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ACTA VŠFS

Economic Studies and Analyses
Ekonomické studie a analýzy

ARTICLES STATĚ

- **Adam GERŠL / Jakub SEIDLER:**
Excessive Credit Growth and Countercyclical Capital Buffers in Basel III: An Empirical Evidence from Central and East European Countries
Nadměrný růst úvěrů a proticyklický kapitálový polštář v Basel III: empirická evidence ze zemí střední a východní Evropy
- **Václav ŽDÁREK:**
Testing the Relative PPP Hypothesis in CEE States – Does the 'PPP Puzzle' Still Keep up?
Testování relativní verze parity kupní síly v zemích střední a východní Evropy – hádanka stále existuje?
- **Ladislava GROCHOVÁ / Tomáš OTÁHAL:**
Corruption, Rule of Law and Economic Efficiency: Virginia vs. Chicago Public Choice Theories
Korupce, právní stát a ekonomická efektivnost z pohledu Virginské a Chicagské větve teorie veřejné volby
- **Irena JINDŘICHOVSKÁ:**
Generating Social Innovations: Some Recent Experience from Abroad
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EDITORIAL

MOJMÍR HELÍSEK**| 088 |**

ARTICLES / STATĚ

ADAM GERŠL / JAKUB SEIDLER:**| 091 |**

Excessive Credit Growth and Countercyclical Capital Buffers in Basel III:
An Empirical Evidence from Central and East European Countries
Nadměrný růst úvěrů a proticyklický kapitálový polštář v Basel III:
empirická evidence ze zemí střední a východní Evropy

VÁCLAV ŽDÁREK:**| 108 |**

Testing the Relative PPP Hypothesis in CEE States – Does the ‘PPP Puzzle’ Still Keep up?
Testování relativní verze parity kupní síly v zemích střední a východní Evropy
– hádanka stále existuje?

LADISLAVA GROCHOVÁ / TOMÁŠ OTÁHAL:**| 136 |**

Corruption, Rule of Law and Economic Efficiency:
Virginia vs. Chicago Public Choice Theories
Korupce, právní stát a ekonomická efektivnost z pohledu Virginské
a Chicagské větve teorie veřejné volby

IRENA JINDŘICHOVSKÁ:**| 155 |**

Generating Social Innovations: Some Recent Experience from Abroad
Inovace ve společenské sféře: některé zkušenosti ze zahraničí

**FROM NEW ECONOMIC LITERATURE / Z NOVÉ EKONOMICKÉ
LITERATURY**

MOJMÍR HELÍSEK:**| 169 |**

Money from the Perspective of Economic Theory
Peníze z pohledu ekonomické teorie

Editorial

Editorial

MOJMÍR HELÍSEK

Dear Readers,

Welcome to the study of the next issue of the scientific journal of the University of Finance and Administration. As usual, this issue includes four articles. The first two articles are continuations of the two award winning works of the Prof. František Vencovský Prize, which have already been published in the previous issue.

The article of Adam Geršl and Jakub Seidler is called Excessive Credit Growth and Countercyclical Capital Buffers in Basel III: An Empirical Evidence from Central and East European Countries. It examines the issue of how best to determine whether the observed level of private sector credit is excessive in the context of the “countercyclical capital buffer”, a macroprudential tool proposed in the new regulatory framework of Basel III by the Basel Committee on Banking Supervision.

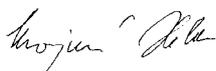
The following article of Václav Žďárek, Testing the Relative PPP Hypothesis in CEE States – Does the ‘PPP Puzzle’ Still Keep up?, is focused on testing the relative version of the purchasing power parity (PPP). It tries to shed light on this so called “PPP puzzle” for a set of transition countries – twelve new EU Member States. The results of conventional linear do not provide a crystal-clear answer, more robust URTs at least partially do in favour of the PPP hypothesis.

Third article, titled Corruption, Rule of Law, and Economic Efficiency: Virginia vs. Chicago Public Choice Theories, written by Ladislava Grochová and Tomáš Otáhal, presents a brief survey distinguishing between arguments of the Chicago Public Choice and Virginia Public Choice schools on how corruption influences economic efficiency. The authors argue that the Virginia Public Choice explanation is more realistic.

The final article written by Irena Jindřichovská, Generating Social Innovations: Some Recent Experience from Abroad, firstly explains the concept of public private partnership and its feasibility and then it deals with the explanation of the new notions: the Big Society recently introduced in the UK and Collective impact developed in the US.

The section From New Economic Literature includes review of the publication Theory of Money. It is a successful work of the team of Czech authors that we highly recommend to our readers.

On behalf of the whole editorial team, I would like to thank you for the attention you devote to our journal. We are looking forward to your contributions.



Mojmír Helísek

Executive Editor

Vice-rector for Research and Development, University of Finance and Administration

Vážení čtenáři,

vítám vás při studiu dalšího čísla vědeckého časopisu Vysoké školy finanční a správní. Jak je obvyklé, obsahuje i toto číslo čtyři stati. První dvě jsou pokračováním vítězných prací v soutěži o cenu prof. Františka Vencovského, z nichž dvě již byly zveřejněny v předchozím čísle.

Stať Adama Gešla a Jakuba Seidlera má název Nadměrný růst úvěrů a proticyklický kapitálový polštář v Basel III: empirická evidence ze zemí střední a východní Evropy. Věnuje se otázce, jak nejlépe určit, zda pozorované zadlužení privátního sektoru je již nadměrné v souvislosti s makrobezpečnostním nástrojem navrhovaným Basilejským výborem pro bankovní dohled v novém regulačním rámci Basel III, tzv. proticyklickým kapitálovým polštářem.

Následuje stať Václava Žďárka Testování relativní verze parity kupní síly v zemích střední a východní Evropy – hádanka stále existuje? Článek se věnuje testování relativní verze parity kupní síly (PPP). Cílem je pokus o objasnění „PPP hádanky“ pro skupinu tranzitivních ekonomik – 12 nových členů EU. Výsledky standardních lineárních testů nejsou jednoznačné, avšak robustní verze testů již alespoň částečně potvrzují PPP hypotézu.

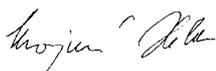
Třetí stať s názvem Korupce, právní stát a ekonomická efektivnost z pohledu Virginské a Chicagské větve teorie veřejné volby napsali Ladislava Grochová a Tomáš Otáhal. Příspěvek prezentuje stručný přehled argumentů v diskusi mezi chicagskou větví teorie veřejné

volby a virginskou větví teorie veřejné volby vysvětlující, jak korupce a lobbying zájmových skupin ovlivňuje ekonomickou efektivnost. Virginská větev veřejné volby nabízí realističtější pohled.

Poslední stať Ireny Jindřichovské, Inovace ve společenské sféře: zkušenosti ze zahraničí, nejprve vysvětluje koncept veřejno-soukromé partnerství (public private partnership) a hodnotí jeho účinnost a poté objasňuje nové koncepte: britský projekt „the Big Society“ a americký projekt „Collective impact“.

V rubrice Z nové ekonomické literatury naleznete recenzi publikace Teorie peněz. Jde o zdařilé dílo kolektivu českých autorů, které čtenářům vřele doporučujeme.

Jménem celého redakčního kolektivu vám děkuji za pozornost, kterou našemu časopisu věnujete, a těšíme se i na vaše příspěvky.



Mojmír Helísek

výkonný redaktor

prorektor pro výzkum a vývoj, Vysoká škola finanční a správní

Excessive Credit Growth and Countercyclical Capital Buffers in Basel III: An Empirical Evidence from Central and East European Countries

Nadměrný růst úvěrů a proticyklický kapitálový polštář v Basel III: empirická evidence ze zemí střední a východní Evropy

ADAM GERŠL, JAKUB SEIDLER¹

Abstract

Excessive credit growth is often considered to be an indicator of future problems in the financial sector. This paper examines the issue of how best to determine whether the observed level of private sector credit is excessive in the context of the “countercyclical capital buffer”, a macroprudential tool proposed in the new regulatory framework of Basel III by the Basel Committee on Banking Supervision. An empirical analysis of selected Central and Eastern European countries, including the Czech Republic, provides alternative estimates of excessive private credit and shows that the HP filter calculation proposed by the Basel Committee is not necessarily a suitable indicator of excessive credit growth for converging countries.

Keywords

credit growth, financial crisis, countercyclical capital buffer, Basel III

JEL Codes

G01; G21; G18

Abstrakt

Nadměrný růst úvěrů je často považován za indikátor budoucích problémů ve finančním sektoru. Tento článek se věnuje otázce, jak nejlépe určit, zda pozorované zadlužení privátního sektoru je již nadměrné v souvislosti s makroobezřetnostním nástrojem navrhaným Basilejským výborem pro bankovní dohled v novém regulačním rámci Basel III, tzv. proticyklickým kapitálovým polštářem. Empirická analýza na vybraných zemích střední a východní Evropy včetně ČR ukazuje alternativní odhady indikátoru nadměrného zadlužení privátního sektoru a naznačuje, že výpočet pomocí HP filtru navrhaný Basilejským výborem nemusí být pro konvergující země vhodným indikátorem nadměrného růstu úvěrů.

Klíčová slova

růst úvěrů, finanční krize, proticyklický kapitálový polštář, Basel III

¹ *The findings, interpretations and conclusions expressed in this paper are entirely those of the authors and do not represent the views of the institution where the authors work.*

Introduction

The Basel III reforms to the banking sector regulatory framework agreed in 2010 contain an important macroprudential element intended to dampen the potential procyclicality of the previous capital regulation. The Basel Committee on Banking Supervision (BCBS, 2010a) has introduced a “countercyclical capital buffer” aimed at protecting the banking sector from periods of excessive credit growth, which have often been associated with growth in systemic risk. In good times, banks will – in accordance with set rules – create a capital reserve which can then be used to moderate contractions in the supply of credit by banks in times of recession.

One region that recorded a boom in lending to the private sector in the lead-up to the global financial crisis was the Central and East European (CEE) countries.² The observed credit expansion was driven by many factors relating to both the demand and supply side of the credit market. Although the credit growth in these transition economies started from very low levels, the rate of growth in many countries has raised concerns about how sustainable such growth is in the medium term and whether it poses significant risks to the stability of the financial sector.

This paper aims to draw on the historical experience of the CEE countries with credit expansion and, using the method proposed by the Basel Committee, to calculate and discuss what the countercyclical capital buffer level these countries might have had if the newly proposed regulation on the creation of capital buffers had existed before the crisis. The motivation for this analysis is to determine how suitable the Basel Committee’s proposed method for calculating excessive credit using the Hodrick-Prescott (HP) filter is for the countries of Central and Eastern Europe. In these countries, rapid credit expansion may simply mean convergence to values typical of the advanced nations, and not excessive borrowing. For this type of country, we propose to use a method involving estimation of the fundamental-based equilibrium private credit level. Given that different countries have different characteristics, the Basel Committee allows national regulators to exercise discretion and specify different methods for setting the countercyclical capital buffer.

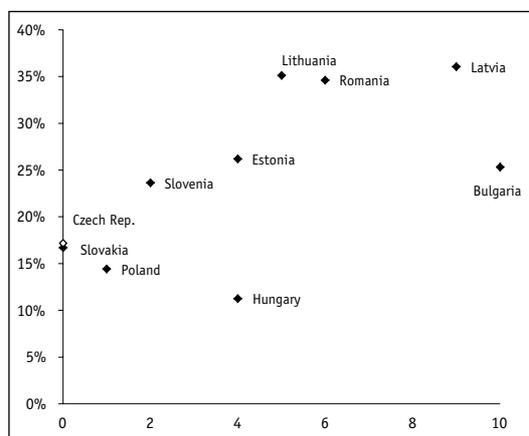
The paper is structured as follows. Section 2 discusses the risks associated with excessive credit expansion, looks at the situation in selected EU countries before the global financial crisis broke out, and briefly examines the logic of the countercyclical capital buffer as proposed by the Basel Committee. Section 3 takes a closer look at the disadvantages of applying the HP filter method and proposes an alternative technique for calculating excessive credit – the out-of-sample method. Both these calculation methods are then used on data for ten CEE countries. Section 4 illustrates the different implications of the alternative indicators of excessive credit growth for the countercyclical capital buffer settings of the banking sectors of the countries analysed. The conclusion attempts to generalise the results of the analysis and formulate recommendations for the national authorities responsible for macroprudential policy.

2 In this study, the group of CEE countries consists of Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

1 Excessive Credit Growth

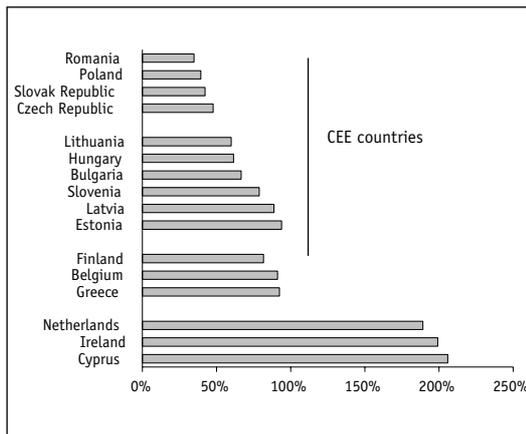
Credit growth in CEE countries has caught the attention of many studies over the past decade. These studies have tried to identify not only the determinants of credit growth, but also its equilibrium level (Enoch and Ötker-Robe, 2007; Égert et al., 2006). The credit boom in some transition economies was strong enough to raise concerns about whether this trend was simply a manifestation of convergence to the average credit levels in advanced nations, or whether it was a case of excessive growth posing a risk to macroeconomic and financial stability (Hilbers et al., 2005). The central banks and supervisory authorities of some countries even assessed the situation as critical and in 2004–2007 introduced a series of tools for limiting credit growth (Dragulin, 2008; Herzberg, 2008). These tools ranged from “soft” measures, such as increased risk weights on selected loans and the introduction of guidelines and limits (e.g. Estonia), through to very “hard” administrative restrictions on credit portfolio growth (Bulgaria). The extent of the measures, as measured by the number of different tools used to limit credit growth, was correlated to a large degree with the credit growth rate (see Figure 1). However, it is difficult to assess the effectiveness of the tools used, since most of them were applied just before the global financial crisis erupted. The decline in credit growth observed since then may thus have been due more to the sharp economic contraction and reduced demand for loans. The studies conducted up to now tend to conclude that the aforementioned tools are pretty ineffective and that credit booms can be limited in only a very limited way during good times (Kraft, 2005; Herzberg, 2008).

