pensions and health care. Since then, the Spanish pension system has suffered diverse vicissitudes and has overcome many difficulties. One of the biggest challenges that the Spanish pension system has faced has been the sustainability and sufficiency problem arising from the Spanish demographic trends, and more specifically from the increase in life expectancy of old people the low birth rate, which have caused a reversal in the structure of the population pyramid. This is why in 2011 and 2013 two important reforms have taken place in the Spanish pension system. This article addresses both reforms, presents demographic evidence, projections, modeling and simulation affecting the sustainability and

sufficiency of the system in the future, and discusses some specific problems still to be resolved.

Invited Oral

Emotions meet financial decision making

Alojzy Nowak[1], Yochanan Shachmurove[2], Jacob Weisberg[3]

1. *University of Warsaw (UW), Krakowskie Przedmieście 26/28, Warsaw 00-927, Poland* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States* **3.** *Bar-Ilan University, Ramat-Gan 52900, Israel*

e-mail: yochanan@ssc.upenn.edu

Emotions are important. Yet, they are ignored by most economists, and by almost all economic and financial models. Therefore, it is interesting to ask an internationally diversified body of students how important is emotions in their decision making for different scenarios. This paper explores the role of emotions in financial decision making.

It can be argued that emotion colors our decisions in a multitude of ways, from helping decision makers to choose relatively quickly among alternatives to allowing for contemplating future emotional states. Through fear of regret and desire of relief one is capable to weigh decisions and discern her own desires more easily as opposed to a cold calculation of payoffs under risk. It seems that emotions give a decision maker a way to pursue a path of actions in the large grey area between rule-like reflex behavior to and a perfectly rational decision. The human intellectual rational is, and should be, sweetened by and intertwined with the expressions of emotions, like our reactions to performing or listening to music, dancing or watching dancing, producing art works or observing art.

Many perfectly rational mutually beneficial deals and negotiations fail because both the participants and outside observers do not seriously and endogenously consider the emotional part of any deal. While we all recognize that love, like, respect etc., are key to successes or failures of negotiation, individual experts, including economists, social scientists, policy makers, etc. by and large, assume away the important ingredient to any human interactions, namely what we call "emotion."

Furthermore, law and emotions are intertwined, yet emotions are ignored in economic analysis of the law. The current study of law and economics focuses nearly entirely on the idea of efficiency and incentivizing people to make the socially efficient decision. How can truly one measure the true loss to a plaintiff without taking emotions into account?

The paper utilizes responses of a survey by 184 individuals. The majority of the current sample is born and resides in Poland, though the first 64 surveys are respondents from countries all over the world. These countries include but are not limited to India, China, the Philippines, Tunisia, and Turkey. Around half of the sample is not currently working, but most have held a job at some point. In terms of income and wealth, most participants marked themselves as average or above average and relatively few identifying as poor. While the participants listed a variety of majors, the most common types dealt with are business and economics. After business-related majors, the next most common types of majors were science and engineering.

Oral

Venture Capital Investment Meets Geography

Etienne Duchâtel[1], Jean-François Gajewski[1], Yochanan Shachmurove[2]

1. *Université Savoie Mont Blanc, 27 Rue Marcoz, Chambéry 73000, France* **2.** *University of Pennsylvania (PENN), 3231 Walnut St., Philadelphia 19104, United States*

e-mail: yochanan@ssc.upenn.edu

The geographical concentration of venture capital investments is an important concern for researchers and policy makers. This paper analyzes the geographical concentration of venture capital at the city level from 1970 until 2013 in forty major developing economies. Results show four evolutionary paths representing four groups of countries. The quantity of investment deals and the dot-com crisis increase the geographical concentration of venture capital while the level of financial development decreases it.

