Załącznik 7 (Appendix 7)

Dr Piotr Ciżkowicz
Chair of International Comparative Studies
Collegium of Economic Analysis
Warsaw School of Economics

Warsaw, January 25th 2016

Summary of Academic Attainments and Achievements

Introduction

This Summary presents my academic and didactic achievements, as well as other information that facilitates assessing thereof. The First Section describes my education and academic, as well as professional career. Section Two, where I present the results of my research that I would like to indicate as a series of monothematic works pursuant to Art.16, Paragraph 2, point 1 of the Act on Scientific Titles from March 14th 2003 ('the Act'), forms the core of this Summary. This postdoctoral series has been entitled **"The reasons for differences in economics results, with a particular focus on the role of monetary policy – comparative analysis using panel data methods"**. The Third Section summarizes my other research that I consider important for this process. In Section Four, I present additional information about my academic achievements. The Fifth Section discusses my didactic career. Section Six presents details of my collaboration with business environment, as well as public administration. The Final Section, number Seven, summarizes my activities related to raising awareness of social sciences, as well as collaborating with academic societies.

1. Outline of professional and academic career

I have been developing my research interests during Master's studies at Warsaw School of Economics ('WSE'), as a member of a student-based Assistant Team at the Ministry of Finance in 1998-2000. Having completed my Master's degree in 2002, I won the first prize in a competition organized by the Polish Chamber of Pension Funds for my Master's Thesis entitled "Pension Funds' Investment Activity vs Polish Capital Markets". In the period of 2002-2006 I served as a Lecturer at Skarbek Graduate School of Business Economics in Warsaw[1]. Simultaneously, I worked as part of data transformation and analysis teams in commercial banks (Raiffeisen Bank Polska in 2000-2001 and

[1] A more detailed description of responsibilities and their impact on my academic and dydactic achievements is presented in Sections 5,6 and 7

Kredyt Bank in 2001-2002). In 2002, I began employment as a Senior Specialist at the International Comparative Studies Division of the National Bank of Poland ('NBP'), which I then headed in the years 2003-2008. In 2003 I released my first two joint academic publications in a journal from the Journal Citation Reports database (see [Rzońca, Ciżkowicz, 2003]). In 2005 I became an Assistant Lecturer at the Chair of International Comparative Studies at WSE. In 2008, I completed my Ph.D. Thesis, supervised by Prof. Leszek Balcerowicz, entitled "The impact of inflation on enterprises' investments – implications for monetary policy". This is also when I became an Assistant Professor at WSE, where I currently work. In the period of 2006-2007 I served as a member of an Expert Committee for Healthcare Reform founded by the Polish Ombudsman. From 2008 until 2012 I built and headed the Economic Strategy Team at Ernst&Young in Warsaw, while also serving as a Chief Economist, as well as the Director of the "Better Government" program. Between 2012 and 2015 I served as a member of the Management Board of Polish State Railways JSC (PKP S.A.), as well as of Supervisory Boards of its group companies.

2. Description of the academic achievements under assessment

The major part of my research focuses on assessing the effects of economic policies and the role they play in explaining the differences in economic results achieved by countries and regions. This has been reflected in my monothematic series of works pursuant to Art.16, Paragraph 2, point 1 of the Act entitled **"The reasons for differences in economics results, with a particular focus on the role of monetary policy – comparative analysis using panel data methods",** which comprises of the following publications[2]:

1. *"The effects of special economic zones on employment and investment: spatial panel modelling perspective"* published in *NBP Working Papers*, [Ciżkowicz, Ciżkowicz-Pękała, Pękała, Rzońca, 2015],
2. *"Windfall of low interest payments and fiscal sustainability in the Euro Area: analysis through panel fiscal reaction functions"* published in *KYKLOS* (MNiSW points: 30; Impact Factor 2015: 1,259; Impact Factor 5-year: 1,411) , [Ciżkowicz, Rzońca, Trzeciakowski, 2015]; earlier versions published as *NBP Working Papers* and *Working Papers of Italian Association for the Study of Economic Asymmetries,*
3. "*Links between the trust in the ECB and its interest rate policy"* published in *Applied Economics* (MNiSW points: 20; Impact Factor 2014: 0,613; Impact Factor 5-year: 0,679), [Albinowski, Ciżkowicz, Rzońca, 2014]; earlier versions published as *NBP Working Papers,*

[2] In chronological order

4. "*Panel data evidence on the effects of fiscal policy shocks in the EU New Member States"* published in *Fiscal Studies* (MNiSW points: 20; Impact Factor 2014: 0,545; Impact Factor 5-year: 0,887), [Borys, Ciżkowicz, Rzońca, 2014]; earlier versions published as *NBP Working Papers,*
5. "*Heterogeneous determinants of local unemployment in Poland"* accepted for publication in *Post-Communist Economies* (MNiSW points: 20; Impact Factor 2014: 0,492; Impact Factor 5-year: 0,604); earlier versions published as *NBP Working Papers,* [Ciżkowicz, Kowalczuk, Rzońca, 2014],
6. "*Does inflation harm corporate investment? Empirical evidence from OECD countries"* published in *Economics: The Open-Access, Open-Assessment E-Journal* (MNiSW points: 20; Impact Factor 2013: 0,391; Impact Factor 5-year: b/d), [Ciżkowicz, Rzońca, 2013]; earlier versions published in *Economics Discussion Papers,*
7. "*The determinants of regional exports in Poland – panel data analysis"* published in *Post-Communist Economies* (MNiSW points: 20; Impact Factor 2013: 0,393; Impact Factor 5-year: 0,527), [Ciżkowicz, Rzońca, Umiński, 2013],
8. „The Determinants of regional differences in employment dynamics in Poland 1999-2008*"* published in *Gospodarka Narodowa* (MNiSW points: 8), [Ciżkowicz, Rzońca, Wojciechowski, 2012].

The above publications are related to each other in at least two ways. Firstly, each contains conclusions on impact of monetary policies on shaping economic environment in countries and regions. Each such implication has been based on empirical research through comparing real economic indicators among varied areas and times. Secondly, panel data models have been applied as an empirical approach in each of the publications, as all the analyses are based on cross-section and time series data. Panel modelling has significant advantages over other tools used for comparative analysis, e.g. cross-section models. The key advantage is the ability to account for dynamic properties of the observed phenomena, as well as larger sample sizes that allow for more precise estimations of larger numbers of structural parameters than cross-section models[3].

The above publications focus on the following three issues, which vary by the analysed set of economic policy tools, as well as geographic categories (regions vs countries):

I. To what extent can regional and national economic policies impact discrepancies in economic results across Polish counties and voivodeships?
II. What is the role of fiscal policy in accounting for the differences in economic results between EU member countries in question?

[3] Detailed description of advantages of panel modeling can be found in e.g. [Hsiao, 2007].

III. How are monetary policy effects on economic entities' behavior affected by unconventional transmission channels?

The publications that form the presented series of research are grouped by the questions they relate to and discussed below, in the following order: research context, methodology used, results obtained and, finally, implications for economic policies.

2.1. To what extent can regional and national economic policies impact discrepancies in economic results across Polish counties and voivodeships?

The Polish political and economic transformation initiated after the collapse of the communism has led to a significant reduction in development gap between Poland and Western European economies (e.g. [Balcerowicz et al., 2013]). Such reductions on national level, however, are accompanied by persisting discrepancies in economic indicators across regions[4]. For example, in 2012, the level of GDP per capita in the most affluent sub-region of Poland was 5,39 times higher than in the least well off sub-region; an increase compared to 4,55 in 2000[5]. Such significant discrepancies in other economic indicators, such as wages, unemployment and industry structure, persist despite considerable support in the form of EU funds flowing to the underdeveloped regions since 2004, as well as numerous regional policy initiatives aimed at reducing these differences. The four publications discussed below examine underlying reasons for these discrepancies with a particular focus on current and potential future role of economic policy in reducing thereof.

[Ciżkowicz, Kowalczuk, Rzońca, 2014] is devoted to causal analysis of the strong and persistent differences in unemployment levels across Polish counties (poviats). According to neoclassical theory, in the long run all disparities should disappear due to labour or capital flows. Unemployed should migrate to regions where demand for labour is higher, whereas employers should relocate their production to regions of higher unemployment. These predictions, however, are not reflected in data. Most research indicates considerable and persistent discrepancies in local unemployment (e.g. [Niebuhr, 2003] and [Elhorst, 2000]).