Figure 1: Credit growth and number of tools applied to limit credit booms (number of measures on x-axis; average year-on-year real credit growth in 2005–2007 on y-axis)



Source: IMF, national authorities' websites

Figure 2: Private credit ratios in selected EU countries (as % of GDP; 2007 Q4)



Source: IMF IFS, authors' calculations

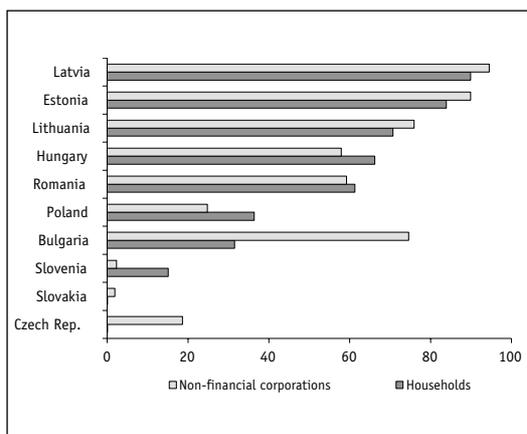
Despite the comparatively strong credit boom observed in 2003–2007, the stock of loans in many CEE countries in the pre-crisis year 2007 was still relatively low, especially in comparison with other EU countries (see Figure 2). Nevertheless, in terms of the private-credit-to-GDP ratio, some countries of the region had reached levels typical of some euro area countries. The question therefore arises whether they were already showing excessive credit levels. One limitation of this comparison is that it is based solely on data on domestic bank loans. This indicator understates total private credit, as it neglects loans provided by non-bank financial intermediaries and loans provided directly from abroad.

Excessive credit growth can threaten macroeconomic stability in many ways. Given that lending supports consumption, growth in private sector loans can over-stimulate aggregate demand beyond the framework of potential output and cause the economy to over-heat, with knock-on effects on inflation, the current account deficit, interest rates and the real exchange rate.

At the same time, lending institutions can, in an economic growth phase, have over-optimistic expectations about borrowers' future ability to repay their debts and therefore very often lend to high-risk borrowers. The upshot is that the bulk of "potentially" bad loans arise during upward phases of the credit cycle. In some CEE countries, private loans were provided in foreign currency because foreign interest rates were lower (see Figure 3). This further increases the risks for the banking sector, because if the domestic currency depreciates, the volume of credit expressed in the domestic currency rises, debt servicing costs go up, and foreign exchange risk turns into credit risk. In many cases, therefore, the aforementioned measures to contain credit growth were targeted primarily at reducing growth in foreign currency loans (Steiner, 2011). Furthermore, if a domestic credit boom is financed from foreign sources, as was the case in several CEE countries (except for the Czech Republic, Slovakia and Poland), the risk of the domestic banking sector having insufficient balance-sheet liquidity (roll-over risk) increases. In economic bad times, domes-

tic banks face a high risk of outflows of short-term foreign funds that cannot be financed by the sale of liquid assets (Hilbers et al., 2005).³

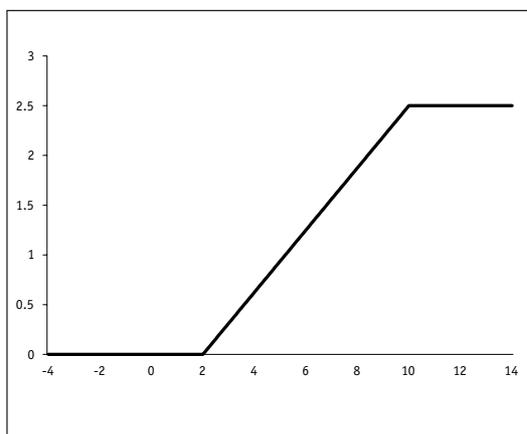
Figure 3: Shares of foreign currency bank loans (as of end-2009; as % of total loans to given sector)



Source: ECB

Note: Slovak Republic and Slovenia were already members of the euro area in 2009, so their foreign currency loans comprise currencies other than EUR.

Figure 4: Countercyclical capital buffer (% of RWA as function of credit-to-GDP gap in p.p.)



Source: CNB

³ In this regard, the Czech Republic has a very favourable deposit-to-loan ratio. For a comparison with other EU countries, see CNB (2010, section 1.3.1).

A bursting of the credit bubble and negative macroeconomic developments, leading to external financing constraints and growth in non-performing loans (NPL), can therefore cause the banking sector serious difficulties. IMF (2004) estimates that more than 75% of credit booms were followed by banking or currency crises. This fear is consistent with existing studies in the field of early warning signals, according to which excessive credit growth can be considered one of the most reliable indicators of future problems in the banking sector (Borio and Lowe, 2002; Borio and Drehmann, 2009; Jimenez and Saurina, 2006; Saurina et al., 2008).

As part of the preparation of the new Basel III regulatory framework for banks, the Basel Committee (BCBS, 2010a, 2010b) has proposed several tools for reducing the procyclical behaviour of the banking sector.⁴ One of the key tools is a proposal for banks to create countercyclical capital buffers during credit booms.⁵ Such buffers, expressed as a percentage of risk-weighted assets (RWA) and covered by high quality capital (Tier 1, or even core Tier 1), would be set by the regulator within the range of 0% to 2.5%. As a guide for the setting of the buffer, the Basel Committee is proposing to use and regularly publish the difference between the current private credit ratio as a percentage of GDP and its trend value estimated using the HP filter (the “credit-to-GDP gap”). However, regulators may also use other methods to calculate the trend and other variables, such as the prices of various relevant assets and credit conditions. In bad times, this capital buffer would be “released” in order to slow any fall in the credit supply and thereby reduce the procyclicality of the financial system.

The Basel Committee document itself (BCBS, 2010b) proposes to use the aforementioned guide as follows. The capital buffer would start to be created when the credit-to-GDP gap exceeded two percentage points. If the gap reached 10 percentage points or more, the buffer would reach the aforementioned maximum of 2.5% of RWA. For gaps of between 2 and 10 percentage points, the buffer would vary linearly between 0% and 2.5%. For example, for a gap of six percentage points the buffer would be 1.25% of risk RWA (see Figure 4). For cross-border exposures, the buffer set by the regulator in the foreign jurisdiction would apply. For cross-border banking groups, the capital buffer would be applied on both a solo and a consolidated basis.

It became clear during the discussion phase within the Basel Committee that a simple filtering technique would in many cases not necessarily lead to reliable estimates of excessive credit, so the final version of Basel III (BCBS, 2010b) gives regulators considerable discretion to set the buffer. The primary aim of the buffer, however, is not to restrict credit growth, but to create a capital reserve to give the banking sector greater protection from sudden changes in the credit cycle. At the same time, the Basel Committee documents emphasise the complementarity of this buffer with other macroprudential tools (BCBS, 2010b, p. 5), such as various limits on key indicators of borrowers’ ability to repay loans (the loan-to-collateral and loan-to-income ratios).

4 *The issue of procyclicality of the financial system and its sources and potential consequences was discussed in a thematic paper in Geršl and Jakubík (2012).*

5 *With regard to the objective of reducing the procyclicality of the financial system, the Basel Committee stated explicitly in its December 2009 consultative document (BCBS, 2009) that the aim of this buffer was to “achieve the broader macroprudential goal of protecting the banking sector from periods of excess credit growth”.*

2 Methods for Estimating the Equilibrium Credit Level

A major problem in constructing an excessive credit growth indicator is determining what level of credit is excessive and might pose a threat to the financial sector. One traditional method is to apply the statistical Hodrick-Prescott (HP) filter, which obtains the trend from a time series. By comparing the actual credit-to-GDP ratio with its long-term trend obtained using the HP filter we can then estimate whether or not the credit level is excessive. This method is used quite routinely in the literature (Borio and Lowe, 2002; Borio and Drehmann, 2009). Hilbers et al. (2005), for example, consider a credit-to-GDP gap of greater than five percentage points to be an indicator of excessive credit in the economy.

Although the HP filter method is used quite often to determine trends in macroeconomic variables, it does have its drawbacks. A time series trend is dependent to a significant extent on the length of the chosen time series and the calculation is very sensitive to the smoothing parameter (λ). A big problem as regards practical application in macroprudential policy is “end-point bias”, which generates a highly unreliable estimate of the trend at the end of the data period.⁶ Macroprudential policy, which, by contrast, requires assessment of the trend on the basis of current (i.e. end-of-period) data, would therefore be reliant on indicators subject to a high degree of uncertainty. In the case of some CEE countries with relatively short time series, credit growth is incorporated directly into the trend itself by the HP filter, i.e. credit growth excess is counted as a trend (Cottarelli et al., 2005). Another relevant question is whether the credit ratio should take into account other denominators besides GDP, such as financial assets or total assets of the private sector. Although GDP is correlated to a significant extent with private sector income and therefore serves as an indicator of the ability to repay a given amount of loans, holdings of financial assets (deposits and securities investments) and non-financial assets (e.g. real estate) are also relevant to the evaluation of excessive credit.

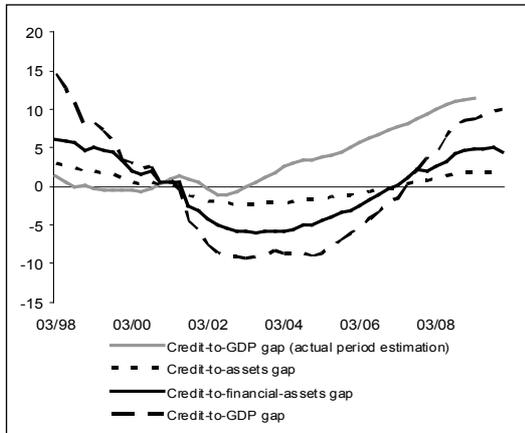
Figure 5 presents credit gaps with alternative denominators (GDP and financial assets and total assets of the private sector) calculated using the HP filter on data for bank loans in the Czech Republic with a high λ parameter equal to 400,000. Such a high value of λ was proposed in Basel III with an argument that credit cycle is usually longer than the business cycle. The filter is applied to quarterly data for the period 1998–2010, which, however, is regarded as relatively short from the international perspective (Basel III recommends at least a 20-year period). The estimates indicate that the current level of bank loans is above the long-term trend. However, the trend estimate is subject to a range of problems related to the short time series and above all to extraordinary factors linked with a fall in credit volume in 1998–2002 caused by a banking crisis in the 1990s and the clean-up of bank balance sheets ahead of the privatisation of large banks.

As regards simulating possible macroprudential policy in the past, it makes more sense to apply the HP filter recursively, i.e. in each past period using only the data that were available in that period (at the end of 2005, for example, the trend value and therefore also the gap between the observed credit level and the trend is calculated on 1998–2005 data).

⁶ One way of dealing with end-point bias is to extend the time series into the future by means of prediction. This, however, can introduce further uncertainty into the estimate linked with the quality of the prediction.

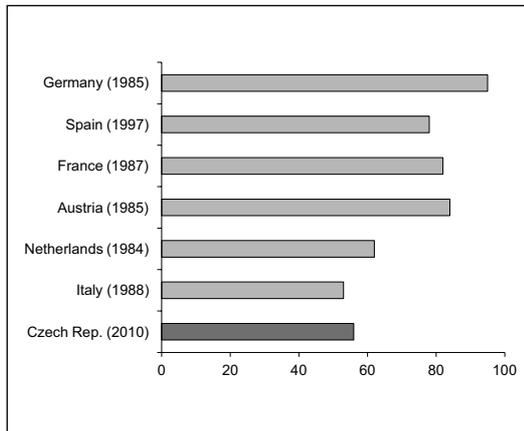
This simulates the situation that the macroprudential policy-maker would hypothetically have found itself in had it been required to decide whether excessive credit growth was emerging. The calculated credit gaps expressed as a percentage of GDP indicate that the Czech Republic would have found itself in a situation of excessive credit as early as 2004 (see Figure 5). However, the aforementioned drawbacks of the HP filter play an even greater role in the calculated gap, as the problem period of 1998–2002 influences the trend.

Figure 5: Credit gaps in the Czech Republic with alternative denominators (in p.p.)



Source: CNB, authors' calculations

Figure 6: Credit-to-GDP ratios for a similar level of economic development (in %; GDP per capita in 2005 USD = USD 17,000 approx.)



Source: IMF IFS, authors' calculations

The main criticism of the HP filter technique, however, is that this method does not take into account economic fundamentals that affect the equilibrium stock of loans. An alternative method is to estimate the equilibrium private credit level in relation to key economic variables (such as the level of development of the economy measured in terms of real GDP

per capita). In nutshell, this method says that if GDP per capita – as a proxy for the standard of living of an economy – is the main and only economic fundamental, all countries with the same level of development should have a similar equilibrium credit level. Poorer countries should have a lower equilibrium credit level than wealthier countries. A comparison of bank loans as a percentage of GDP for the Czech Republic in 2009 and selected euro area countries in years when they were at a similar level of economic development indicates, in contrast to the HP filter findings, that the credit ratio in the Czech Republic is below the level consistent with its economic level (see Figure 6).⁷

Given that the CEE countries started from very low private credit levels, however, the estimation of a suitable econometric model on data for these countries would capture the rapid growth caused by convergence towards the average level of the advanced nations. As Égert et al. (2006, p. 14) point out, such estimated elasticities of the relationships between fundamentals and credit would be overstated. At the same time, the estimates would reflect not the equilibrium level, but only the present relationship between economic fundamentals and private credit.

For this reason, the existing literature suggests using out-of-sample (OOS) panel estimation, i.e. estimating the model on a different sample of countries (so called in-the-sample countries) and applying obtained elasticities to the data for the countries for which the equilibrium credit level is being estimated (so called out-of-sample countries). This approach assumes a priori that the stock of credit of “in-the-sample” countries, which serve for estimating elasticities, is at equilibrium on average, which is quite a significant assumption. Therefore, one needs to choose suitable group of “in-sample” countries that best meets the need to estimate the correct equilibrium relationships between economic fundamentals and private credit. The existing studies on this topic therefore normally use the developed countries of the EU or OECD as appropriate countries for comparison (Kiss et al., 2006; Égert et al., 2006). For this study, the advanced EU countries were used as “in-sample” countries. Owing to the current debate regarding the excessive debt of the PIIGS⁸ countries, these countries were omitted from the calculation of the equilibrium credit level.⁹

A variety of econometric methods can be used for OOS estimation. Given the properties of the variables used, however, traditional panel methods run into the problem of nonstationary time series, mutual regression of which can lead to spurious results. The traditional solution to the problem of nonstationarity of variables involves differentiating them. This step allows us to obtain the short-run relationship between the variables by regression, but the longer-run relationship is lost in the differentiation. The long-run relationship between nonstationary variables can be better estimated if the variables are

7 This comparison of the level of economic development is based on average GDP per capita expressed in real USD and can be interpreted as the same volume of goods that could be bought in the USA with the average GDP of the given country in the given year.