The European Commission and the Organization for Economic Co-operation and Development (OECD) disagree as to whether or not it is desirable to concentrate the activities of ventures. While the European Commission is in favor of more regional clusters, the OECD advocates the development of an even geographical distribution. In the case of uneven geographical allocation, some small and even medium companies have difficulty in finding sources of funding. Regional equity gaps exist but no consensus has yet emerged about their efficiency. Conversely, Silicon Valley and Route 128 in the United States of America (USA) are examples of geographic regions with very high levels of venture capital concentration. In the USA, venture capital investment spanned 160 cities in 2014, which is the highest number of metropolitan areas since 2009. In the first quarter of 2015, venture capital investment exceeds $17 billion for the first time since the fourth quarter of 2000. The paper raises the following questions: How has the geographical concentration of venture capital investments evolved from 1970 until 2013? What are the macro determinants of this evolution?

Furthermore, the literature review highlights a gap in regards to the macro determinants of concentration. To date, few researchers have analyzed the reasons for geographical concentration in venture capital using empirical studies, while there are currently no studies on the macro determinants. Consequently, this paper assesses four factors explaining concentration at the macro level, in addition to the number of investment deals, the dot-com and the 2008 financial crises, the national technological intensity, and the level of financial development.

Oral

Pension System and the Empirical Study of Pension Annuity's MWR in China

Qingyao Wan, Deyi Cheng

Shanghai Fiannce University, Shanghai 201209, China

e-mail: wanqingyao@aliyun.com

Pension System and the Empirical Study of Pension Annuity MWR in China Qingyao WAN Deyi CHENG □Abstract□China has exper-

ienced the kind of fertility transition over the past 40 years that typically took more than 100 years in developed countries. With rising life expectancy and the sharp fall in total fertility to only around 1.5, it has “grown old before growing rich”. The share of people aged 60 and over to total population will accelerate in coming decades, from only around 12 percent in 2010 to almost one quarter by 2030 and over a third by 2050. This would by 2030 give China a population share over 60 only just under the OECD average. As a result, the old age dependency ratio in China will increase at an almost unprecedented rate over the coming decades, with the rural old age dependency ratio rising to over 34 percent and the urban rate to around 21 percent by 2030. The emerging “4-2-1”extended family pattern of four grandparents, two parents and one child will put deepening strains on family support networks. Aging will also challenge social programs, in particular pensions and health care. There are three-pillar pension system in China, but the second and third pillar are in the infant stage. It’s reviewed the development of China pension system, it’s opportunities and challenges. Annuity can hedge longevity risk but not popular in China. Beyond the constrains of low insurance literacy etc., what is the Money’s Worth Ratio(MWR) of annuity in China? It’s the first time to set up the analysis structure of the Money’s Worth Ratio of Annuity, and uses unique macro and micro data from China market to calculate MWR of annuity in China. We find that: (1) It’s obvious that annuity is fairly priced in China with the law of MWR no less than 0.9. (2) It is available for the insured with average life expectancy in some big cities to get the premium back in China. (3) There are some big differences of MWR among different annuity products, the lifelong annuity without any payment guarantee has the highest MWR. The best age to buy annuity exists with the highest MWR. It’s highly recommended to improve the annuity supply. □Key words□Pension System, Annuity, Money’s Worth Ratio, Longevity Risk

Index

C

Cheng, Deyi, 5, 9, 13, 17, 21, 25
Chrostowska, Joanna, 3, 7, 11, 15, 19, 23

D

Duchâtel, Etienne, 5, 9, 13, 17, 21, 25

F

Foo, Jennifer P., 3, 7, 11, 15, 19, 23
Forys, Iwona A., 4, 8, 12, 16, 20, 24

G

Gajewski, Jean-François, 5, 9, 13, 17, 21, 25

K

Kompa, Krzysztof T., 3, 7, 11, 15, 19, 23

M

Montero, Jose M., 4, 8, 12, 16, 20, 24

N

Nowak, Alojzy, 5, 9, 13, 17, 21, 25

S

Santacruz Cano, Javier, 4, 8, 12, 16, 20, 24
Shachmurove, Yochanan, 5, 5, 9, 9, 13, 13, 17, 17, 21, 21, 25, 25

W

Wan, Qingyao, 5, 9, 13, 17, 21, 25
Weisberg, Jacob, 5, 9, 13, 17, 21, 25
Witkowska, Dorota, 3, 7, 11, 15, 19, 23