There are two main theories trying to explain this issue. The first one is referred to as equilibrium theory. It is based on the assumption that local labour market equilibrium depends on much more factors than local unemployment level. The unemployed, when deciding whether to leave a region, may consider *inter alia* economic and social costs of migration, social security, family support and

[4] The entire publication refers to "regions" in conversational meaning, not the NUTS level 1 unit. The terms "voivodeship", "subregion" and "poviat" are referred to, respectively, as NUTS level 2, 3, and 4.
[5] This is the earliest year of publication of regional balances for NUTS-3 level by GUS

even local amenities (e.g. weather, pollution). According to the second theory, disparities in local unemployment rates result from local labour market shocks and rigidities that lead to sluggishness of equilibration process (e.g. [Marston, 1985]). Each of the theories offers a different set of local unemployment determinants: the first theory indicates primarily structural factors, whereas the second one mainly demand factors. The discussed research confronts both theories through analyzing the determinants of discrepancies in local unemployment among Polish poviats in 2000-2010. Therefore, we estimate local unemployment levels in the poviats using a set of panel data estimators. We start with pooled estimator (OLS) which ignores the possibility of individual effects, the fixed effects (FE) and random effects (RE) estimators and Driscoll and Kraay (1998) nonparametric covariance matrix estimator (DK) which corrects standard error estimates for the impact of spatial dependence, autocorrelation and heteroskedasticity of the error term. Results indicate that, although the demand factors (GDP per capita dynamics, public and private sector investments, local government fiscal balance) have a statistically significant impact on local unemployment, the structural determinants (population share of the young and the old, level of education, shares of manufacturing and construction, market services and non-market services in total employment) are the ones that explain more of the identified differences. Our ability to present such conclusions stems from the fact that, as opposed to majority of research, we did not limit our analysis to assessing just the statistical significance of the estimated parameters, but we also integrated economic significance analysis (e.g. [Engsted, 2009]), i.e. what is the impact of changes (one standard deviation) in any of the explanatory variables on the dependent variable.

The above research further distinguishes itself from other publications through a much broader scope of robustness analysis. Firstly, we repeated the obtained regressions excluding outliers identified using three distinctive methods. Secondly, we examined potential heterogeneity of the estimated parameters through estimating a separate model for each of sub-groups based on quartiles of the following three variables: GDP per capita, unemployment rate and average farming area. While excluding the outliers has no impact on the results, the latter examination allowed us to identify interesting relations. As opposed to other poviats, unemployment in less well-off poviats (high unemployment and low GDP per capita) has limited reaction to increases in public and private investment. It is also not significantly dependent on average education level. On the other hand, presence of small farms serves as a buffer against demand fluctuations related unemployment.

The above research implies that both national and regional economic policies are important tools for limiting unemployment on regional level. Their role, however, is not constrained to simply offsetting private demand (consumption and investment) with state demand or "creating jobs" in public sector. Economic policy efforts should focus on structural measures to increase level of

education, to transition from employment in agriculture and non-market services to manufacturing and market services, as well as to support migration from less to more densely populated areas.

The issue of diversification of regional labour markets in Poland has also been tackled in [Ciżkowicz, Rzońca, Wojciechowski, 2012][6]. This research focused on seeking the determinants of employment levels[7] in Polish voivodeships in 1998-2008. This variable fluctuated over the analysed period, with the extent of the fluctuations varied across regions. E.g. employment level in the entire country in 1998-2003 decreased by, on average, 2,4% *per annum*, with the highest rate achieved in Opolskie voivodeship (on average 5,4%) and the lowest in Wielkopolskie voivodeship (only 0,1%); in 2003-2008 increased by, on average 3,0% *per annum* in Poland, and almost twice as much in Mazowieckie voivodeship (5,7%); in the same period employment in Kujawsko-Pomorskie voivodeship decreased by 1,1% per annum. To explain the fluctuations we estimated a series of panel models, which used dynamics of BAEL employment number for a given year and voivodeship as dependent variable. Independent variables included a range of determinants used in other research publications with the addition of export volume dynamics for given voivodeships. To the best of our knowledge, this is the first research to use econometric modeling in analyzing the impact of foreign trade on regional discrepancies in Polish labour market. The latter relation gains in importance as current literature (both theoretical and empirical) does not explicitly confirm whether an increase in exports from given region exacerbates or eases labour market fluctuations. On the one hand, increased export volume may, *ceteris paribus*, lead to increased specialization within the region and, as a result, to increased labour market sensitivity to demand shocks (e.g. [Baldwin, Brown, 2004]). On the other hand, increasing share of exports in total production is usually accompanied by diversification of trade partners, thus improved protection from demand fluctuations (e.g. [Ma, 2006]). The estimation results indicate increased employment dynamics in Polish voivodeships following increased dynamics in export volumes, which would suggest the latter of the above mechanisms is correct. This relation is statistically significant regardless of estimation method but the impact is not very strong: a 1 p.p. increase in export dynamics leads to 0,06 p.p. rise in employment dynamics. The limited effect may result from the fact that dependence between these two variables has been cleansed from the influence that increases in export volumes have on labour demand, as the model accounts for gross value added dynamics. Other determinants with statistically significant effect on employment dynamics included education level, dynamics in number of entreprises, gross value added dynamics and EU membership[8]. Lagged dynamics of real wages, lagged employment

[6] The research was conducted based on the results of the project "Analysis of demand for jobs in the context of supporting export potential of Lubelskie voivodeship", completed at the request of Lubelskie Voivodeship Governor Office.
[7] Measured according to BAEL methodology, recorded by National office of Statistics.
[8] Incorporated as a dummy variable equal to 1 for years 2004-2008.

coefficient and ratio of minimum wage to average wage in a given voivodeship all turned out to have insignificant impact. This may come as a surprise, particularly in the case of the first two variables, whose significant impact on employment has been indicated in other research. This impact, however, may result from internal heterogeneity of labour markets across various voivodeships.

The above conclusions are in accordance with the previously discussed implications from [Ciżkowicz, Kowalczuk, Rzońca, 2014]: if the aim of economic policy is to increase employment, it should be focused on improving the structural features of regional economies which lead to persistent competitive advantage, i.e. level of education, entrepreneurship and ability to compete in foreign markets.

Significant discrepancies in economic results among Polish regions appear not only in labour market, but also in volume and structure of exports: in 2008, over 40% of exports originated from only four voivodeships, whereas *per capita* value of exports varied from EUR 0,8 thousand in Lubelskie voivodeship to EUR 4,4 thousand in Dolnośląskie voivodeship. The purpose of [Ciżkowicz, Rzońca, Umiński, 2012][9] is to explain the strong diversification in the volume and structure of exports in Polish regions in the years 1999–2008. To the best of our knowledge, it has been the first such publication to feature panel data analysis of regional differences in export volumes in Poland. The overview of literature within our publication indicates that there is no common standard as to what theoretical strands shall be used. Evaluation of publications on this subject leads us to the conclusion that there are three main concepts to which one may refer (i) competitiveness concept (e.g. [Melitz, 2003]), (ii) structure of a given economy and its inventory of production factors, including cheap human capital of required qualities (e.g. [Coughlin and Fabel, 1988]), (iii) economic activity location theories (with emphasis on new economic geography, e.g. [Quigley, 1998]). Based on the indications of these theories and compiled stylised facts regarding regional export performance, an estimation of two exports models has been undertaken. Model I analyzes relative role of exports in a given voivodeship's economy, taking the ratio of exports volume to value added created in the voivodeship as the dependent variable. The higher the value of this variable, the faster the growth (slower the decline) in importance of exports in the voivodeship. Estimation results indicate that none of the abovementioned theories explains fully how the variable in question evolves. The role of exports in a given economy depends on:

- competitiveness measured by productivity of labour and share of foreign capital in total capital of a given voivodeship (both positive relationship),

[9] The research was conducted based on the results of the project "Analysis of demand for jobs in the context of supporting export potential of Lubelskie voivodeship", completed at the request of Lubelskie Voivodeship Governor Office

- share of employment in agriculture (negative relation), availability of cheap and well-qualified labour measured by level of education (positive relation), as well as average wage level (negative relation),
- location – exports play more prominent role in voivodeships with sea access, or sharing borders with another state.