8 Portugal, Italy, Ireland, Greece and Spain.

9 However, nations that are structurally quite different from the CEE countries, such as the United Kingdom, remain in the sample of control countries. This may skew the results of the analysis towards higher equilibrium credit values for a given set of economic fundamentals.

cointegrated. This fact is used by the ECM (error correction model) method, which estimates not only the long-run relationship between the cointegrated variables, but also the potential deviation from this long-run relationship, which is gradually corrected through short-run adjustments.

We use the PMG (pooled mean group) estimation method, introduced for panel estimates by Pesaran et al. (1999). It, too, is based on this principle of short-run deviations from the long-run trend. This method can be used to estimate the long-run relationship between the credit-to-GDP ratio and other variables, which is identical for all countries, whereas the short-run adjustment towards this relationship can differ across countries. The PMG model therefore allows heterogeneity of the estimates for individual countries in the short run. However, the long-run relationship of the cointegrated variables is common to all the countries in the sample (more technical details regarding estimation method is available in the Appendix).

The data used for the OOS method were obtained from the International Monetary Fund's IFS (International Financial Statistics) database, which provides the required macroeconomic data with a sufficient history (which is vital for estimating long-run relationships). For this reason, we used data for a 30-year period (1980–2010). The available statistics on bank loans to the private sector were used as the credit indicator. These statistics slightly underestimate the total credit of the private sector, as they do not include non-bank financial intermediaries (e.g. leasing) and cross-border loans. Data on aggregate household consumption, government debt, short-term interest rates, unemployment, inflation measured by the GDP deflator, and GDP per capita in dollar terms were also used.

A long-run cointegration relationship between the credit-to-GDP ratio, the household consumption-to-GDP ratio and GDP per capita in USD was identified for the set of in-sample countries. The GDP per capita variable in the long-run relationship captures the different degree of wealth of the economy, which therefore also influences the equilibrium private credit level (Terrones and Mendoza, 2004).

The following equation gives estimates of the coefficients of the long-run relationship between the cointegrated variables and the values of the coefficients in the short run, which are given as the mean of all the estimates for the relevant countries.¹⁰

10 Based on the Hausman test, we can not reject null hypothesis of PMG being efficient estimator, thus PMG is preferred compared to the mean-group (MG) counterpart. MG estimator is a simple non-weighted mean of regression estimates for each individual country. Hausman statistic $\chi^2(2)$ is equal to 0.9 (p -value = 0.637). Further, in the estimated equation only those variables were kept that were significant at least at a 10 % confidence level. Also, more empirical approach was used as in Sekine (2001), therefore in short-run part of the equation inflation is present, which is not in the long-run part.

$$\Delta(\text{credit/gdp})_t = \underbrace{-0.035(\text{credit/gdp}_{t-1})}_{(**)} - \underbrace{(0.7\text{cons/gdp}_t)}_{(***)} + \underbrace{0.013(\text{gdp/pop}_t)}_{(***)} + \underbrace{0.87\Delta(\text{cons/gdp})_t}_{(**)} - \underbrace{0.07\text{inf}_t}_{(*)} + \underbrace{0.014}_{(***)}$$

}long-run relationship
}short-run adjustment

Note: *, ** and *** denote significance of the estimated coefficients at the 10, 5 and 1% levels respectively

Credit/gdp represents the ratio of private sector credit to GDP, *cons/gdp* denotes the ratio of household consumption to GDP, *gdp/pop* is GDP per capita in thousands of dollars and *inf* is the change in the price level, expressed as the year-on-year change in the GDP deflator.

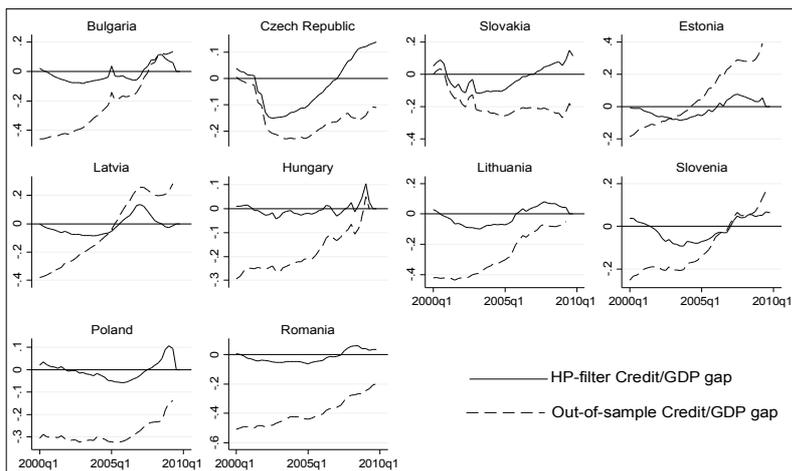
Besides the aforementioned variables, other factors that might affect the explained *credit/gdp* ratio were included in the model. For example, the government debt-to-GDP ratio might capture any crowding out of bank lending to the private sector.¹¹ Also, the real interest rate, or changes therein, should, as the cost of financing, be in a negative relationship with the explained variable. However, as the final specification of the model indicates, these variables were not significant even at the 15% level.¹² On the basis of the model, short-run adjustment dynamics towards the long-run trend is given as a function of the change in the consumption-to-GDP ratio and as a function of inflation. Based on the estimated coefficients, we can conclude that in the long-run relationship the credit-to-GDP ratio increases with increasing wealth of the economy and with an increasing consumption-to-GDP ratio. This factor then positively affects the explained variable in the short-run relationship as well, while inflation acts in the opposite direction. These conclusions are in accordance with intuition as regards the effects of the variables used on the credit-to-GDP ratio.

The estimated parameters of the model were applied to data for the CEE countries to obtain values of the “equilibrium” credit ratio. The OOS calculations may in some cases imply significantly different conclusions regarding excessive credit compared to the calculations using the HP filter (see Figure 7). According to the HP filter, the credit-to-GDP gap indicates excessive credit in the recent period not only for the Czech Republic, but also, for example, for Slovakia, Lithuania, Romania and Poland, whereas the econometric estimate does not confirm this excessive credit level (values in the positive part of the chart indicates excessive private credit-to-GDP ratios). By contrast, Bulgaria, Estonia, Latvia and Slovenia now have excessive credit-to-GDP ratios according to the OOS method. It is clear, therefore, that the two calculation methods used give contradictory results in some cases.

11 For this reason, we would expect a negative relationship between the government debt ratio and loans to the private sector. The fact that a less indebted government sector would be able to provide more significant support if the banking sector ran into serious problems is relevant for assessing whether the current private sector credit level is excessive with regard to financial stability.

12 Detailed description of the available data is provided in the Appendix.

Figure 7: Comparison of credit-to-GDP ratios for various calculation methods (in p.p.)



Source: IMF IFS, authors' calculations.

3 Simulation of the Size of the Capital Buffer

One of the questions associated with the new Basel III rules is whether the requirement to create a countercyclical capital buffer would contribute to the creation of capital reserves in those CEE countries which experienced significant problems in their banking sectors during the global financial crisis. In the following simulation, the size of the capital buffer is calculated for individual CEE countries using the two aforementioned methods, i.e. the HP filter method and the econometric OOS method. As the crisis did not manifest itself fully in the CEE countries until late 2008 and (in particular) 2009, i.e. after the collapse of Lehman Brothers in September 2008, we set mid-2008 as the starting point for the buffer calculation.

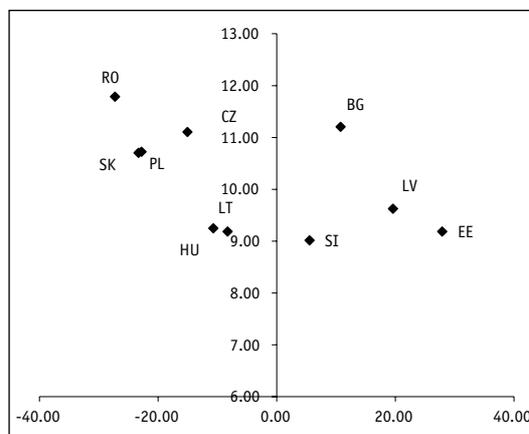
Table 1: Simulation of countercyclical buffer calculation (data as of 2008 Q2)

	Credit-to-GDP gap (%)		Countercyclical capital buffer (% of RWA)	
	HP filter	Out-of-sample	HP filter	Out-of-sample
Bulgaria	11.4	10.8	2.5	2.5
Czech Rep.	9.5	-15.0	2.4	0.0
Estonia	5.3	27.9	1.0	2.5
Lithuania	6.9	-8.3	1.5	0.0
Latvia	1.0	19.6	0.0	2.5
Hungary	-1.4	-10.7	0.0	0.0
Poland	3.0	-23.3	0.3	0.0
Romania	6.1	-27.3	1.3	0.0
Slovakia	6.1	-22.8	1.3	0.0
Slovenia	5.4	5.5	1.1	1.1

Source: authors' calculations

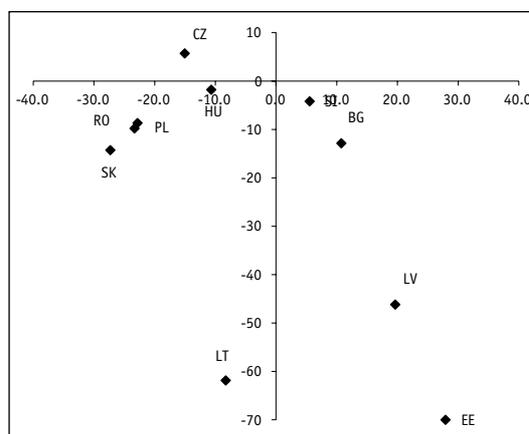
The results of this simple simulation indicate that only four countries needed a counter-cyclical capital buffer according to the OOS method (Bulgaria, Estonia and Latvia needed the maximum possible 2.5% of RWA, while Slovenia needed 1.1% of RWA).

Figure 8: Credit-to-GDP gap via out-of-sample and Tier 1 ratio in 2008 (gap in p.p.; Tier 1 capital ratio in 2008)



Source: IMF, authors' calculations

Figure 9: Credit-to-GDP gap via out-of-sample and change in RoE (gap in p.p.; change in RoE of banking sector in p.p.)



Source: IMF, authors' calculations

It is relevant to ask whether the banking sectors of these countries had a sufficient capital reserve already in 2008, building a “would-be” capital buffer in anticipation of possible problems in the banking sector due to the experienced credit boom. Figure 8 indicates that with the exception of Bulgaria, which has set its minimum regulatory limit on capital adequacy higher than the traditional 8%, the countries identified by the OOS method as having excessive credit ratios (i.e. Estonia, Latvia and Slovenia) had relatively low Tier 1 capital ratios.

Several indicators can be used to compare the impacts of the crisis on the banking sectors of individual countries. In this paper, we look at the change in banking sector profits between 2008 and 2009 (in p.p. of return on equity, RoE), as profitability reflects both credit and market losses as well as impact on pre-provision income from possible higher funding costs. A simple graphical analysis reveals that the countries identified by the OOS method as having excessive credit ratios recorded large losses in their banking sectors in 2009, causing the RoE to decline dramatically (see Figure 9) and even in some cases leading to negative RoE in 2009 (Latvia). Two of the identified countries, namely Latvia and Slovenia, have seen governments stepping in and providing public support in 2009. It is worth mentioning that the HP method would not have identified the problems building up in the Latvian and Estonian economies, which were hit hard by the crisis and, especially in the case of Latvia, suffered very high real costs.

Conclusions

This paper discusses methods for calculating excessive private sector credit in the Central and Eastern European region and their suitability as regards the creation of the counter-cyclical capital buffer introduced by the Basel Committee on Banking Supervision (BCBS, 2010a). The BCBS has recommended the use of an excessive credit indicator based on the Hodrick-Prescott (HP) filter technique as a guide for setting this buffer.

The paper shows that the HP filter-based calculation of the excessive credit indicator is not necessarily appropriate in certain cases. For the CEE countries in particular, rapid credit expansion may simply mean convergence to values typical of the advanced nations, and not excessive borrowing. As an alternative, the paper suggests considering excessive credit calculation methods that better reflect the evolution of a country's economic fundamentals. One such method is an out-of-sample technique based on estimates for advanced EU countries which are subsequently used to calculate the equilibrium credit levels of the CEE countries.

Although statistical filtering techniques such as the HP filter do have a role to play in the analysis as a first step in the interpretation of the available data, a broader set of indicators and methods should be employed to determine a country's position in the credit cycle. Our chosen method, based on economic fundamentals, would have better identified the problem of excessive credit in those CE countries whose banking sectors recorded serious problems during the crisis. Although this calculation technique has its limitations, it can be considered as a complementary indicator of excessive credit, especially for small converging economies.

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Contact address

PhDr. Jakub Seidler (corresponding)

Czech National Bank / Česká národní banka
Charles University in Prague / Univerzita Karlova
(jakub.seidler@cnb.cz)

PhDr. Adam Geršl, Ph. D.

Joint Vienna Institute
Charles University in Prague / Univerzita Karlova
(adam.gersl@gmail.com)

Appendix

A) Detailed description of the data time series used:

IMF IFS: AF.ZF...	National Currency per US Dollar average period
IMF IFS: 22D..Z	CLAIMS ON PRIVATE SECTOR
IMF IFS: 32D..ZF...	CLAIMS ON PRIVATE SECTOR
IMF IFS: 32AN.ZW...	CLAIMS ON GENERAL GOVT. (NET)
IMF IFS: 222A..ZF...	CLAIMS ON GENERAL GOVERNMENT
IMF IFS: 60P..ZF...	Interest rate
IMF IFS: 64...ZF...	Index CPI
IMF IFS: 67R..ZF...	Unemployment rate
IMF IFS: 99Z..ZF...	Population
IMF IFS: 96F..ZW...	HOUSEH.CONNS.EXPND.,INCL.NPISHS EUROS
IMF IFS: 99BIPZF...	Deflator HDP (base year = 2005)
IMF IFS: 99B..ZF...	Gross Domestic Product in the National Currency

Time series of interest rates for some countries were completed using the ECB and Eurostat databases and data provided by national central banks.

B) Technical details regarding used PMG and MG estimates

The pool mean group (PMG) and the mean group (MG) estimators are error correction forms of the autoregressive distributive lag (ARDL) model, where the dependent variable in its first differences is explained by the lagged independent and dependent variables in both levels and first differences. The equation is expressed as follows:

$$\Delta y_{i,t} = \rho_i (y_{i,t-1} - \sum_{h=1}^v \alpha_{i,h} x_{i,h,t}) + \sum_{j=1}^{p-1} \beta_{i,j} \Delta y_{i,t-j} + \sum_{h=1}^v \sum_{j=0}^{q-1} \gamma_{i,h,j} \Delta x_{i,h,t-j} + c_i + \varepsilon_{i,t}, \quad \begin{array}{l} i = 1, \dots, N, \\ t = 1, \dots, T, \end{array}$$

where y is dependent variable, x represents set of v independent variables, p and q represent maximum lags used, and α , β , c , and γ are estimated coefficients. Coefficient α represents the long-term relationship, which is specific for each cross-section in the MG estimator or the same for every country in the case of PMG estimator. Parameter ρ is the country specific error correction term, i.e. the speed of adjustment towards the equilibrium.

For more details see Pesaran et al. (1999).

Testing the Relative PPP Hypothesis in CEE States – Does the ‘PPP Puzzle’ Still Keep up?

Testování relativní verze parity kupní síly v zemích střední a východní Evropy – hádanka stále existuje?

VÁCLAV ŽDÁREK

Abstract

This paper is focused on testing the relative version of the purchasing power parity (PPP). It tries to shed light on this so called “PPP puzzle” for a set of transition countries – twelve new EU Member States. Since results of similar studies in the literature have been ambiguous, a set of econometrics methods is employed: univariate (standard) tests (URTs), robust versions of URTs including high-powered ones – the non-linear Kapetanios, Sollis (non-linear adjustments) and Bierens’ test (non-linearities in trends). Three definitions of exchange rates (bilateral currency pairs) are utilised: for the euro, the US dollar and the CPI-based real effective exchange rate (REER). Due to limitations as regards to the availability of the data for our set of countries, quarterly data for the period 1995:Q1–2011:Q1 are used. The results of conventional linear do not provide a crystal-clear answer, more robust URTs at least partially do in favour of the PPP hypothesis. In addition, once the source of non-linearities has been controlled for (structural changes), the results show stochastic stationarity of all three series.

Keywords

real exchange rates, unit root tests, exponential smooth transition autoregressive model, new EU Member States

JEL Codes

E51, F21

Abstrakt

Článek se věnuje testování relativní verze parity kupní síly (PPP). Cílem je pokus o objasnění „PPP hádanky“ pro skupinu tranzitivních ekonomik – 12 nových členů EU. Z důvodu velmi rozdílných výsledků předchozích studií je použito několik ekonometrických postupů: jednoduché (standardní) testy jednotkového kořene a jejich robustní verze zahrnující i nelineární Kapetaniosův test a Sollisův test (nelineární přizpůsobování) a Bierensův test (nelineární trendy). Tři definice měnového kurzu jsou použity (bilaterální páry): eurové, dolarové a reálný efektivní měnový kurz (na bázi CPI). Vzhledem k omezené dostupnosti data pro tuto skupinu zemí jsou použity čtvrtletní pozorování pro období 1995:Q1–2011:Q1. Výsledky standardní lineárních testů nejsou jednoznačné, avšak robustní verze testů již alespoň částečně potvrzují PPP hypotézu. Pokud je při testování zohledněna přítomnost nelinearit (strukturální změny) v časových řadách, výsledky potvrzují existenci stochastické stacionarity časových řad.

Klíčová slova

Reálné měnové kurzy, testy jednotkového kořene, exponenciální autoregresivní modely, nové členské státy EU

Introduction

The exchange rate economics and empirical studies attempting to verify the related hypotheses have attracted much attention of both empirical and theoretical economists. The reason for that may be very simple; this particular field has experienced rapid theoretical development recently, or it is particularly attractive for empirical economists due to ambiguous results. Real exchange rates belong to the well-known six main puzzles in macroeconomics mentioned in a seminal paper written by Rogoff (1996). One of these puzzles is the purchasing power parity (PPP) puzzle. This may also be a reason why one of the most frequently empirically tested hypotheses are those associated with PPP.¹

There have been a large number of studies on PPP in the literature, both for developed and to a lesser extent on developing countries. Empirical results seem to have been in favour of supporting PPP in developed countries.² Therefore, recent articles have focused on developed countries such as selected OECD countries (e.g. Chortareas and Kapetanios, 2009) or EU15 countries (e.g. Christidou and Panagiotidis, 2010). However, the findings have been mixed for the developing and transition countries, depending on the set of countries, time period, price indices and applied econometric techniques. Some studies have even rejected the PPP hypothesis using univariate unit root tests (hereinafter referred to as URTs) and more recently panel unit root tests (hereinafter referred to as pURTs).³ While the former are exposed to criticism due to low power, the latter have solved some problems but simultaneously created new ones (see (e.g. Bahmani-Oskooee et al., 2008). Some authors cast doubts on the PPP theory, and its empirical testing, as PPP is a long run concept of exchange rate determination (in the horizon of decades for instance), which may span different exchange rate regimes and monetary policy environments.⁴

A relevant question is why there has not been enough attention devoted to the transition countries in Europe. This might be for a number of reasons. For example, the availability of data has been limited and the radical and deep structural changes during the 1990s

1 *It is a well-known fact that at several points in history, the PPP concept has been used as a guidance for restoring exchange rate parities (The most prominent case seems to be in the 1920s, when some countries restored their pre-war exchange rate regimes (gold parities), following recommendation of Gustav Cassel (see Cassel, 1922).) The reasons why it is relevant to study PPP in transition countries and in Europe in particular (see e.g. Alba and Park, 2005; Chortareas and Kapetanios, 2009).*

2 *Even though some authors cast doubts on the results of older studies for developed countries pointing out that an overwhelming majority of studies use a very specific time samples (the Post-Bretton Woods era); they make use almost exclusively of USD currency pairs and their model specification mainly reflect theoretical reasons and not taking into account alternative models' specifications, see Chini (2010).*

3 *LLC (Levin, Lee and Chu) and IPS (Im, Pesaran and Shin) tests have been extensively used in the literature to test PPP hypothesis as a response to problems of URTs, see e.g. Alba and Papell (2007).*

4 *For a brief discussion see e.g. Alba and Papell (2007).*

make any analysis difficult.⁵ Additionally, some countries did not exist before 1993, which puts limits on available time series. Several studies have tried to overcome this problem by using data for the black market. However, given characteristics of the former regime in most of the new EU Member States (hereinafter referred to as NMS),⁶ it is not certain how valid these data and their results are. There have also been studies covering selected NMS countries, which focused on issues related to the process of joining the EU Rahn (2003) or discussed selected problems associated with the adoption of the euro (Frait et al., 2006).

Additional issues are related to assumptions required for PPP to hold. In reality, it is not possible to trade currencies without any transaction costs. This may result in observing "corridors of inactivity", i.e. if deviations from the PPP are not large enough, any adjustment process will not take place and an exchange rate will show non-linear behaviour. This may also be a problem for standard methodologies (approaches) for testing PPP. Therefore, one way of testing PPP is based on employing non-linear models that may capture transaction costs, such the exponential smooth transition autoregressive (ESTAR) models, see e.g. Taylor et al. (2001). ESTAR models unlike autoregressive (AR) models (univariate URTs) allow for varying autoregressive parameters that depend on a lagged value (a previous lag) of the time series Sollis (2009). Additionally, both types of models assume symmetrical changes in exchange rates leading to the restoration of an equilibrium, i.e. a PPP parity holds (mean reversion) regardless of the sign (positive or negative) for the same size of a deviation. This assumption may not be defensible in the context of exchange rates since appreciations and depreciations lead to different implications for economic subjects and their behaviour. Developing and transition countries that rely on export-led growth may not be willing to see a real appreciation of their currencies, but their policymakers may be more supportive of a long-lasting real depreciation. For example Sollis et al. (2002) find asymmetrical adjustments for the US dollar currency pairs, however, empirical evidence for developing and transition countries and/or other currency pairs is very scarce.

As shown above, there are a number of reasons for having a look at PPP that are rather of a more general character. In addition, PPP is one of the *necessary assumptions* for exchange rate modelling (e.g. for monetary models from the 1970s). It is also tacitly assumed to be satisfied in many macroeconomic models, which may be true in the long run, but not necessarily in the short and/or medium run with implications for results of these models. Therefore, we test the relative version of PPP in this paper for the NMS countries. Since an exchange rate is an economic variable, it can be influenced by various factors depending on many determinants and structural characteristics of an economy. This leads to the need to employ various approaches and tests to try to verify or refute

5 The same does hold true for developing (transition) countries in general, for an overview see e.g. Bahmani-Oskooee et al. (2008).

6 Through the text we will use either NMS12 or simply NMS as synonyms for all the NMS countries. NMS10 consists of countries from the 5th (2004) wave of enlargement (i.e. without Bulgaria and Romania); NMS8 encompasses only Central and Eastern European transition countries (i.e. without Cyprus and Malta) and NMS5 is the Visegrad group of countries (the so-called core of the NMS countries): the Czech Republic, Hungary, Poland, Slovakia and Slovenia.

suggested hypotheses. In a similar vein, different approaches and tests are utilized in this paper. Using two approaches allows us to employ various robust techniques allowing for different potential sources of influences, factors that may influence results. Several definitions of real exchange rates are also used: RER in two definitions following two main world currencies – the US dollar (US) and the euro and real effective exchange rate (REER).⁷

To date there has been no empirical study that would use both approaches and the complete set of NMS countries as far as we are aware of. The main contributions of this study can be summarised as follows: PPP is tested vis-à-vis the euro currency⁸ and both the URTs and the pURT are employed, including high power ones compared to conventional ADF (the ESTAR models and the Bierens (1997) tests), while focusing on quarterly instead of monthly data for all NMS countries. This allows us to do more robustness tests (country characteristics, various exchange rate regimes, etc.) without losing too many degrees of freedom due to lack of data. We also distinguish between time periods before and after the ongoing financial crisis.

The paper is structured as follows. The second section aims at summarizing the literature and explaining main problems and our empirical strategy. The third section describes the dataset. The next section presents and discusses the results of our empirical analysis. The last section concludes and offers possible extensions of this study.

1 A Brief Review of Underlying Theory

Even though there has been a plethora of studies that have dealt with the determination of exchange rates, it is not certain whether our current knowledge is better than few years (or even decades) ago, see (e.g. Alba and Papell, 2007). A reason may be that an exchange rate is one of the prices (or assets) in an economy. Such a price is determined by a great number of factors and since their influences may influence an exchange rate (generally a price) in both directions. Moreover, a significant factor may be the role of psychological factors related to market participants (agents).

There are several approaches and concepts in the literature that put emphasis on the role of various factors (determinants), which may be important when determining the value of an exchange rate. Some of them are important in the short run, others in the long run. While a workhorse approach for the short run seems to be the uncovered interest rate par-

7 In the IMF IFS database that is the main source of the underlying data used in this paper. REER's are missing for the Baltic States, and Slovenia.

8 Standard approach is to test PPP against the US dollar or a "synthetic currency" (real effective exchange rate, REER), see e.g. Bahmani-Oskooee et al. (2008) or Telatar and Hasanov (2009).

ity (UIP), there are several alternative concepts with different determinants (equilibrium concepts):⁹

- **purchasing power parity** (PPP) – it emphasises the importance of price levels (absolute version of PPP) and the role of changes in price levels between countries (relative version of PPP)¹⁰;
- **fundamental equilibrium exchange rate** (FEER) – key variables determining the equilibrium exchange rate are national income and current account balance. It emphasises macroeconomic balances (both internal and external) and macroeconomic identities without explicitly giving any theoretical grounds for exchange rate determination (Clark and MacDonald, 1998).
- **behavioural equilibrium exchange rate** (BEER) – using a set of economic indicators to explain behaviour of an exchange rate. The key distinction between FEER and BEER is that the BEER includes a part that can be described as “behavioural” (Gandolfo, 2001). The inclusion of individual (fundamental) variables rests upon theoretical underpinnings.¹¹ Clark and MacDonald’s study (1998) includes the ratio of domestic

9 Another classification scheme (Bénassy-Quéré et al., 2009) works with the following time dimensions:

- **The medium run** – only prices of goods and services are flexible and therefore, they will drive an exchange rate towards the level that will result in adjusting trade balance and net foreign assets (NFA) to their “equilibrium levels”. This case is equivalent to the definition of FEER.
- **The long run** – prices and stocks can change, an exchange rate is driven by these variables (differences in NFA positions and productivity gaps). This case is consistent with the definition of BEER.
- **The very long run** – all variables can change as all adjustment processes have been completed. This case reflects the PPP definition.

A recent study written by Bussière et al. (2010) distinguishes between three approaches (based on an IMF report):

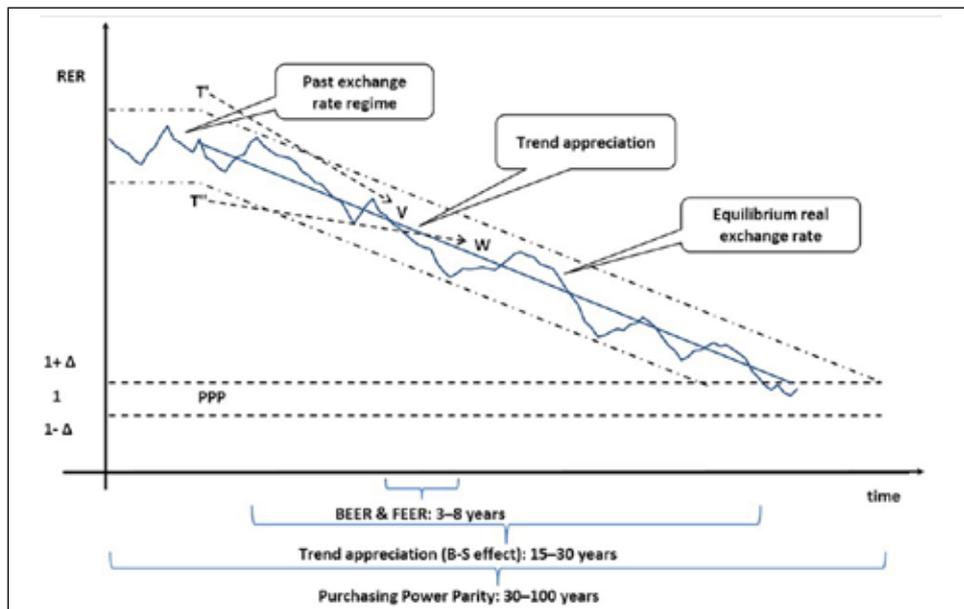
- a) the macroeconomic balance approach (a sustainable level of the current account for the long run is based on a regression including a range of variables); countries with similar characteristics are expected to have the same level,
- b) the external sustainability approach (a sustainable level of the current account for the long puts emphasis on the net foreign assets position – a external-indebtedness level is stabilised) and
- c) the reduced form equilibrium real exchange rate (a group of variables is used to estimate their connection with the exchange rate).