Model II analyses the determinants of exports of agricultural and food products, which is of great importance to the exports of many less developed regions. As in the case of Model I, the results of Model II did not indicate any of the abovementioned theories as dominant. The impact of agricultural and food products exports depends on:

- competitiveness of labour employed in agriculture and entire economy (positive relation),
- share of agriculture in value added (positive relation),
- location – the share of agricultural and food products in exports is larger in sea neighbouring voivodeships.

All the above relations, except for the positive correlation between the dependent variable and level of education, are robust to changes in estimation method, including incorporation of various forms of autocorrelation of error term.

The conclusions of the discussed analyses indicate that, in addition to factors related to location, a region's capacity to export depends to a high extent on structure and productivity of its economy. Thus, economic policy aimed at boosting exports should focus on fostering the above factors through investing in infrastructure and educating labour force, as well as encouraging foreign investors to finance high productivity projects.

The so far discussed publications focused on analyzing the role of economic policy in explaining discrepancies in performance among Polish regions without assessing the effectiveness of specific tools. On the other hand, [Ciżkowicz, Ciżkowicz-Pękała, Pękała, Rzońca, 2015][10] revolves around evaluation of one such tool: Special Economic Zones (SSE).

Polish government implemented SSEs in 1994 as a location-based policy aimed at attracting investment and creating new jobs. Increasing reliance on SSEs has been mirrored in both the gradual expansion of SSEs' territory and the extension of their operating time horizon. Support for enterprises operating in SSEs involves substantial fiscal costs[11] so the problem of their effectiveness as a policy tool has become vital. The problem may be divided into two questions: (i) why do some

[10] The Research was conducted as part of the grant no. 2013/11/B/HS4/02124 financed from OPUS program of National Science Centre. I served as the Principal Investigator.
[11] In 2013, SSEs were extended until 2026. By the end of 2012 the value of state aid granted in the form of tax exemptions to companies operating in SSEs amounted to PLN 10.5 billion.

SSEs attract more firms than others and (ii) what effects do firms that are located in SSEs have on economic outcomes outside SSEs' territories? The discussed publication seeks to answer the second question through estimation of a set of panel and spatial panel data models of employment and capital outlays in Polish poviats over the 2003-2012 period. We based our assessment on the previously unexploited employment and investment data from SEZ-based firms. We have included the data, aggregated to poviats level, in a set of explanatory variables within the estimated models, rather than dummy variable commonly used in previous literature[12]. This approach, which, to the best knowledge of the authors, has not been used previously in the literature, helps avoid some principal limitations of the dummy variable approach. Firstly, it allows to distinguish between first-round effects (i.e., the scale of activity of firms located on SSEs' territories) from induced effects (i.e., the effect of companies located on SEZs' territories on the economic outcomes of firms located in the hosting region but outside this territory). Based on this decomposition, important conclusions might be drawn with regard to existence of crowding-in/crowding-out effects and spillovers from SSEs, which are relevant for full assessment of the SSE effect. Secondly, dummy variable approach assumes that SSEs are homogenous, whereas in reality they differ with respect to, e.g., scale of financial incentives, quality of the infrastructure, available area, as well as size of the resulting size of first-round effect. The dummy variable approach averages out these differences, which leads to biased estimates of SSEs' effects on economic outcomes in hosting regions. Thirdly, using the SSE-based employment and investment data as explanatory variables allows capturing unique characteristics of particular regions.

This research approach is based on estimating the standard model of employment and investment within poviats[13], enhanced with variables representing (respectively) investment and employment and employment from SSE companies within a given poviat. Step one estimates each equation as a panel model excluding spatial effects, assuming that SSE companies only impact their hosting poviat. This constraint is removed in further steps, as we analyse the impact of SSE companies in the poviat on neighbouring regions using panel Spatial Durbin Model[14]. Then, the approach proposed by LeSage and Pace [2009] is applied to correctly interpret the spatial effects resulting from the estimates and to distinguish the following three types of induced effects of SSE on employment and investments:

[12] Equal to 1 if in the given year SEZs were present in a given region

[13] A set of controlling variables includes those with determinants of regional employment and investment indicated in other studies, for which there exist data available on the county level for the entire study period, i.e. 2002-2013. As a result, the employment equation takes into account the share of the working age population in the total population, the share of people aged 18-24 and 55-64 in the working age population, the number of registered companies, sold production of industry per capita and investment companies located outside SSEs. The investment equation takes into account the share of the population living in rural areas in the total population, the number of registered companies, sold production of industry per capita and employment outside the SSE.

[14] A detailed overview of spatial models in available in e.g. [LeSage, Pace, 2009].

- effects outside the SSEs in hosting poviats,
- externalities to neighboring poviats,
- feedback loop effects from neighboring poviats on SSE-hosting poviats.

The results obtained using FE and DK estimators indicate that SSEs have a substantial positive effect on employment. Every 100 jobs in a given SSE create, on average, approximately 70 jobs outside the SSE within the hosting poviat and further 130 jobs in neighboring poviats. These results are considerably more optimistic than predicted by the majority of research on SSEs published in Poland and globally so far. This may be the result of accounting for spatial correlation which, to the best of our knowledge, has not been applied in previously in this sort of research. The effect of SSEs on regional investments is weaker, but nonetheless positive. Investments in a given SSE neither crowd in investments outside the SEZ, nor crowd them out. Thereby, investments in SSEs add one-to-one to capital stock in hosting poviats. These findings are robust to changes in estimation methods, sample composition, set of explanatory variables and the spatial weight matrix. The entire analysis encompasses estimation of 76 models in total.

There exist at least two complimentary explanations for these large differences between the SSEs impact on employment and investment. Firstly, SSEs-based companies may induce employ population of their hosting poviat and its neighbouring regions. This increases local purchasing power and thus spurs employment outside the SSEs when spent on labour intensive services, which do not require large investments (e.g. trade). Secondly, SSE-based companies belong to a higher extent to global, rather than local value chain, thus do not compete against, nor cooperate with local entreprises. As a result, they might not require supplies from local companies, and local markets are not necessarily their target markets. Regardless of which interpretation is appropriate, the results of the abovementioned research indicate that SSEs should not be treated by policy makers as a solution guaranteeing high employment in the long run: the higher the relative labour costs in Poland and the lower the difference in productivity between firms from within and outside of the SSEs, the quicker the decline of the currently observed positive SSE-related effects.

2.2. What is the role of fiscal policy in accounting for the differences in economic results between EU member countries in question?

The outbreak of the economic crisis in 2008 ignited a debate on the impact of fiscal policy on economic growth. The publications discussed in this section revolve around two principal topics of these deliberations.

In [Ciżkowicz, Rzońca, Trzeciakowski, 2015] we analyse the fiscal crisis in Euro area's peripheral countries, i.e. Greece, Ireland, Italy, Portugal and Spain. Although it burst over five years ago, its causes still remain unclear. There exist three explanations. According to the first narrative (see, e.g. [Bronner et al., 2014]), the debt crisis was closely linked to the global financial crisis. The second narrative (see, e.g. [Baskaran and Hessami, 2013]) links the sovereign debt crisis to unsustainable fiscal policy which peripheral member states were running after joining the Euro area, based on the assumption they would be bailed out by remaining member states. The third explanation (see, e.g. [Aguaiar et al., 2014]) states that prospects of joining the Euro area allowed peripheral countries to benefit from higher credibility of remaining member states and thus lower borrowing costs (windfall). Thus, they loosened their fiscal policy. However, when the global financial crisis spawned fears of Euro area disintegration and the windfall disappeared, fiscal policy run by peripheral countries turned out to be unsustainable.

The discussed publication provides empirical support for the last of the above narratives. We analyse stability of fiscal policy through estimating a series of panel fiscal reaction functions on a sample of 12 early member states of the Euro area in the period of 1970-2013[15]. We divide the sample into two groups: peripheral (Greece, Portugal, Italy, Spain and Ireland) or core contries (Austria, Belgium, Finland, France, Germany, Luxembourg and the Netherlands) as well as into two sub-periods: the baseline time (covering the years of 1970-1995 and 2008-2013) and the time of the windfall for the peripheral member states (covering the years 1996-2007). Using this approach, we tested three hypotheses, each forming a partial explanation of the sources of the financial crisis.

The first hypothesis assumes that peripheral countries were running unsustainable fiscal policies, when they were receiving the windfall from yields' convergence. To verify this statement, we juxtaposed results of estimated fiscal reaction functions for peripheral and core countries in the period of windfall, as well as the baseline period. Results indicate that fiscal policy in peripheral countries, in the wake of windfall, ceased to respond to condition of public finances, as indicated by the lack of statistical significance of the parameter describing lagged impact of public debt on fiscal balances. During the baseline period, this parameter was positive and statistically significant at the level of 5%. According to the second hypothesis, core countries have strengthened their fiscal sustainability in the same period that peripheral countries weakened. Verification of this hypothesis was based on comparing estimates of fiscal reaction parameters in core countries during the windfall period against the same parameters in the baseline period. Obtained results confirm this hypothesis, i.e. value of fiscal reaction parameter is two to three times higher during windfall period than during

[15] The idea of fiscal reaction function that describes public sector balance response to changes in public debt was introduced by Bohn [1998] and developed by de Mello [2008] and Mendoza & Ostry [2008].

baseline period (depending on the estimators used). The third hypothesis assumes that the discrepancies in the size of fiscal reaction, identified by the previous two hypotheses, originated primarily from different approaches between core and peripheral countries to non-interest expenditure changes during the windfall period. To verify this hypothesis, we estimated fiscal reaction functions, which used expenditures (current or capital) or income (direct or indirect taxes) as explanatory variable, as opposed to fiscal balance. It is worth noting that this approach of estimating expenditure/income fiscal reaction function had not been previously applied in research on fiscal stability in Euro area. Our results indicate that, in baseline period, peripheral countries did not counter increasing public debt with reductions in current and capital expenditures, however during windfall period this reaction came in the form of increased indirect taxes. Core countries, on the other hand, responded to rising debt with decreasing current expenditures in both the windfall and the baseline periods, but to a much higher extent in the former case.

The above results have been obtained using three types of panel data estimators: fixed effects (FE), Driscoll-Kraay (DK), as well as adjusted least square dummy variable estimator (LSDVC) [16] ([Bun, Kiviet, 2003]). The results are robust not only to the choice of different estimators, but also to changes in dependent variables, country groups definitions, as well as to exclusions of sample countries and use of alternative time periods definitions.

The discussed research provides important implications for the role of fiscal policy in shaping economic performance. Firstly, we indicate that, if borrowing costs of a given country are lower than intrinsic credibility-based yields, then the related windfall effects, if treated as long term, may cause a severe fiscal crisis. Secondly, the paper provides additional argument to back public spending reductions, as opposed to tax increases, as the preferred fiscal austerity tool, both in the context of costs to economic growth and long term fiscal stability.

The other publication under discussion, [Borys, Ciżkowicz, Rzońca, 2014][17], analyses effects of fiscal shocks on short term economic growth. The issue of type and strength of these effects lies at the centre of argument between supporters of fiscal stimulus and fiscal austerity policies. The debate revived in particular in response to increasing budget deficit and public debt levels in numerous countries following the burst of the financial crisis in 2008, and focuses primarily on the issue of how fiscal policy should react to such events[18]. Supporters of the former approach (see e.g. [Krugman, 2015]) claim that fiscal stimulus is necessary for the swift recovery of economies after the crisis,

[16] Standard estimators applied in this case were introduced by Arellano & Bond [1991] and Arellano & Bovera [1995], but their properties in short trials are not satisfactory.

[17] This article is an extension of the studies described in [Rzońca, Ciżkowicz, 2005], which is the most frequently cited work I have authored - according to Google Scholar database it has been cited 67 times, among others, by Giavazzi & Pagano, who are the pioneers in terms of research on non-Keynesian the effects of fiscal shocks.

[18] The phrase "austerity + stimulus" was search in Google 112 000 times between January 1st, 2008 and December 31st.

whereas deficit and debt reductions at this stage come at too high a cost. Supporters of the latter (see e.g. [Alesina et al., 2015]) note that correct implementation of fiscal austerity may minimize these costs.

This article contributes to the debate by analysing the impact of fiscal stimuli on economic growth using panel data for the EU new member states (NMS) over the 1995-2011 period. The fundamental issue with the applied approach is identification of fiscal impulses, i.e. the changes in public finance balance that result from the discretionary actions of policymakers. The presented publication discusses four distinctive methods of fiscal impulse identification, two of which have not been previously applied to analyzing this group of countries. The estimated impulse values are then used as explanatory variable in dynamic GDP equation. In addition to the controlling variables, the equation is also expanded with a dummy variable that takes the value of the impulse, if deficit reduction resulted from spending cuts. Results of the estimation indicate that fiscal expansion based on reduced tax burden may foster short term economic growth, as well as that fiscal austerity measures do not significantly hider economic growth.

In contrast to majority of research, this analysis is only the starting point in our discussion. In the next step, we examine response of each GDP expense component on fiscal stimuli, through estimating equations with dynamics of, respectively, investments, exports and private consumption, used as dependent variables, and strength and structure of the fiscal stimulus as explanatory variables. As shown by the results, export and investment dynamics increased in periods of fiscal austerity and decreased in periods of fiscal stimulation, if the fiscal impulses had been generated through changes in public spending. Fiscal austerity in the form of increased taxation led to decreased dynamics of the above variables. In the case of private consumption, our analysis did not bring unequivocal results on the impact of fiscal shocks on dynamics of this GDP component. The results were not robust to modifications in estimation or impulse identification methodologies, which leads us to the assumption that private consumption dynamics does not respond to discretionary fiscal policy decisions in the short run. As the final step we analyse direct impact of fiscal stimuli on labour costs (i.e. cost channel) and household confidence (i.e. expectations channel). In the case of the former, fiscal consolidation through public expenditure reduction lowers labour costs paid by entrepreneurships. We have verified this channel through estimation of a panel model, which describes share of labour costs in total production as a function of the strength and structure of fiscal stimulus. Our results confirm this transmission mechanism, which also explains the positive response of exports and investment to this type of fiscal austerity, as this sort of consolidations improve competitiveness and profitability of domestic entreprises. Expectations channel, on the other hand, focuses on the strength, rather than on the structure of fiscal stimuli. If a stimulus is

sufficiently strong, it may encourage households to verify their expectations regarding future economic conditions (through addressing concerns about public finance crisis) or disposable income in their horizon of utility maximization (lack of necessity to withstand higher tax burden in the future to cover present spending) thus, in effect, to increase current consumption. This channel has been verified through estimation of a model, which described changes in consumer confidence index using the strength of financial stimuli and an additional dummy variable to account for large scale impulses. Our results did not confirm the existence of this channel, in accordance with the lack of response of private consumption to fiscal shocks obtained in the previously discussed publication.

Each of the equations presented above was estimated in four versions depending on the fiscal stimuli identification method, and each of these versions was estimated using four distinctive, previously discussed panel estimators, i.e. FE, RE, DK and LSDVC. This approach guarantees robustness of results and allows avoiding passing conclusions based on spurious relationships.

Results of this research support the policy of deficit and public debt reduction, as correct composition of fiscal austerity; such a policy does not have to hinder economic growth. What is more, fiscal stimuli based on changes to public spending levels may increase growth in investment and exports through improving competitiveness and profitability thanks to lower labour costs. The results, however, do not confirm that fiscal stimulation may increase households' consumption in the short run.

2.3. How are monetary policy effects on economic entities' behavior affected by unconventional transmission channels?

The 2008 financial crisis caused the international economy to slide into a global recession for the first time since WWII. This led most central banks in developed countries to engage in using unconventional monetary policy measures, which included quantitative easing, as well as lowering interest rates to levels close to zero and, in some cases, a promise to maintain them at this low level for extended period of time (forward guidance). This sort of monetary policy response to the severe financial crisis results from predictions of New Keynesian analytical framework ('NK'), which forms the basis for most models used by central banks and reflects the way of thinking about economic processes prevalent among these institutions (see e.g. [Walsh, 2009], [Christiano, Trabandt, Walentin, 2011]). The NK, however, does not account for a series of monetary policy channels of impact on behaviour of economic entities, which may lead to underestimating the costs of the abovementioned unconventional measures taken by central banks and, as a result to flawed recommendations regarding policies to be implemented. The publications presented in this section

discuss two unconventional, i.e. unaccounted for by the NK, transmission mechanisms of monetary policy.