10 However, there have been discussions associated with price indices that may be used and mainly, theoretical assumptions that are not satisfied in reality. The approaches nos. 1 and 2 can be classified as the FEER concept (following Williamson (1994) as they rely on calculations of an exchange rate that closes gaps between a selected balance (various definitions – broader or narrower) of balance of payments and its “normal” value. In the former case they are estimated, in the latter, they are derived so that external debt is stable. The approach no. 3 consists of the PPP concept and its extensions.

11 In order to estimate BEER, the current levels of fundamental variables are used and variables that show cyclical behaviour (having a persistent, but vanishing effect over the course of time) may be employed as well. A refinement of BEER is PEER – the permanent equilibrium exchange rate – that makes use of the decomposition of the BEER into permanent and transitory components. It can be also viewed as an example of the medium-term equilibrium exchange rate approach compared to the cyclical and current values of variables approach (the short-term approach), i.e. BEER.

consumer price index to the producer price index (a proxy for the Balassa-Samuelson effect (B-S effect¹²), the stock of net foreign assets, terms of trade, and the fraction of the supply of domestic to foreign government debt (a risk premium factor). However, the list of potential variables is much longer (see e.g. Bénassy-Quéré et al. (2009).)

Figure 1: Exchange rate determination



Note: RER – level of the real exchange rate.

Source: Égert et al. (2005), p. 26, own adaptation.

Figure 1 shows how one can interpret the link between individual approaches to exchange rate determination (with respect to one classification scheme – time dimension). The PPP concept with its assumptions can be viewed as guidance for the development of an exchange rate in the long run, in the horizon of decades (see Wu et al., 2011). The FEER can be used for medium run assessments (given its construction), the BEER for short and medium run. PPP is not indicated as one possible level (it does not equal to one) but rather as a band ($1 \pm \Delta$).¹³ The PPP does stand for the values of ERER (equilibrium real exchange rate) that are compatible with the PPP definition. Moreover, PPP hold not only for an exchange rate that moves around a constant, i.e. shows mean reversion, but also for an exchange rate that oscillates around a time trend.¹⁴

¹² For details regarding the Balassa-Samuelson effect see e.g. Égert et al. (2005).

¹³ Due a number of problems ranging from different tax policies to various combinations of exchange rate pass-through in individual countries.

¹⁴ Similar information is provided by the ERDI (exchange rate deviation index). It relates a spot exchange rate and a particular PPP exchange rate. Values of the ERDI above (below) 1 indicate undervaluation (overvaluation) of an exchange rate. In transition countries values of the ERDI are usually far from being equal to 1.

Under past political regimes, exchange rates oscillated within a band (if they oscillated at all) and they were reset at the outset of the transformation process in the NMS countries. In some countries it may have been close to the PPP value (given productivity, price and wage levels), while in others below or above this parity (i.e. between T' and T'' in the Figure 1). This deviation may have occurred unintentionally owing to a great deal of uncertainty at that time in NMS countries. However, the RER was generally higher than one. Since then, the trend may have been following fundamental factors of an economy, i.e. showing a trend appreciation.¹⁵ In addition, at least two important comments can be added: 1) exchange rate tends to converge towards its equilibrium level (PPP) at rather fast pace (an estimated half life is about 3–5 years, Rogoff, 1996) even after allowing for heterogeneity and small sample bias, see Chen and Engel (2004). A faster pace has been found for transition and developing countries, see Solakoglu (2006); 2) RER does fluctuate within a band around this equilibrium level even during the transition period (see the Figure 1). As Égert et al. (2005) mention, a trend in ERER behaviour as long as 15–30 years may be observed due to changes in structural characteristics of transition economies.¹⁶

As regards the actual changes in exchange rates in the NMS countries, figures in the Appendix present some evidence. Given the starting point (1. Q. 1995), there are not captured the very early stages of transition and therefore, the possible periods of “tâtonnement”. Nevertheless, it can be seen that the euro currency pairs in the Figure A1 in the appendix, in some countries seem to show mean reversion (Cyprus, Hungary, Latvia, Malta and Poland), that follows after a period after “a shock” has occurred. In the remaining countries there does not seem to be mean reversion as “a shock” has been followed by a trend appreciation or another shock¹⁷ or mean reversion followed by a non-mean reverting process (the Czech Republic and Slovakia).

A somewhat different picture can be seen in the case of US dollar currency pairs. Mean reversion seems to be found in Cyprus, Malta, Poland and Slovenia. Some countries seem to be mean reversion to a new level after “a shock” (Bulgaria, Estonia, Hungary, Latvia and Romania) and mean reversion followed by a non-mean reverting process (the Czech Republic, Lithuania, and Slovakia). As regards the restricted sample of the NMS countries with available REER data, for most of the countries REER does not show mean reversion; some sort of mean reversion seems to be in the case of Cyprus, Malta, Poland and Romania (see Žďárek, 2010).

15 Based on productivity differentials and increase in price levels reflecting usually faster economic growth in transition countries compared to developed ones.

16 ERER can fluctuate too as it is based on level of net foreign assets (NFA) reflecting current account sustainability. It may also exhibit a kind of overshooting behaviour – lower values in the medium run adjusting current account so that it strengthens in the long run.

17 A financial crisis in Bulgaria between 1996–1997, an economic turmoil in Hungary in 1995, a period of appreciation owing to a gradual process of price deregulation leading to increases in domestic price level (Estonia, Latvia and Lithuania), a hyperinflation in Romania. The case of Slovenia is more complicated, but several events (deregulation of prices, liberalization of capital transactions) may have affected the Slovenian exchange rate; e.g. see EBRD (1999).

2 Review of Literature

There are two main strands in the literature: a) studies that have focused on individual countries (e.g. Thacker (1995), rejecting PPP for Poland and Hungary) and b) on groups of countries. However, they differ in many aspects: Bahmani-Oskooee et al. (2008) test PPP *inter alia* for 25 European countries (24 post-communistic European countries and Turkey). Two univariate URTs (ADF and Kapetanios et al. (2003)'s test, the KSS test or ESTAR model) are applied to the REER. They signal non-linear mean reversion to a constant trend for Bulgaria, Slovak Republic, Slovenia, and to a trend for the Czech Republic and Romania.

Twelve CEE countries (the NMS without Cyprus and Malta, but with Croatia and Macedonia) are analysed by Telatar and Hasanov (2009). They apply two conventional URTs (ADF, KPSS) and also two URTs accounting for non-linearities (KSS) and asymmetric adjustment (the Sollis' test). They use monthly time series of REER from 1990 to 2007 (with different starting points). They find that PPP holds for five countries with conventional URTs, for seven countries when nonlinear pURT are employed and for all countries if asymmetric adjustment is allowed. Bilateral PPPs (CPI based) between the Czech Republic, Hungary and Slovenia and their main trading partners (Austria, Germany, France and Italy) were analysed by Bekö and Boršič (2007).

They employ univariate URTs (ADF and KPSS) and the Johansen cointegration approach, using monthly data on individual currency pairs for this set of countries over the period of 1992–2006. They do not find any significant evidence for PPP. Sideris (2006) focuses on the PPP for 17 CEE countries (without Cyprus and Malta but with selected CIS¹⁸ and Balkan countries) against the US dollar. He makes use of cointegration approaches (Johansen for individual countries and Larson's for a panel). He finds support for both weak and strong versions of PPP.

Cuestas (2009) applies non-linear URTs to data (KSS and Bierens test – a generalisation of the ADF test, see explanations in the Appendix) to REER calculated by the IMF and RER for the US dollar and the euro/ECU (monthly data 1992/1993–2006/2007) for eight CEE countries (without Cyprus and Malta and the Baltic States). While conventional URTs reject PPP, KSS and Bierens test do the same for most countries and currency pairs (exceptions are Bulgaria, Croatia and Romania). Koukouritakis (2009) focuses on all NMS countries over the period mid-1990s to 2006 (monthly data and the euro) and uses the Johansen cointegration method. He finds that PPP holds for Bulgaria, Cyprus, Romania and Slovenia.

Acaravci and Ozturk (2010) focus on eight European countries (six NMS and two candidate countries – Croatia and Macedonia FYR) during the period 1992:1–2009:1 (monthly data of the REER). This study utilizes two URTs – ADF, KPSS – and two tests allowing for structural breaks (Lee and Strazicich, 2003, 2004). PPP hypothesis is rejected for all countries for conventional URTs, and it does hold for two countries (Bulgaria and Romania) for the other pair of tests.

¹⁸ *The Commonwealth of Independent States (CIS) is a group of new independent states established after the break-up of the former Soviet Union.*

Maican and Sweeney (2006) investigate the PPP hypothesis in ten NMS countries (apart from Cyprus and Malta) for the time period 1993:1–2003:12 (monthly data) and for the US dollar currency pairs (US CPI and PPI based) and the euro currency pairs (German CPI and PPI based). Univariate URTs allowing for structural shifts and outliers (simple ADF and modified tests based the “first” generation URTs such as Zivot and Andres, 1992) and pURT are employed (SUR based on Levin et al. (2002) allowing for structural breaks and time trends). The results of the ADF show some support for PPP in the Baltic States, Poland and Bulgaria and Romania (US CPI based), half lives are in many cases over 10 years. The results of modified tests are also mixed; however, half lives are closer to 3–5 years found in the literature. The results of pURT give support to the PPP hypothesis in all the countries.

2.1 Further Notes on Methodology

There are two version of PPP.¹⁹ The relative PPP that is a generalization of the “law of one price” (LOP) and it is a simplification since it approximates changes in individual prices by changes in price indices). The LOP can be expressed as:

$$P_{d,t}^i = E_{d/f,t} \cdot P_{f,t}^i \quad (1)$$

where $P_{d,t}$ is the domestic price level, $P_{f,t}$ is the foreign price level both for a good i , expressed in the domestic and the foreign currency respectively and $E_{d/f,t}$ is the spot exchange rate.

The absolute version of the PPP is based upon the law of one price (LOP) that is usually tested for individual commodities or baskets of commodities.²⁰ It can be formally written (assuming inter alia that price baskets in both countries are the same, for discussion see below) as

$$P_{d,t} = E_{d/f,t} \cdot P_{f,t} \quad (2)$$

where $P_{d,t}$ is the domestic price level, $P_{f,t}$ is the foreign price level, expressed in the domestic and the foreign currency respectively and $E_{d/f,t}$ is the spot exchange rate. The subscript may be dropped as it is assumed that this relationship holds over time.

The PPP assumes that some theoretical assumptions are satisfied for it to hold perfectly (see e.g. Kanamori and Zhao, 2006). However, this is not the case in reality. Apart from these prerequisites that are usually not satisfied, there are other explanations why it does not hold: measurement errors, non-economical factors different from trade barriers, imperfect information and information costs leading to existence of non-equalised prices, various market participants (volume of currency trade associated with trade flows is only a tiny fraction of total transactions in foreign markets). That means that the exchange rate may be driven by other factors such as interest rate differentials (capital flows) and the power of empirical methods used for testing PPP (for details and review of studies see

¹⁹ Sometimes these forms are referred to as to the “weak” and “strong” version of the PPP hypothesis, see Taylor and Taylor (2004).

²⁰ LOP says that one commodity (an asset) has the same price in two countries when the level of their exchange rate is used. If it were not the case, it would enable an arbitrage process leading to equal prices (*ceteris paribus*). It is a reformulation of the absolute version of the PPP.

e.g. Sarno and Taylor, 2003; MacDonald, 2007). If that were the case, it would hold that changes in an exchange rate would fully reflect the price differentials between domestic and foreign country over a period of time and real exchange rate (q_t) would equal to one. That means (if absolute PPP holds and the real exchange rate is given by the ratio of price levels)²¹

$$q_t = \frac{E_{d/f,t} \cdot P_{f,t}}{P_{d,t}} \quad (3)$$

$$q_t = 1 \quad \left(= \frac{P_{f,t}}{P_{d,t}} \cdot \frac{P_{d,t}}{P_{f,t}} \right) \quad \text{if} \quad q_t = \frac{P_{d,t}}{P_{f,t}} \quad (4)$$

A log-linearised form of the relative version of the PPP (hereinafter referred to as simple PPP unless indicated otherwise) can be written as:²²

$$q_t^{i,rc} = e_t^{i,rc} - p_t^i + p_t^{rc} \quad (5)$$

where $e_t^{i,rc}$ is the log of the nominal exchange rate (the direct quotation of the exchange rate, i.e. the a-country--domestic-currency price of foreign currency (the euro – or the US dollar – US), p_t^i and p_t^{rc} are the logs of domestic and foreign price levels (i is the -th country, is the foreign country price level – the euro area level or the US level) and is the time (for details see data descriptions below).²³ A generalization of the model in the equation (5) (the “strong” PPP hypothesis) is the “weak” PPP hypothesis, whose model takes the form:

$$q_t^{i,rc} = -p_t^i + \beta_0 p_t^{rc} + \beta_1 e_t^{i,rc} \quad (6)$$

where the variables are the same as in the previous model, sign´ is used for distinguishing both approaches and the coefficients β_0 and β_1 reflect the existence of measurement and transaction costs (such as transport costs). Throughout the text the model (5) is used following the literature. Nevertheless, transaction costs are allowed for indirectly and therefore the so called ESTAR models are employed in the empirical part of this paper.

2.2 Estimation Strategy

Since the relative version of the PPP hypothesis will be tested in the empirical part of this paper, it means verifying properties of q_t (the equation (5), i.e. testing the q_t for a unit root). If it followed a non-stationary process (e.g. I(1), also described as *random walk*), then the

21 The same can be shown for relative PPP if inflation rates replace price levels and cross term stemming from multiplication is omitted.

22 Some studies have used one of the approaches, e.g. Juvenal and Taylor (2008) takes only the US economy as the benchmark country or the real exchange rate (q_t) is split into two components, one being traded-goods, the other non-traded goods, see Maican and Sweeney (2006).