The first mechanism, discussed in [Albinowski, Ciżkowicz, Rzońca, 2014], concerns relation between trust in a central bank and the monetary policy this bank actually implements. The standard NK assumes that households trust central banks, it does not, however, account for the possibility of the trust to wane in case of households' negative perception of the banks actions. This type of situation may emerge, in particular, as a result of an economic crisis. Firstly, households may blame central bank for a crisis' occurrence in the first place. Secondly, they may hold the central bank responsible for inappropriate reaction to the crisis, which may have resulted in a more severe or prolonged recession. In particular, if a shock that caused the crisis is not fundamental in nature (i.e. decrease of interest rate is not exogenous), but rather is a lack-of-confidence shock experienced by households (in accordance with Schmitt-Grohe and Uribe [2012]), then lowering interest rates close to zero will only exacerbate the crisis, as it will confirm the pessimistic expectations.

To the best of our knowledge, the discussed publication is the first one so far to verify the above hypotheses based on Eurobarometer semiannual trust data for European Central Bank ('ECB') in 12 countries between 1999 and 2012. The data show that, after the outburst of the 2008 crisis, trust in ECB fell to unprecedented low levels, however the extent of this decrease varied strongly across countries. We begin by estimation of a panel model that describes trust in ECB as a function of unemployment, inflation, consumer expectation index and a dummy variable equal to 1 in the years of the crisis. Controlling variables also include trust in European Commission to exclude potential impact on trust in ECB of the EU institutions' perception as a whole. Results indicate that the outburst of the crisis has been a significant factor in weakening trust in ECB, despite integrating into the model certain variables representing the size of the crisis' negative impact of different countries. This supports the hypothesis that households may blame ECB for the financial crisis.

Next, we expanded the set of explanatory variables by adding the interest rates set by ECB and its interaction with a dummy variable equal to 1 in periods of low confidence among households in a given country[19]. The interest rate parameter turned out statistically insignificant, whereas the interaction variable parameter – positive and statistically significant at 1%. This result indicates that trust in ECB falls when the central bank lowers interest rates in periods of households' pessimistic expectations, but fails to respond to interest rate fluctuations in other periods. Simultaneously, the variable representing period since the outburst of the crisis maintained its negative impact on trust in

[19] The period of lack of confidence shock in a given country is defined as the period beginning at the date of decline in consumer expectations by more than 50% of standard deviation below the mean and ending with return to the mean. This arbitrary definition is modified in the section discussing robustness analysis

ECB. The overall significance of the both variables may be interpreted as backing both the analysed hypotheses: waning trust in ECB resulted from negative perception of the bank's policy during the crisis, as well as perception of ECB as responsible for the crisis.

The results are robust not only with respect to the choice of estimators applied (as shown in the previous section), but also with respect to introduction of additional control variables, as well as to changes in the definition of lack-of-confidence shock periods and exclusion of particular countries from the sample. In addition, we repeated estimation of the discussed models using trust in European Commission as explained variable and trust in EBC and explanatory variable. If significance of this estimation was maintained despite this modification, it would mean that the results are spurious due to e.g. endogeneity. In the case of the discussed equations, estimations of the variable describing the crisis and interaction variable turned out not statistically significant, which indicates robustness of the obtained results. 114 models have been analysed in total to check the robustness of the results.

Results of the discussed publication have important implications for assessing the purpose and effectiveness of zero interest rate policy used by central banks, including ECB, following the outburst of the 2008 crisis. We found that when households have pessimistic expectations, then aggressive cuts in interest rates have an adverse effect on their trust in central banks. This, in turn, decreases the power of future monetary policy. In other words, the falling trust in ECB observed since the outburst of the crisis may mostly result from the fact that lowering interest rates close to zero was a solution inadequate to the state of Euro area economy.

The other unconventional monetary policy transmission mechanism, discussed in [Ciżkowicz, Rzońca, 2012], concerns the relationship between inflation and entreprise investment. The standard NK assumes that lowering interest rates by central banks leads to decreasing cost of capital, which fosters investment. Thus, monetary policy aiming at maintaining price stability is often accused of not supporting economic growth, as increased interest rates hinder corporate investment and lead to economic slowdown. This argumentation is currently used as a justification for maintaining interest rates close to zero, despite inflationary pressures in some developed economies. This thinking does not account for potential fall in investment, caused by failure to increase interest rates, in response to rising inflation. Indeed, the standard NK does not take into consideration the impact of inflation on investment decisions of firms, resulting market imperfections, such as asymmetric information, nominal rigidities in tax system and uncertainty[20]. Our analysis of the impact of inflation on corporate investment covers the period of 1960-2005 and the sample of 21 OECD countries. It has been based

[20] More detailed analysis available in [Ciżkowicz, Hołda, Rzońca, 2010].

on a series of panel models which describe private investment dynamics as a function of inflation and a set of controlling variables, such as GDP dynamics, real cost of capital (measured as ration of corporate investment deflator to GDP deflator), long term interest rates and public investment dynamics. First, we estimate a model which assumes linear impact of inflation on corporate investment dynamics. Results, obtained using five previously discussed distinctive estimators: OLS, FE, RE and PCSE, as well as two-step feasible GMM estimation (GMM2S), show that a 1 p.p. increase in inflation leads to 0,14-0,36 p.p. decrease in corporate investment dynamics, statistically significant at 5%. It is worth noting that neither cost of capital, nor long term interest rate turned out to be significant determinants of corporate investments[21]. Next, we examine the assumption of linear relationship between inflation and investment dynamics. We conducted an analysis of changes in the coefficients determining the impact of inflation on investment dynamics estimated with the rolling regression technique. To the best of our knowledge, this is the first time this method has been used for examination of nonlinearity between inflation and investments. The following procedure was applied: (1) observations available in the sample were sorted according to the increasing rate of inflation; (2) multiple estimation was performed starting from the first 100 observations; (3) an extra observation was added at each subsequent step; (4) the obtained estimations of inflation coefficients, along with confidence intervals were presented as inflation function. The obtained results indicate that the impact of inflation of corporate investment is nonlinear. Coefficient estimate in the initial part of the sample is unstable. As the scope of the sample is extended by observations where the inflation ranges from about 3% to around 5.5%, the point value of the estimates decreases (the strength of the relationship increases), reaching the minimum value of approximately -0.8. Expanding the sample with observations with higher inflation values (over 5.5%) leads to gradual weakening of the relationship, down to the value of -0.18, which is the result of the model estimation for the entire sample.

Nonlinearity of the examined relationship is then incorporated into the estimated panel model, extending initial set of explanatory variable with a variable equal to inflation, if inflation fluctuates between 3,0-5,5%, or equal to 0 otherwise. Results of this examination confirm that inflation's impact on corporate investment is not linear: inflation within the 3,0-5,5% bracket impacts investment dynamics at a rate higher by 0,24-0,58 p.p. than inflation outside of this range. Thus, harmfulness of inflation is not limited to hyperinflation or even high inflation (exceeding 30%). Inflation harms investments even in the case of relatively low price dynamics, i.e. 2,0-3,0 p.p. more than the level of inflation target for most central banks using this strategy.

[21] Similar results to be found in [Kothari, Lewelen, Warner, 2014]

The obtained results are robust to changes in the model's specification, as well as to modified sample structure (estimation of 5-year average values, excluding periods of oil crises, narrowing the sample to the period of 1993-2005) – in total, robustness analysis encompassed 17 models.

The above results indicate that monetary policy focused on price stability also fosters economic growth, as higher levels of inflation discourages corporate investment. The policy of "cheap money", revolving around maintaining low interest rates in order to encourage investment and growth may, on the other hand, through increased inflation, slow down capital accumulation and weaken economic growth potential. To assess the impact of tight monetary policy on corporate investments it does not suffice to account only for the effects of increased interest rates. It is also necessary to take into account how increased inflation caused by refusing to increasing interest rates may affect corporate investment decisions. Incorporating this important relationship leads to the conclusion that monetary policy resulting in low inflation has a more positive impact on investment, that monetary policy of low interest rates that leads to high inflation.

3. Other research

The publications presented in the previous section are only a part of the research I authored or co-authored after receiving my PhD. Other publications, which I consider most important in my academic portfolio, are discussed below. All of the below positions focus on assessing effects of monetary policy measures.

The first one is [Ciżkowicz, Rzońca, 2014] published in *„Prague Economic Papers"*, a journal included in the list A of MNiSW (15 pts, Impact Factor 2014: 0,500). In this article, we argue that, in the case of an economy requiring restructuring following the financial crisis, a policy of maintaining low, almost "unhealthy", interest rates (e.g. higher than 2%) may produce better results than zero interests rate policy. This is because zero interest rate policy may hinder restructuring processes due to allowing for persistently unprofitable entities and decelerates capital flows towards more beneficial uses. This may lead to permanently lowering of natural interest rate accompanied by slowing growth in efficiency of production factors which, as a result, could limit effects of monetary policy in the future. We underline that this sort of mechanism has not been accounted for in standard NK, which forms the theoretical basis for models applied by most central banks.

The above reasoning is extended in [Rzońca, Ciżkowicz, 2014] published in *"mBank-CASE Working Papers"* and has been approved for print in *„Singapore Economic Review"* included in the list A of MNiSW (15 pts, Impact Factor 2014 r.: 0,129, planed date of publication 2Q 2014). In the research, we indicate that standard NK does not account for a series of mechanisms through which

unconventional monetary policy can generate costs to economies. In particular, its influence on the speed of restructuring, degree and persistence of uncertainty faced by economic entities, availability of loans, as well as growth rates of money supply and public debt. Excluding the costs generated by the abovementioned mechanisms leads to overestimation of the positive effects of unconventional measures of monetary policy, which runs the risk of these methods become conventional response to repeating crises.

The topic of the costs related to unconventional monetary policy measures is continued in [Ciżkowicz, Torój, Rzońca, 2015] published as *„NBP Working Paper".* Here we attempt at comparing positive and negative effects of zero lower bound ('ZLB') policy on social welfare. Using the New Keynesian Dynamic Stochastic General Equilibrium model we show that, under the assumption of no negative effects, ZLB is more beneficial that the positive lower bound policy ('PLB'). However, even minor negative effects are sufficient for PLB to dominate ZLB in terms of improving social welfare. This is the case even if we assume that accelerated restructuring caused by the PLB policy increases additional costs, compared to when ZLB hinders restructuring. Furthermore, the stronger and more persistent the shock that implies the necessity to bring interest rates to close to zero, the more probable the dominance of PLB over ZLB. Results obtained in the research indicate that decreasing interest rates to close to zero may be not the best response to a crisis. It is possible that the option preferred from the point of view of social welfare would be to lower interest rates to a low but positive level and to use quantitative easing in order to prevent panic in the critical segments of financial system.

[Ciżkowicz, Rzońca, 2015] published in "*Acta Oeconomica"* included in the list A of MNiSW list (15 pts, Impact Factor 2014: 0,179) assesses efficiency of direct inflation target strategy, as applied in running monetary policy in Poland. We indicate that this strategy has proven successful and see the source of its success in asymmetric unequivocal response to emerging inflation risks. We also present arguments for why the NBP should not replace this strategy. Furthermore, we analyse Poland's post-accession experience in monetary policy in the context of policies enacted by major central banks following the financial crisis.

In [Ciżkowicz, Rzońca, 2011a] published in *"Ekonomista"* included in the list A of MNiSW (15 pts, Impact Factor 2011: 0,141) we present an overview of research focused on costs of inflation and analyse the costs based on their impact on economic growth. The arrangement of the research is what distinguishes this publication from others related to inflation costs: while majority of research focuses on the nature of inflation (expected vs unexpected), we use the criterion of inflation transition mechanisms on economic growth. Thus, theoretical and empirical evidence is grouped according to five dimensions of inflation effects: structure and dynamics of business investments,

structure of public expenditure, penetration of financial intermediaries, personal and corporate taxation levels and costs that could have been avoided had inflation been lower.

Finally, in [Ciżkowicz, Rzońca, 2011b] published in *"Ekonomista"* (15 pts, Impact Factor 2011: 0,141), we critically assess Blanchard et al.'s [2010] idea that central banks should raise their inflation targets from the current level of 2% to, as they put it, "approximately 4%". First we review argumentation used in previous discussions on this topic. In terms of shorter time frame, these arguments revolve around assessing the effects of raising inflation target on risk premiums factored into interest rates, as well as the effects of changes in risk premiums on stability of the global economy. In the long run, the arguments refer to assessing inflation costs. Next, we analyse a potential third line of reasoning, i.e. the influence of monetary policy on the risk of causing dangerous speculative asset bubbles. Finally, we sketch an alternative to raising inflation tax. We also argue that, in the light of the financial crisis, it would be beneficial to use monetary analysis in inflation process examination, in addition to only economic analysis.

4. Additional information about academic achievements

Appendix 4 presents the full list of publications which I have authored or co-authored. In the case of A- or B-listed by MNiSW, I also added number of points for each position, as well as information on Impact Factor (from publication year and 5-year figures) for A-listed items. Since completing my PhD, I have published

- 1 book,
- 1 book (co-authored),
- 1 (eds., co-authored),
- 5 chapters in books, incl. 3 co-authored,
- 9 publications co-authored in A-listed MNiSW periodicals (total MNiSW points: 170; total Impact Factor: 4,126)[22],
- 15 publications co-authored, incl. 13 in B-listed periodicals MNiSW (total MNiSW points: 84)[23],
- 19 working papers, incl. 18 co-authored[24,25] ,
- 1 translation of a book (co-authored).

[22] Before having been awarded the PhD, I co-authored 1 publication in a quarterly with an Impact Factor of 0,393 and 27 MNiSW points.

[23] Before having been awarded the PhD, I completed 2 publications (incl. 1 co-authored) in MNiSW B-listed journals (15 points in total).

[24] It should be noted that a significant portion of these studies are earlier versions of articles that appeared in scientific journals. In many cases, these versions differ significantly from the final text, thus I include them on the list.

[25] Additional two studies of this sort (incl. 1 co-authored) were published before I obtained my PhD

26 of the above publications were written in English. The MNiSW A-listed periodicals which published my research include: „KYKLOS", „Economics of Transition", „Applied Economics", „Fiscal Studies", „Post-Communist Economies", „Prague Economic Papers", „Economics e-Journal", „Acta Oeconomica" and „Ekonomista". The MNiSW B-listed periodicals which published my research include: „Bank i Kredyt", „Ekonomista", „Gospodarka Narodowa", „Ruch Prawniczy, Ekonomiczny i Socjologiczny", „Studia BAS", „Zarządzanie Publiczne", „Acta Universitatis Lodziensis Folia Oeconomica". My working papers have been published by institutions, such as Bank for International Settlements, ECB, NBP, CASE (the first three using peer review assessment style). Furthermore, two publications I co-authored have been accepted for print and will be published in 2016 in the following MNiSW A-listed periodicals: „Post-Communist Economies" and „Singapore Economic Review".

Citation figures for my research depend on data base used:

- Publish or Perish: 205 citations, Hirsch index: 7
- Google Scholar: 188 citations, Hirsch index: 7
- IDEAS (RePeC): 42 citations; 36th Polish economist in terms of number of citations
- Web of Science: 6 citations

For my active publication efforts, I have been awarded, on several occasions, by Chancellor of WSE and President of NBP.

Results of my research have been presented in numerous conferences, both in Poland and abroad, organised by, *inter alia*, Central Bank of Chile, European University Institute in Florence, Södertörn University in Stockholm, Gabriele d'Annunzio Univeristy in Pescara, International Journal of Central Banking, NBP, WSE, Katowice University of Economics, Kraków University of Economics, University of Łódź. The full list of conferences can be found in Appendix 5.