23 CPI indices are usually used in tests of PPP. However, CPI is a proxy for changes in national price level. Therefore broad price indices such as the GDP deflator may be preferred, for quarterly or yearly time series in particular. Here problems such as availability, methodological changes of such a time series come into the fore.

PPP would not hold in the long run due to non-stationary properties.²⁴ On the other hand, if a unit root is not present in a time series, it means that a deviation from equilibrium is only of a temporary nature and the PPP does hold in the long run (for a modified interpretation see below).

There is no agreement among empirical economists which of the expanding set of URTs is “appropriate” for testing the PPP hypothesis. If the relative version of PPP is tested, it is verified that exchange rate oscillates within a “certain band”, i.e. around “1” (see above the Figure 1) being the very long-term level of an exchange rate in an economy if strict assumptions of the PPP theory are satisfied. A simple test of the PPP hypothesis make use of the following equation:

$$\Delta q_t = \alpha + \rho q_{t-1} + v_t \quad (7)$$

where q_t is the time series (i.e. a real exchange rate) defined in the equation (5), $\rho \in (0,1)$ is an autoregressive parameter and v_t is the error term (a sequence of normal variables, *iid*, with zero mean and standard variance). Under the null (nonstationarity) $\rho = 0$ and for $\alpha \neq 0$ the real exchange rate follows a random walk with drift (or with a time trend determined by the value of α). Under the alternative, mean reversion occurs since $\rho \in (-1,0)$ with $-\rho$ determining the speed of adjustment towards equilibrium. In order to observe PPP, a time series (q_t) has to be stationary and it is not driven by any permanent shocks (see Maican and Sweeney, 2006).

A generalisation of the model (7) explicitly models a time trend:

$$\Delta q_t = \alpha + \beta t + \rho q_{t-1} + v_t \quad (8)$$

where the variables have the same interpretation, β is the time-trend parameter. Due to difficulties with time series that can be used and their sensitivity to a large number of factors, “conventional” and also non-linear URTs are applied to our data. If a time series is stationary, the next step is to calculate the so-called half-lives.²⁵ Invidual tests utilised in this study are described in Žďárek (2010, 2012).

3 Data

Empirical studies have used different sorts of data as there is no prior information. While some have worked with monthly data Telatar and Hasanov (2009), others used quarterly Matei (2009) or even yearly data Solakoglu (2006). Due to the problems with data availability for the early 1990s, methodological changes in definitions of economic variables and a set of issues associated with exchange rate regimes in the NMS countries, this study relies on quarterly data. This type of data is sufficiently long and allows us to perform necessary robustness tests. This decision is also connected with some advantages and disadvantages. The time span is longer for quarterly data than it would have been for monthly data and it is a reasonable way of solving the problem of low number of yearly observations for our set of countries. On the other hand, some quarterly time series were

²⁴ A shock influencing this time series would lead to disequilibrium that would not be restored due to increasing variance and non-existence of unconditional mean of this time series, see Fan and Yao (2003).

²⁵ Half-life means a period of time necessary to halve the existing gap of one (economic) variable. A decay rate and a constant of decay are necessary to calculate a half-life.

not available for all countries and time series used in this paper, which led to reduction of the empirical part of this paper.²⁶

Nominal exchange rates for individual pairs of currencies (against the euro and the US) are obtained primarily from the IMF IFS (quarterly periodic averages of market rates against the US), UNECE Statistical Database (United Nations Economic Commission for Europe, market rates against the euro), Database Eurostat (the irrevocable conversion rates for the euro) and DataStream. The calculation of cross exchange rates was avoided as there may be significant differences due to failure of perfect triangular arbitrage. Also official exchange rates are not used as they may not reflect market forces (for a discussion of some related issues see e.g. Giannellis and Papadopoulos, 2009). Since the euro exchange rate is not available before 1999Q1 (only the ECU), an implicit proxy derived from bilateral exchange rates (UNECE) is used instead.²⁷ The last time series is the REER that is CPI based and it is calculated by the IMF. Seasonally adjusted data are used for calculations of the RER time series since seasonal patterns may affect the results of URTs or pURT. For seasonal adjustments, the ARIMA X-12 method is applied.²⁸

Harmonised consumer price indices (HICP) are taken from the Eurostat and UNECE databases for individual countries (national CPI indices), with the base year 2005 = 100. The same data for the euro area stem from the Eurostat database and the ECB statistical data warehouse. The consumer price index reflects the demand side and can be viewed as a proxy for changes in the total price level of an economy.

The producer price indices (PPI) stem from the Eurostat, the IMF IFS and UNECE databases (NACE Rev. 2, 2005 = 100). However, this time series is available for Malta only since 2005, which means that this country could not be included in additional robustness tests. The PPI is based on the supply side as it measures changes in prices of tradable (partially non-tradable) commodities. Selected summary statistics for our time series are included in the Appendix (Table A2 and Table A3).

As regards the calculation of real exchange rates, the formula (5) is utilized. For countries that joined the euro area, the exchange rate is calculated as $e_{i,ea,t} = e_{ea,t} + e_i$, where e_i is the euro area member's national currency conversion rate of one euro. For the US dollar (US), indices are in relation to the US and also price indices are calculated against the US price

26 Surprisingly, mainly for countries such as Malta or Cyprus that can hardly be characterised as transition countries. The problem can be the structure and size of these economies.

27 As there have been denominations and changes of individual currencies, our data set includes comparable time series. Due to space constraints details from the author are available upon request.

28 As some time series were at monthly frequency, as the first step they were converted into quarterly time series (following the IMF IFS methodology) and in the next step, seasonally adjusted using the ARIMA X-12 method. However, the main concern regarding seasonal fluctuations would be in the case of monthly time series. However, even for these series, some studies do not work with seasonally adjusted time series, see e.g. Alba and Papell (2007); Chortareas and Kapetanios (2009), even though the time dimension is not very large, but rather medium ($T < 100$). On the other hand some studies, e.g. Christidou and Panagiotidis (2010), use monthly seasonally adjusted values.

index ($p_{us,t}$).²⁹ In the case of the real effective exchange rate (REER) the same definition that the equation 5 states is used. However, due to data unavailability, REER time series based on CPI (the IMF definition) are available only for eight out of twelve NMS countries.

4 Empirical Results

4.1 The Euro

Euro currency pairs for individual countries are employed to test the PPP hypothesis via URTs. The main specification rests upon real exchange rates (RER), based on harmonized consumer price indices (HICP). The first step is to conduct conventional URTs for our sample of countries. A starting point is to choose "right" lag lengths for URTs, so that any result is not biased. This selection follows the Schwert (1989) criterion³⁰ and is confirmed by checking values suggested by the Schwartz (Bayesian) information criterion (SBIC) and the Hannan-Quinn information criterion (HQIC). In the case of the PP, KPSS and DF-GLS tests³¹, the optimum number of lags is selected automatically if this option is allowed. As we are not sure about the character of individual time series, models with a constant, drift or a constant and a time trend are employed. The results are presented in the Table 1.

The ADF test offers a mixed picture, as most of the time series seem to be non-stationary. The PP test indicates that three exchange rates may be stationary (Bulgarian, Estonian and Lithuanian) – while for Lithuania it does confirm the ADF results, it is the very opposite for Estonia. The results of the KPSS test (the H_0 is stationarity) indicate that almost all time series are non-stationary. Ambiguous results for Cyprian, and Slovenian currency indicate rejections of the PPP hypothesis in the long run. The results of the DF-GLS test does not allow us to reject the null hypothesis of I(1) in any specification except from the Slovenian exchange rate in one specification.³² If the DF-GLS statistics rejects the I(1) hypothesis, PPP holds.³³ As the results for the alternative price index (PPI) are similar, they are not shown.³⁴

29 As it would be possible to argue that fixing conversion rates and applying them to data prior 1998 is artificial, the same set of tests is applied to exchange rates against the US

30 This rule rests upon a criterion that calculates the optimal number of lags (l) as: $l = INT \left\{ 2 \cdot \left(\frac{T}{100} \right)^{0.25} \right\}$, where T is the length of a time series, and INT means that only the whole part of a number is considered. In our case for $T = 65$ is the value $10.7748 \approx 10 = > 10$ lags was the starting value; see e.g. Greene (2008), p. 752. The iterative procedure follows; if the last difference is not significant, the test is run for the same specification with one lag less until a significant lag is found. Sometimes the numerator of the fraction is with $T + 1$, however, this does not change for large number of observations T . In our case that value would be 10.8160, which means ≈ 10 lags as well.

31 Optimal lag values were based on the Ng-Perron seq t statistics (the general to specific method).

32 The DF-GLS statistics is superior to the ADF statistics as its power (lower probability of accepting wrong null hypothesis of non-stationarity) and size properties are better Wu et al. (2010).

33 The numbers of lags in augmented versions of both tests are chosen according to the Durbin-Watson and the Durbin's alternative test for autocorrelation. If one of them indicates presence of autocorrelation, another lag is added unless both indicate no presence of autocorrelation.

34 Results for PPI based indices and alternative \$ US currency pairs (HICP based) are available upon request from the author.

Table 1: Univariate unit root tests (euro currency pairs)

	ADF ^{a)}		PP ^{a)}		KPSS ^{b)}		DF-GLS	
	constant	trend	constant	trend	constant	trend	constant	trend
Bulgaria	-0.633	-1.441	-2.751*	-6.362***	1.530***	0.198 ^{d)}	1.028	-0.511
Cyprus	-3.373**	-2.908	-1.823	-1.670	1.340***	0.36	0.399	-0.939
Czech Republic	-0.801	-3.425**	-0.854	-3.250***	1.430***	0.293***	0.072	-1.385
Estonia	-1.710	-2.362	-4.140***	-5.354***	1.560***	0.216 ^{d)}	1.055	-1.766
Hungary	-1.482	-2.212	-0.880	-2.846	1.630***	0.237***	0.236	-0.8221
Lithuania	-5.316***	-4.557***	-5.462***	-3.824**	1.320***	0.307***	1.155	-1.519
Latvia	-2.186	-2.477	-2.915**	-2.446	1.140***	0.198 ^{d)}	0.685	-1.789
Malta	-3.466***	-2.433	-2.420	-1.537	1.090***	0.265***	-0.393	-0.976
Poland	-2.174	-2.705	-2.287	-2.654	1.070***	0.143*	-0.651	-2.333
Romania	-1.528	-2.344	-1.432	-2.425	1.380***	0.147**	-0.145	-2.186
Slovenia	-1.035	-2.756	-0.960	-2.628	1.430***	0.119 ^{d)}	0.117	-2.596*
Slovakia	-1.760	-2.906	0.306	-2.549	1.700***	0.220***	1.176	-2.467

Note: a) $Z(t)$ values reported. b) values of the test statistics. c) significant at 2.5% level. d) marginally insignificant. ***, **, and * significant at 1%, 5% and 10% respectively. Critical values for the KPSS test (level stationary): 10%: 0.347, 5%: 0.463, 2.5%: 0.574 and 1%: 0.739; trend stationary: 10%: 0.119, 5%: 0.146, 2.5%: 0.176, and 1%: 0.216. Trend = a constants and a time trend included.

Source: own calculation.

In the next step, we turn to robust and non-linear URTs that may solve problems of breaks within time series due to changes of exchange rate regimes over time. First test is the Ng-Perron test offers four results (MZa, MZt, MSB and MPT), followed by non-linear test, the KSS test (ESTAR) and the Sollis test (AESTAR). Ng-Perron test does not reject the for any currency pair (even though for some only marginally).

In the previous (methodological) part of this paper we showed a test that gives us answer what type of URTs test is appropriate. Results of this linearity test (see the Table A1 in the appendix) that conventional URTs are appropriate to test stationarity or non-stationarity of exchange rates in the Czech Republic, Hungary, Lithuania, Latvia, Malta, and Slovenia. Therefore, we do report results of ESTAR and AESTAR model for these countries in the Table 2 in parentheses since according to the test, they are not necessary.

If we now allow for the possibility of a non-linear model, there is some evidence against the null for two currency pairs (Cyprian and Polish). The figure is therefore slightly different compared to previous results based on conventional URTs. It gives much more support to PPP and it is similar to findings of other studies, e.g. Telatar and Hasanov (2009). It also implies that barriers to adjustment processes exist. For example, transaction costs change the speed of mean reversion (larger deviations will be followed by faster gap narrowing).

Table 2: Non-linear unit root tests results (euro currency pairs, HICP based indices)

	MZa	MZt	MSB	MPT	ESTAR	AESTAR
Bulgaria	1.115	2.415	2.167	309.073	-2.27	18.86***
Cyprus	0.336	0.276	0.822	43.114	-2.87*	1.25
Czech Republic	1.231	1.074	0.873	57.121	(-1.60)	-0.01
Estonia	1.240	2.162	1.743	207.645	-1.09	0.69
Hungary	0.618	0.509	0.823	45.855	(-1.80)	-3.45
Lithuania	0.803	1.245	1.551	151.378	(-3.01**)	(7.77***)
Latvia	0.396	0.308	0.777	39.741	(-1.73)	-0.20
Malta	0.164	0.163	0.994	57.531	(-3.40**)	-0.20
Poland	-0.734	-0.388	0.529	17.754	-2.87*	4.95
Romania	-1.053	-0.516	0.490	15.162	-2.29	0.03
Slovenia	-0.390	-0.194	0.497	17.683	(-2.97**)	(4.28*)
Slovakia	1.185	1.190	1.004	72.724	-0.77	1.43

Note: Ng and Perron tests include a constant, ESTAR & AESTAR models are in the demeaned version, the optimal number of lags selected by the general to specific method. Critical values for all tests are in the Table 3. Values in parentheses – see explanations in the text.

Source: own calculation.

If exchange rates that are found to be stationary, it is possible to test whether adjustments are symmetrical or asymmetrical. As we reject the null of nonlinearity for Bulgarian currency using the AESTAR test, it is possible to test the existence of asymmetrical adjustments. This can be done by testing a parameter in the AESTAR model obtained through a twostep Taylor approximation of the original ESTAR model (for details see e.g. Žďárek, 2012). The null hypothesis of a symmetric ESTAR can be rejected (at level).³⁵ This means that a shock of the same magnitude affecting this exchange rate leads to different adjustments speeds towards equilibrium for an appreciation and for a depreciation.

Table 3: Critical values for Ng-Perron, ESTAR and AESTAR tests

	MZa	MZt	MSB	MPT	ESTAR	AESTAR
1%	-13.8	-2.58	0.174	1.78	-3.48	4.037
5%	-8.1	-1.98	0.233	3.17	-2.93	4.899
10%	-5.7	-1.62	0.275	4.45	-2.66	6.889

Note: The critical values for Ng a Perron test taken from Ng and Perron (2001), the critical values for ESTAR are taken from Kapetanios et al. (2003), Table 1, F-test (AESTAR model), values for non-zero mean (simulated values) based on Sollis (2009).