An achievement that I consider significant is the 2014 National Science Centre research grant won in the Opus 6 research competition for the project: *"Efficiency of Special Economic Zones in Poland as a tool of economic policy: multidimensional econometric analysis using spatial and panel models"*. I serve as the Principal Investigator and head of the team of four responsible for conducting the research. So far, the results of the research financed by the grant have been presented in one conference abroad and 2 conferences in Poland, as well as published as *"NBP Working Papers"* and in *„Acta Universitatis Lodziensis Folia Oeconomica"*.

In November 2015, as a result of the 7th research project competition by NBP, I received financial support for the project *"Impact analysis of fiscal devaluations on diversification of economic activity in EU member countries in 1999-2013. Implications for economic policy for countries considering*

joining the Euro". I serve as the Principal Investigator and the head of the team of three responsible for conducting the research.

I am particularly proud of having been selected by the National Science Centre to join a panel of experts responsible for assessment of research grants applications for the "OPUS" program, as well as to become a reviewer in the "PRELUDIUM" program. As part of the above responsibilities, I have reviewed 26 applications. Furthermore, I have reviewed publications for the following periodicals: „Fiscal Studies", „Economic Modelling", „Acta Oeconomica", „Structural Change and Economic Dynamics" (one review each). I have also reviewed reports from the "Better Government" program (four reviews), as well as a report on financing of higher education by the Institute of Research in Education.

5. Didactic activities

I first engaged in didactics while still pursuing my Master's degree, as a Lecturer at Skarbek Graduate School of Business Economics in Warsaw. From 2002 until 2006, I supervised classes in operational research, quantitative methods and econometrics. Since 2005 I have been employed at Warsaw School of Economics, Chair of International Comparative Studies, where I became an Assistant Professor in 2005. Until recently, I lectured and conducted classes in econometrics, applied econometrics, public sector economics (lectures only) and public finance (lectures only). My lectures and classes have scored highly among students, i.e. above average survey scores in their categories. I am particularly proud of my series of lectures presented as part of the public sector economics stream, which combine up to date global literature with my experience gained while dealing with public sector institutions (see Section 6).

Since 2008, I have also been conducting M.A. seminars, and since 2010 also B.Sc. seminars. Until present I have supervised 12 Bachelor theses (incl. 1 in English) and 11 Master's theses (incl. 4 in English). I put great emphasis on the theses to relate to the current global research trends. As a result, together with two of my Master's students (Rafał Trzeciakowski, Michał Kowalczuk), we have produced joint papers, one of which was published in the *"KYKLOS"* magazine, while another one was approved for print by *„Post-Communist Economies"*. The research topic of my third Master's student under supervision (Bartosz Radzikowski), formed the basis for a grant application, which was selected for implementation in the 7th research project competition organized by the National Bank of Poland. I also supervise one of the mentioned Master's students in his Ph.D. degree conferment procedure. I also serve as an auxiliary supervisor in another Ph.D. degree conferment procedure at the Collegium of World Economy at WSE (Paweł Opala, supervisor: prof. Ewelina Nojszewska PhD).

6. Collaboration with businesses and public administration

Since graduation, I have been focused on combining academic career with working for public institutions, as well as private businesses. Such an approach allows me, on the one hand, to confront theory with implementation and, on the other hand, to use my knowledge and scientific tools to solving real life problems. My first step on this path was involvement with a student-based Assistant Team at the Ministry of Finance, which I began in 1998 while still at university. My responsibilities included preparation, at the disposal of the Minister of Finance, of analyses and simulations on topics related to fiscal policy, labour market and education. This experience allowed me to significantly broaden my knowledge of public finance, as well as observed real life implementation of fiscal policy.

I then moved to work at two commercial banks (Raiffeisen Bank Polska in 2000-2001 and Kredyt Bank in 2001-2002), where I was responsible for programming and implementation of big data transformation and analysis systems for the purpose of providing management information. Thus, I gained the opportunity to learn about real decision making mechanisms in this sort of institutions, which significantly influenced my later research on functioning of financial sector and monetary policy.

In 2002 I moved to become a Senior Specialist at the International Comparative Studies Division of the National Bank of Poland, which I then headed since 2003 until 2008. There, my responsibilities included selecting research topics and producing research methodology, as well as managing a team tasked with international comparative studies. I also prepared analytic reports on selected topics in macroeconomics, structural reforms and economic growth for the President of the NBP. I also had the opportunity to participate, as an expert, in Monetary Policy Council's meetings, as well as in management sessions of NBP Board of Directors. I was also a member of a macroeconomic discussion group, which analysed results of the most important research conducted at NBP, initial forecasts and inflation risk balance. This experience, coupled with the opportunity to learn about real life dilemmas faced by monetary policy decision makers have shaped my research interests, which was reflected in the topic of my PhD thesis (relation between inflation and companies' investments), as well as a considerable part of my publications as a PhD.

In the period of 2006-2007 I served as a member of an expert committee for healthcare reform founded by the Polish Ombudsman. The committee focused on delivering recommendations regarding financing and provision of healthcare in Poland, inter alia, introduction of competition among payers, as well as expanding the system with so called additional insurance packages. Based on such analyses for the purpose of the committee's discussions, two research articles were published.

From 2008 until 2012 I created and managed Economic Strategy Team in Ernnst&Young (currently EY), which performed economic impact assessment, development strategy and sectoral analysis projects commissioned by public administration institutions (e.g. Ministry of Science and Higher Education, Ministry of Economy, Ministry of Treasury, European Integration Committee, Lubelskie Voivodeship Governor Office), as well as private sector entities[26] (28 projects in total). Most of the time, I served as projects' scientific coordinator. The list of the most important projects is provided in Appendix 4. In numerous cases, the results of the projects formed the basis for research publications, e.g. the project *"Analysis of demand for jobs in the context of supporting export potential of Lubelskie voivodeship"*, completed at the request of Lubelskie Voivodeship Governor Office, which resulted in publishing a book [Ciżkowicz, Opala (edit.), 2011]) and two research publications, i.e. ([Ciżkowicz, Rzońca, Umiński, 2013] and [Ciżkowicz, Rzońca, Wojciechowski, 2012]).

In the years 2012-2015 I served as a member of the Management Board at Polish State Railways JSC (PKP S.A.), where I co-managed the PKP Group comprised of 15 companies employing over 85 thousand people. I was also a member of Supervisory Boards at various Group companies (PKP Cargo, PKP Intercity, PKP Energetyka, PKP Informatyka, TK Telekom), which I either chaired or co-chaired. This experience allowed me to better understand the underlying differences in managing private and public entities.

7. Activities related to raising awareness of social sciences and collaborating with academic societies

Between 2006 and 2007 I was a member of Economic Education Council at the National Bank of Poland, where I collaborated on the educational website of the NBP. In the period of my work, the website had ca. 200 thousand of unique users. Its e-learning courses have been used by ca. 120 thousand users, i.e. more than total enrollment on any university in Poland. As part of this project, I also delivered a set of scenarios for basic classes in economics for secondary schools, still in use.

In 2007-2009 I served as a Deputy Chairman of the Polish Economic Society, of which I am still a member. My responsibilities included collaborating on the content part of the society's activities, as well as technical supervision of conferences and discussion panels organized by the society.

Since 2007, i.e. since its inception, I have been affiliated with the Foundation for Civic Development. I have authored and co-authored publications, as well as served as a speaker in events organized by the foundation (conferences, discussion panels).

[26] Due to the terms of contracts with entities for the projects were conducted projects, I cannot disclose their names, nor the scope of the projects carried out for them.

In the period of 2010-2012, I served as the Head of the "Better Government" sponsored by EY, which was an international research grant program for researchers in institutional economics. The program resulted in numerous valuable reports that compared selected public sector areas in Poland with global best practices, and provided actual recommendations. The reports were presented during research conferences, popular not only among researchers, but also public administration representative. Grant applications originated not only from Poland, but also numerous other EU countries.

I have authored and co-authored tens of economic articles published in the most popular Polish daily and weekly press. The articles were listed in Appendix 5. I have also given over a hundred economics-related radio, TV and interned-based interviews.

Piotr Grzekowicz

Bibliography

Albinowski M., Ciżkowicz P., Rzońca A. [2014], *Links between the trust in the ECB and its interest rate policy*, „Applied Economics", Vol. 46, No. 25, pp. 3090-3106.