Source: own calculation.

Finally, we allow for the possibility of structural breaks in currency pairs; one and two both in the mean and in the trend. Results of Lee and Strazicich (2003) URTs are in the Table 4. Given the fact that the NMS countries are catching-up economies, undergoing structural

³⁵ Results are available upon request from the author.

changes and more recently they have been hit by the financial crisis, structural breaks may have occurred. Omitting them leads to problems in the case of conventional URTs as shown above. If we allow for one structural break (the left side of the table), the null of non-stationarity can be rejected in two cases (Cyprus and Hungary). Surprisingly, there is no break around the outbreak of the financial crisis (2007/2008).

Table 4: Lee and Strazicich (2003) URTs – results, one or two breaks

	TB1	Statistics	TB1	TB2	Statistics
Bulgaria	1999/3	-2.2364	2000/3	2006/4	-3.5129
Cyprus	1999/4	-4.7062**	1999/3	2007/1	-6.1928***
Czech Republic	2000/3	-3.9800	2003/1	2007/2	-5.3399**
Estonia	2001/4	-3.6230	1998/4	2006/4	-4.8009
Hungary	2001/3	-4.5807**	2000/4	2005/2	-5.4938**
Lithuania	2000/3	-3.4395	2000/3	2007/2	-5.9600***
Latvia	2001/4	-3.2736	2001/4	2006/4	-5.1996*
Malta	2001/4	-3.1865	2000/4	2003/3	-6.1769***
Poland	2002/4	-3.7584	2002/3	2006/2	-4.6207
Romania	1998/4	-3.8248	2002/4	2007/2	-5.5972***
Slovenia	2004/4	-5.2685	2000/2	2006/4	-7.9427***
Slovakia	2003/2	-3.6443	2001/1	2007/4	-4.8879

*Note: TB1 and TB2 – the time period when the first and the second structural break, respectively. The model assumes a change in the drift and in the trend. Critical values are based on Lee and Strazicich (2004), Table 1, Lee and Strazicich (2003), Table 1: TB1 test: 1%–5.10, 5%–4.50, and 10%–4.20. TB1 and TB2 test: 1%–5.823, 5%–5.286, and 10%–4.989. *, ** and *** means rejection at 10%, 5% and 1% level of significance, respectively.*

Source: own calculation.

However, allowing for the possibility of two structural breaks (the right side of the table), the null of non-stationarity is rejected in eight out of twelve cases. It can be seen that first breaks are within the year 2000 (five) and years 2001 and 2002, each with two countries, which may be explained by changes in the global economy or as a result of the EU enlargement. Also the other breaks do not seem to be related to the on-going financial crisis and problems of major financial institutions as five breaks are found in 2006, five in 2007 (mostly first half).

The results of the last non-linear URTs, the Bierens (1997) test, are shown in the Table 5. As there are several size distortions in the case of this test, the critical values are based on the Monte Carlo simulation with 10000 replications (a Gaussian $AR(k)$ process for Δx_t , where is determined by the SBIC or HQ information criterion from previous steps and initial values are taken from particular time series.) If individual tests are not concordant, more lags are included in the model. The order for the Chebishev polynomials (m) must be chosen long enough, as a lack of lags compared to structural breaks might result in lower power of the test Bierens (1997). However, there is no simple rule for its determination. In our case, we follow the suggestion of Cuestas (2009), i.e. the lag length m is chosen so that it yields more evidence against the null (H_0).

Table 5: Univariate unit root test – the Bierens (1997) test (euro currency pairs)

	Test	t. statistics	P-value		Test	t. statistics	P-value
Bulgaria	t(m)	-3.6418	[0.0872]	Latvia	t(m)	-2.4084	[0.5067]
	A(m)	-35.4625	[0.0690]		A(m)	-16.0053	[0.3798]
	F(m)	4.5400	[0.8676]		F(m)	2.6407	[0.4125]
Cyprus	t(m)	-2.8083	[0.3318]	Malta	t(m)	-3.1148	[0.2527]
	A(m)	-7.8568	[0.7410]		A(m)	-7.3638	[0.7358]
	F(m)	4.2629	[0.8186]		F(m)	5.3624	[0.9143]
Czech Republic	t(m)	-3.6828	[0.0872]	Poland	t(m)	-3.0608	[0.2624]
	A(m)	-39.6200	[0.0512]		A(m)	-18.3615	[0.2443]
	F(m)	4.5914	[0.8587]		F(m)	3.2493	[0.6196]
Estonia	t(m)	-2.9975	[0.3300]	Romania	t(m)	-2.3211	[0.5600]
	A(m)	-13.5896	[0.2976]		A(m)	-10.7264	[0.5125]
	F(m)	3.5431	[0.6161]		F(m)	1.9724	[0.2690]
Hungary	t(m)	-2.1269	[0.6221]	Slovenia	t(m)	-2.5934	[0.4251]
	A(m)	-14.2108	[0.4547]		A(m)	-23.5015	[0.2579]
	F(m)	1.7697	[0.2132]		F(m)	3.6785	[0.7190]
Lithuania	t(m)	-3.6737	[0.1017] ^{a)}	Slovakia	t(m)	-0.2688	[0.9796]
	A(m)	-10.3602	[0.5680]		A(m)	-12.1045	[0.4316]
	F(m)	6.8976	[0.9714]		F(m)	3.2174	[0.6418]

Note: *p*-values in brackets. Rejection of the is in bold. a) Marginally rejected.

Source: own calculations.

Our results show a rejection of the left-sided hypothesis for the Bulgarian and Czech currency pairs, however, does not allow us to conclude whether they are (mean) stationary, stationary with a linear trend or a stationary around a nonlinear trend (see Bierens, 1997 or Žďárek, 2010 for possible interpretations of various alternative hypotheses). There is only one significant result for the Lithuanian, Maltese and Slovakia currency pairs, some other ones are (marginally) insignificant. (Following recommendations in Bierens (1997) as regards cases when only one out of three test statistics indicates that PPP holds.) Interestingly, the results for Bulgarian or Hungarian currency are found highly significant in Cuestas (2009),³⁶ but results for other countries are similar.

Our results for the URTs are rather inconclusive, unless we check for possible sources of nonlinearities and even then, they seem to be in favour of rejecting the PPP hypothesis in most of the NMS countries. In addition, the values of test statistics may be affected by the properties of time series, so the next step of our analysis may be to employ the pURT_s.³⁷ Results for the two other currency pairs (the US dollar and REER) can be obtained from the author upon request (results for a shorter time span, see in Žďárek, 2010).

³⁶ It may have been due to inclusion of the time period including the early 1990s.

³⁷ A recent study Telatar and Hasanov (2009) does not find much support for PPP in CEE with ADF test either.

4.2 What May Have Influenced our Results?

As we have seen, the results are rather ambiguous and do not provide clear guidance regarding the PPP hypothesis for the group of NMS countries. What maybe the possible reasons for these findings? Wu et al. (2010) and Alba and Papell (2007) summarize the recent pURTs studies and highlight that there may be some country characteristics that determine whether the PPP holds or not. These are the inflation rate, openness, volatility of exchange rate, economic growth and distance. However, empirical studies have not confirmed any of these determinants beyond all doubts. The results in this study are not crystal clear, either. Possible problems and/or reasons for the lack of clear-cut evidence in the analysis of the PPP can be divided into three groups.

The **first group** includes problems and issues related to available data. For example, some of them can be labelled as **problems of transition countries**. Our time span starts in the mid-1990s, which gives us enough observations in the time dimension, but may also be the reason why results are rather mixed due to the changes of exchange rate regimes in some countries. In a similar vein, the measures of inflation may have been exposed to similar kind of shocks. Therefore, the problem may be due to the utilised price indices and not due to the exchange rates. Even though, there may be large discrepancies between official exchange rates and cross exchange rates calculated under the assumption of perfect triangular arbitrage.³⁸ If the former is less volatile, it means possible central banks' interventions in the foreign exchange markets.

Another problem is well known in the literature – **aggregation bias**. It can be associated either with the data used Broda and Weinstein (2008) or linked to empirical methods (Imbs et al. (2005) parameter heterogeneity). Additionally, there may be a bias associated with “small samples” in the data Chen and Engel (2004) and this may have an impact on results.³⁹

The **second group** encompasses various direct and indirect (non-market) measures applied in an economy. One of them can be in the form of **exchange rate arrangements** such as the ERM II. This may have restricted the exchange rates of NMS countries and therefore, the results of URTs or pURT may be inconclusive. The euro as a benchmark for our analysis may also influence our results, as it was an artificial currency in the 1990s. However, this choice seems to be rational, since the US dollar seems to have lost much of its importance in the NMS countries and the euro/ECU has gained significance due to European integration process. Moreover, some authors argue that the **RER are not I(1) but rather I(0) process** that has a nonlinear (deterministic) trend or with structural breaks. This may give support to the notion of a ‘quasi-PPP’ or ‘a relaxed version of PPP’ (for a brief discussion see above; see also e.g. Cuestas and Regis (2008).

Another example is mentioned in the study by Brissimis et al. (2005). The authors claim that **monetary authority's interventions** in the foreign market targeting a certain level

³⁸ Examples in the case of some NMS countries can be found in Giannellis and Papadopoulos (2009).

³⁹ Robertson et al. (2009) surveys literature and discuss sources of these biases in depth. It also shows how important these biases for a development country are (Mexico compared to the US).

of exchange rate may result in the inability to confirm PPP empirically even though it holds. Additionally, Taylor (2004) puts forward that interventions may lead to RER displaying nonlinear behaviour, e.g. with I(1) type of behaviour within a certain band, and I(0) outside.⁴⁰ For example, some countries have been using inflation targeting and exchange rate is an important part of this. An exchange rate has direct and indirect impacts on inflation.

Finally, the *last group* incorporates empirical problems and problems of econometric methods that can be utilised. One of them may be a group of issues related to the problem called fractional integration of time series. This means that time series have a long memory (long range dependence).⁴¹ This poses a problem not only for URTs and but also for pURT. This would mean that conventional URTs would not be suitable for those cases.

This group also includes more practical aspects as **different specification of a non-linear adjustment process**. For example, Bahmani-Oskooee et al. (2008) argue that assumptions for PPP are not met in many countries and as a result, the PPP hypothesis is rejected. Additionally, some market interventions, friction or misbeliefs may hamper market forces from restoring equilibrium. This may lead to the necessity to account for these by employing nonlinear methods such as threshold models. The **lag selection** is a problem of non-linear tests such as the Bierens (1997) test.⁴² This is because the number of lags (k) can be determined by various methods, but the same cannot be easily done for the order of Chebishev polynomials m (however, the actual size of the test depends on it). Hence, the power may be low (see Bierens, 1997).

Even though it is not possible to list and discuss all possible problems and issues related to the tests of the PPP hypothesis, given the space limitations of this paper, the aforementioned ones can help us to answer the question stated in the title of this subsection. The 'PPP puzzle' is still alive at least in the transition (and developing) countries and it is not clear when we will have such (empirical) tools that will give us a clear answer.

Conclusions

This paper focused on testing the relative version of the PPP in the NMS countries over the time span of 16 years. It tried to shed some light on the "old PPP puzzle" for a set of European transition countries, new Member States of the European Union. It was argued that the PPP concept plays a very important role in various fields – both theoretical concepts (exchange rate modelling) and policy-making (impacts of various actions and measures). As there has been a large number of studies with rather ambiguous results, various econometrics methods were employed. We made use of conventional URTs and selected pURT, and additionally, more robust versions of URTs.

40 The Bierens (1997) test should account for this.

41 That is I(d) time series, where $0 < d < 1$. The key threshold is the value of $d = 1/2$ dividing time series into two groups (stationary and non-stationary).

42 This seems to be the main problem for empirical analyses of time series, see Harris and Sollis (2005).

While conventional univariate URTs the results of the non-linear KSS test (ESTAR), the Solis test (AESTAR) or the Bierens test do not provide a crystal-clear answer to our question as results significantly vary. In the case of the other currency pairs – the US dollar and REER, the results of these tests are less significant and therefore, they seem to give more emphasis on the importance of the euro currency for the NMS countries. The results of non-linear test (Lee and Strazicich, 2003) that take into account structural breaks, tend to favour the existence of PPP, once the source of non-linearities has been controlled for. The version allowing for two breaks gives support to PPP in eight out of twelve NMS countries, for the euro exchange rate pairs, nine out of twelve for the US currency pairs and seven out of eight REER pairs. Interestingly, the dates of individual structural breaks are not necessarily linked to the outbreak of the ongoing financial crisis, but they seem to reflect changes in the global economy or some important events (e.g. phases of the EU integration process).

Sollis (2009) finds that for some developed countries their currency pairs (against the US) show asymmetrical behaviour and real appreciations are long lasting compared to real depreciations for the same relative change in exchange rates. This has been also confirmed for a broader set of developed countries by other studies, e.g. by Sollis et al. (2002). An under-valued currency is usually associated with positive effects for exporters and policymakers may thus want to extend the period with favourable conditions for net exports. On the other hand, the experience of developing countries is different. According to Dutta and Leon (2002) policymakers seem to prefer having longer periods of appreciated currencies than depreciated, even though an economic rationale for mainly exporting economies would require the exact opposite. These authors argue that the reason may be associated with financial links of these economies – real depreciation increases costs of borrowing in foreign currencies and may have serious repercussions on foreign-indebted domestic firms.⁴³ We found asymmetrical adjustments only in the case of Bulgarian currency pairs.

Apart from many reasons related to the techniques and methodologies that can be applied, one of the key explanations for ambiguous results can be the length of time period used in this study. While exchange rates data are mostly available, problems arise with supplementary, however, necessary economic variables for testing the PPP hypothesis. Moreover, the quality of the data from the early 1990s seems to be for many reasons rather questionable. In addition, in most of the NMS countries were subject to non-economic influences (interventions), which may invalidate any economic approach trying to capture underlying economic determinants and processes. Without any doubt, it is possible to say that this area of research will remain one of the most attractive in the future.