Alesina A., Barbiero O., Favero C., Giavazzi F., Paradisi M. [2015]. *Austerity in 2009-2013*, "NBER Working Papers", No 20827.

Aguiar M., Amador M., Farhi E., Gopinath G. [2014], *Coordination and Crisis in Monetary Unions*, "NBER Working Paper", No 20277.

Arellano M., Bover O. [1995], *Another Look at the Instrumental Variable Estimation of Error-Components Models,* "Journal of Econometrics", Vol. 68, No. 1, pp. 29-51.

Arellano M., Bond S. [1991], *Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations*, "Review of Economic Studies", Vol. 58, No 2, pp. 277-97.

Balcerowicz L., Rzońca A., Kalina L., Łaszek A. [2013], *Economic Growth in the European Union*, Lisbon Council, Brussels.

Baldwin J.R., Brown W.M., [2004], *Regional Manufacturing Employment Volatility in Canada: TheEffects of Specialization and Trade*, „Papers in Regional Science", Vol. 83, No 3, pp. 519-541.

Baskaran T., Hessami Z. [2013]. *Monetary Integration, Soft Budget Constraints, and the EMU Sovereign Debt Crises*, "Working Paper Series of the Department of Economics", Uniwersytet w Konstancji, No 2013-03.

Blanchard O. J., Dell'Ariccia G., Mauro P. [2010], *Rethinking Macroeconomic Policy*, "IMF Staff Position Note", No 10/03.

Bohn H. [1998], *The Behavior of U.S. Public Debt and Deficits*, "The Quarterly Journal of Economics", Vol. 113, No 3, pp. 949-963.

Borys P., Ciżkowicz P., Rzońca A. [2014], *Panel Data Evidence on the Effects of Fiscal Policy Shocks in the EU New Member States*, „Fiscal Studies", Vol. 35, No.2, pp. 189-224

Bronner F., Erce A., Martin A., Ventura J. [2014], *Sovereign debt markets in turbulent times: Creditor discrimination and crowding-out effects*, "Journal of Monetary Economics", Vol. 61, pp. 114-142.

Bun M., Kiviet J.F. [2002], *On the Diminishing Returns of Higher-order Terms in Asymptotic Expansions of Bias*, "Tinbergen Institute Discussion Papers", No 02-099/4.

Christiano L.J., Trabandt M., Walentin K. [2011], *DSGE Models for Monetary Policy Analysis*, [w:] Friedman B.M., Woodford M. (red.) [2011].

Ciżkowicz P., Ciżkowicz-Pękała M., Pękała P., Rzońca A. [2015], *The effects of special economic zones on employment and investment: spatial panel modelling perspective*, „NBP Working Papers" No 208.

Ciżkowicz P., Hołda M., Rzońca A. [2010], *Inflation and corporate investment - a critical survey*, „Bank i Kredyt", Vol. 41, No 6, pp. 5-44.

Ciżkowicz P., Kowalczuk M., Rzońca A. [2014], *Heterogeneous determinants of local unemployment in Poland*, **„**NBP Working Paper", No 188.

Ciżkowicz P., Opala P. (red.) [2010], *Determinanty krajowej i międzynarodowej konkurencyjności województwa lubelskiego*, Ernst & Young Publishing, Warszawa.

Ciżkowicz P., Rzońca A. [2003], *A comment on 'The relationship between policies and growth in transition countries'*, „Economics of Transition", Vol. 11, No. 4, pp. 743-748.

Ciżkowicz P., Rzońca A. [2011a], *Dlaczego banki centralne nie powinny podwyższać celu inflacyjnego?*, „Ekonomista", No 5, pp. 677–690.

Ciżkowicz P., Rzońca A. [2011b], *Koszty inflacji – przegląd piśmiennictwa*, „Ekonomista", No 3, pp. 395–418.

Ciżkowicz P., Rzońca A. [2013], *Does Inflation Harm Corporate Investment? Empirical Evidence from OECD Countries*, „Economics: The Open-Access, Open-Assessment E-Journal",Vol. 7, No 2013-06, pp. 1-38.

Ciżkowicz P., Rzońca A. [2014], *Interest rates close to zero, post-crisis restructuring and natural interest rate*, „Prague Economic Papers", No 3(2014), pp. 315-329.

Ciżkowicz P., Rzońca A. [2015], *Inflation targeting and its discontents: the case of Poland*, "Acta Oeconomica", Vol. 64, No s1, pp. 107-122

Ciżkowicz P, Rzońca A., Trzeciakowski R. [2015], *Windfall of low interest payments and fiscal sustainability in the Euro Area: analysis through panel fiscal reaction functions*, "KYKLOS", Vol. 68, No 4, pp.475-510.

Ciżkowicz P. , Rzońca A., Umiński S. [2013], *The Determinants of Regional Exports in Poland – Panel Data Analysis*, „Post-Communist Economies", Vol. 25, No 2, pp. 206-224.

Ciżkowicz P., Rzońca A., Wojciechowski W. [2012], *Determinanty regionalnych różnic w dynamice liczby pracujących w Polsce w latach 1999-2008*, „Gospodarka Narodowa", Vol. 11-12, pp. 59-77.

Coughlin C.C., Fabel, O. [1988], *State factor endowments and exports: an alternative to cross-industry studies,* "The Review of Economics and Statistics", Vol. 70, No 4, pp. 696–672.

Driscoll J. C., Kraay A. C. [1998], *Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data*, "Review of Economics and Statistics", Vol. 80, No 2, pp. 549–560

Elhorst J. P. [2000], *The mystery of regional unemployment differential: a survey of theoretical and empirical explanations*, " ERSA Conference Papers", pp. 1-48, European Regional Science Association.

Engsted T. [2009], *Statistical vs. Economic Significance in Economics and Econometrics: Further Comments on Mccloskey & Ziliak*, "Journal of Economic Methodology", Vol. 16, No 4, pp. 393-408.

Hsiao Ch. [2007] , *Panel data analysis—advantages and challenges,* "TEST"*,* Vol. 16, No 1, pp.1 -25.

Kothari S.P., Lewellen J., Warner J. [2014], *The Behavior of Aggregate Corporate Investment*, "Simon Business School Working Papers".

Krugman P. [2015] , *The austerity delusion*, "The Guardian", 24.04.2015.

LeSage J., Pace R. K. [2009], *Introduction to Spatial Econometrics*, CRC Press, New York.

Ma A.C. [2006], *Geographical Location of Foreign Direct Investment and Wage Inequality in China*, „The World Economy", Vol. 29, No 8, pp. 1031-1055.

Marston S. T. [1985], *Two views of the geographic distribution of unemployment,* "The Quarterl Journal of Economics", Vol. 100, pp. 57-79.

Melitz M.J. [2003], *The impact of trade on intra-industry reallocations and aggregate industry productivity*, "Econometrica", Vol. 71, pp. 1695–1725.

Mello de L. [2005], *Estimating a Fiscal Reaction Function: The Case of Debt Sustainability in Brazil*, "OECD Economics Department Working Papers", No 423.

Mendoza E. G., Ostry J. D. [2008], *International evidence on fiscal solvency: Is fiscal policy 'responsible'?*, "Journal of Monetary Economics", Vol. 55, No 6, pp. 1081-1093.

Niebuhr A. [2003], *Spatial interaction and regional unemployment in Europe*, "European Journal of Spatial Development", No 5, pp. 1-26.

Quigley J.M. [1998], *Urban diversity and economic growth*, "Journal of Economic Perspectives", Vol. 12, No 2, pp. 127–138.

Rzońca A., Ciżkowicz P. [2005], *Non-Keynesian effects of fiscal contraction in new member states*, „ECB Working Paper", No 519.

Rzońca A., Ciżkowicz P. [2014], *The effects of unconventional monetary policy: what do central banks not include in their models*, „mBank – CASE Seminar Proceedings", No 131

Schmitt-Grohé S., Uribe M. [2012], *The Making of a Great Contraction with a Liquidity Trap and a Jobless Recovery*, "NBER Working Paper", No 18544.

Walsh C.E. [2004], *Implications of a Changing Economic Structure for the Strategy of Monetary Policy*, „UC Santa Cruz SCCIE Working Paper", No 03-18.