There are many possibilities regarding the future research in this area. More detailed analysis based on individual subindices of the HICP index should be conducted as one extension going beyond the scope of this paper.⁴⁴ Using selected price subindices that

⁴³ *It thus touches the third generation of financial crisis models.*

⁴⁴ *Additionally, due to lack of availability consumer price subindices for some countries and most of the 1990s, it would lead to radical reduction of our sample and therefore, the necessity to switch from quarterly to monthly time series so that one would gain some power for the URTs and pURT.*

may solve problems associated with aggregation bias. However, these subindices are available only for a limited set of countries and/or time span is very limited, which limits their use.

Possible extensions of this paper could be done with respect to several aspects. An extension may be based on using disaggregated price indices (either for CPI or HICP) for our group of countries, different indices (broad or narrow versions of REER) or different benchmark countries. Moreover, more robust univariate URTs such as the CBL test⁴⁵ or methods based on panel smooth transition regression models (PSTR, see e.g. González et al. (2005) that may solve some problems of non-linear adjustment processes or structural breaks due to their construction may be applied. They would also make possible to use longer time span or data of higher frequencies (e.g. weeks or months).

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⁴⁵ Carrion-i-Silvestre, Barrio-Castro and Lopez-Bazo, see Carrion-i-Silvestre et al. (2005) allowing for several structural breaks in the presence of cross-sectional dependence).

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Contact address

Ing. Václav Žďárek, MSc.

ŠKODA AUTO University / ŠKODA AUTO a. s. Vysoká škola
(yzdarek@is.savs.cz)

Appendix

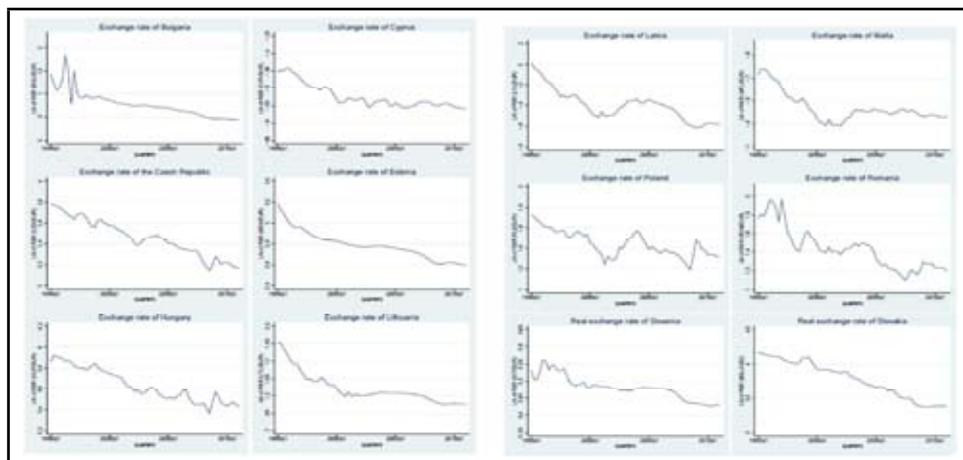
Table A1: Results of the Terasvirta (1994) linearity test – time series (HCPI based)

Exchange rate	p	d	F-statistics	Probability	Conclusion
Bulgaria	9	1	30.776	0	NL model
Cyprus	3	4	2.543	0.0178	NL model
Czech Republic	3	2	1.629	0.1332	L model
Estonia	4	3	3.622	0.0008	NL model
Hungary	3	2	1.729	0.1075	L model
Lithuania	1	1	1.395	0.2533	L model
Latvia	2	2	0.471	0.8286	L model
Malta	1	4	1.991	0.1258	L model
Poland	2	2	3.726	0.0036	NL model
Romania	2	4	4.492	0.001	NL model
Slovenia	9	2	1.371	0.2407	L model
Slovakia	2	4	2.4936	0.0339	NL model

Note: – the number of lags, – the value of the delay parameter. NL – non-linear model, L – linear model.

Source: own calculation.

Figure A1: Exchange Rates of the NMS countries against the euro



Notes: various scales on vertical axes.

Source: see the text.

Statistical appendix:

Table A2: Summary statistics – Euro (€) time series and REER

		ER ^{a)}	hicp ^{b)}	ppi ^{b)}	rer_hicp ^{d)}	rer_ppi ^{e)}	reer_ppi ^{c)}
Bulgaria	mean	1.071	4.091	4.057	0.7813	0.7804	4.5138
	SD	0.617	1.208	1.189	0.2852	0.2644	0.2358
Cyprus	mean	0.581	4.533	4.504	-0.5242	-0.4955	4.5702
	SD	0.006	0.12	0.12	0.0343	0.0669	0.0588
Czech Republic	mean	31.969	4.533	4.525	3.4581	3.4716	4.5324
	SD	3.787	0.16	0.117	0.1801	0.1484	0.1913
Estonia	mean	15.588	4.507	4.55	2.7862	2.7457	..
	SD	0.197	0.226	0.227	0.1349	0.0725	..
Hungary	mean	241.575	4.399	4.454	5.6332	5.576	4.4753
	SD	29.819	0.347	0.355	0.1587	0.0701	0.1656
Lithuania	mean	3.9	4.584	4.493	1.3055	1.3902	..
	SD	0.632	0.151	0.167	0.2194	0.2375	..
Latvia	mean	0.656	4.523	4.537	-0.397	-0.4173	..
	SD	0.052	0.237	0.247	0.1509	0.1166	..
Malta	mean	0.429	4.537	..	-0.8294	..	4.5603
	SD	0.016	0.116	..	0.0641	..	0.0673
Poland	mean	3.897	4.463	4.472	1.4424	1.4356	4.5446
	SD	0.388	0.241	0.243	0.1254	0.0795	0.1227
Romania	mean	2.535	3.816	3.723	1.4328	1.4727	4.463
	SD	1.366	1.141	1.14	0.2216	0.287	0.207
Slovenia	mean	213.682	4.432	4.461	5.481	5.452	..
	SD	29.172	0.256	0.204	0.034	0.027	..
Slovakia	mean	38.71	4.404	4.452	3.775	3.729	4.4941
	SD	4.154	0.271	0.218	0.266	0.2197	0.2652

Table A3: Summary statistics – \$ US time series

		ER ^{a)}	cpi ^{b)}	ppi ^{b)}	rer_usdcpi ^{d)}	rer_usdhcpi ^{d)}	rer_ppius ^{d)}
Bulgaria	mean	1.5	4.057	4.057	0.5894	0.606	0.5754
	SD	0.605	1.208	1.193	0.3262	0.3359	0.2901
Cyprus	mean	0.502	4.521	4.504	-0.7022	-0.7019	0.7029
	SD	0.076	0.12	0.149	0.1484	0.1441	0.1368
Czech Republic	mean	27.9	4.515	4.525	3.2836	3.2808	3.2645
	SD	6.63	0.16	0.116	0.2678	0.2608	0.2078
Estonia	mean	13.472	4.487	4.55	2.6089	2.6086	2.5383
	SD	2.172	0.225	0.154	0.2081	0.2094	0.1285
Hungary	mean	209.22	4.375	4.454	5.4518	5.4556	5.3687
	SD	44.506	0.347	0.263	0.2369	0.2399	0.1267
Lithuania	mean	3.361	4.577	4.493	1.1191	1.128	1.183
	SD	0.674	0.151	0.189	0.2375	0.2475	0.255
Latvia	mean	0.562	4.503	4.537	-0.576	-0.5724	-0.6225
	SD	0.044	0.237	0.218	0.1952	0.1956	0.1558
Malta	mean	0.369	4.533	..	-1.0189	-1.007	..
	SD	0.048	0.107	..	0.124	0.1274	..
Poland	mean	3.37	4.448	4.471	1.2626	1.2648	1.2281
	SD	0.629	0.241	0.191	0.1738	1.1765	0.1226
Romania	mean	2.156	3.763	3.723	1.2512	1.2549	1.265
	SD	1.105	1.14	1.14	0.2701	0.2738	0.3248
Slovenia	mean	184.096	4.418	4.461	5.2987	5.3029	5.2441
	SD	34.852	0.251	0.204	0.1513	0.1535	0.12
Slovakia	mean	33.829	4.391	4.452	3.5888	3.5973	3.5216
	SD	8.382	0.273	0.218	0.3567	0.3515	0.2847

Corruption, Rule of Law, and Economic Efficiency: Virginia vs. Chicago Public Choice Theories

Korupce, právní stát a ekonomická efektivnost z pohledu Virginské a Chicagské větve teorie veřejné volby

LADISLAVA GROCHOVÁ, TOMÁŠ OTÁHAL

Abstract

Can corruption improve economic efficiency? Classical political economists argue that corruption undermines the rule of law (Smith, 2001, chap. 5). The modern Public Choice proponents argue that corruption and lobbying might influence the efficiency of the rule of law. While Chicago Public Choice scholars model how legal lobbying, which is corruption in Virginia Public Choice perspective, improves efficiency of the rule of law and thus the overall economic efficiency, the Virginia Public Choice models explain how corruption reduces efficiency of the rule of law and thus the overall economic efficiency. In this short paper, we present a brief survey distinguishing between arguments of the Chicago Public Choice and Virginia Public Choice schools on how corruption influences economic efficiency. We argue that the Virginia Public Choice explanation is more realistic because it includes the influence of bureaucratic rent-seeking.

Keywords

bureaucracy, corruption, economic efficiency, Chicago Public Choice, lobbying, Virginia Public Choice, rent-seeking, rule of law

JEL Codes

D74, K42, P3

Abstrakt

Může korupce zlepšit ekonomickou efektivnost? Klasičtí političtí ekonomové tvrdí, že korupce narušuje fungování právního státu (Smith, 2001, kapitola 5). Moderní teoretici veřejné volby argumentují, že korupce a lobbing ovlivňují efektivitu fungování právního státu. Zatímco chicagská větev veřejné volby modeluje, jak legální lobbing zájmových skupin zvyšuje efektivitu právního státu a tím i celkovou ekonomickou efektivnost, virginská větev teorie veřejné volby vysvětluje, jak korupce a lobbing snižují efektivní fungování právního státu a tím i celkovou ekonomickou efektivnost. V tomto příspěvku prezentujeme stručný přehled argumentů v diskusi mezi chicagskou větví teorie veřejné volby a virginskou větví teorie veřejné volby vysvětující, jak korupce a lobbing zájmových skupin ovlivňuje ekonomickou efektivnost. Tvrdíme, že virginská větev veřejné volby nabízí realističtější pohled, protože vysvětluje vliv byrokratického dobývání renty.

Klíčová slova

byrokracie, dobývání renty, ekonomická efektivnost, chicagská veřejná volba, korupce, lobbování, právní stát, virginská veřejná volba

Introduction

Can corruption improve economic efficiency? The economic theory of Adam Smith (1723-1790) assumes that the state is a necessary part of market organization. Economic theorists thus deal with the state as a precondition for a successful economic organization. However, Adam Smith in *Wealth of Nations*, criticizes Mercantilism as the doctrine of the state interventionism (Smith, 2001, chap. 5) to suggest an alternative way of social organization where the state enforces rules protecting private property, and allows the emergence of private enterprises – the rule of law (Smith, 2001, chap. 5).

Classical political economists were aware of the danger that corruption poses for the rule of law, but they did not develop any appropriate analytical apparatus for dealing with this problem.¹ They suggested that the rule of law can prevent discretionary public policies, which can create barriers to entry restricting economic development. This was the reason why it was necessary to provide such system of governance that avoids creation of governmental privileges in favour of particular classes. Almost one hundred years later, Public Choice theoreticians filled this gap and developed more comprehensive analytical apparatus providing a more rigorous explanation of the corruption problem and its effects on the efficiency of the rule of law. As James M. Buchanan states: "If I am allowed to use Thomas Kuhn's overly used word here, we can, I think, say that a new *paradigm* has been substituted for an old one. Or, to go somewhat further back, and to use Nietche's metaphor, we now look at some aspects of our world, and specifically our world of politics, through a different window." (Buchanan and Tollison, 1999, p. 11)²

Public Choice theoretical analysis in its attempt to explain effects of corruption on efficiency of the rule of law, however, does not reach an agreement about how corruption effects overall economic efficiency. While Chicago Public Choice scholars argue that lobbying (for Virginia Public Choice even lobbying might be considered as corruption) can lead to efficient regulation provided by the state and thus improve economic efficiency (Posner, 1974, Becker 1983), Virginia Public Choice proponents argue that the state behaves rather as a benevolent despot than *homo economicus*³, so that the provision of the rule of law by the state cannot be efficient unless the benevolent despot is constrained by the constitution (Buchanan and Tullock 1965, Brennan and Buchanan, 1977) therefore corruption reduces overall economic efficiency (Tullock, 1996). While Chicago Public Choice understands lobbying as a legal activity, which can improve the economic efficiency, Virginia Public Choice understands legal lobbying as corruption, which reduces economic

1 In this paper I assume that corruption is a problem of the governmental organization rather than the market system (Banfield, 1975, *Otáhal*, 2007).

2 For the survey of Public Choice literature with some implications for public policy, see Schwarz (2001).

3 We define the benevolent despot as an agent who maximizes political power. *Homo economicus* is defined as an agent who maximizes utility in the market.

efficiency. Given the assumption of a benevolent despot, in Virginia Public Choice framework corruption or legal lobbying reduces economic efficiency through rent-seeking (Tullock, 1967, Krueger, 1974).

In this paper we survey the Public Choice contributions to the economic theory of corruption, identify theoretical discourse among the Chicago Public Choice and Virginia Public Choice proponents and synthesize the more realistic Virginia Public Choice theory with a theory of corruption. We extend Lambsdorff (2002) who presents an argument based on uncertain effects of corruption on economic efficiency when rent provided by a politician-bureaucrat⁴ is endogenous. Our explanation in essence represents the extension of seminal Public Choice theoretical contributions based on Brennan and Buchanan (1977, 1981) theory of benevolent despot, rent-seeking theory (Tullock, 1967, Krueger, 1974) and Downs (1965) and Niskanen (1968) theory of bureaucracy. Our theoretical framework implies that in the world where bureaucracy provides public goods, including the rule of law, politicians must cover the inefficiencies of bureaucracy. This provides the source of the endogenous rent-seeking.

In the next section, we explain that the assumption of a politician-bureaucrat behaving as a benevolent despot means the behavior of *homo economicus* in an institutional framework, which does not transform private interest into public interest as efficiently as free markets (Buchanan and Brennan, 1977, 1981). We define corruption analogically. Since corruption is in essence a particular type of exchange, the task of the theoretical analysis of corruption is to explain how such particular exchange reduces economic efficiency within the particular institutional framework.

In the second section we summarize the Chicago Public Choice theoretical arguments explaining effects of legal lobbying on economic efficiency. According to this theoretical framework, competing pressure groups might "bribe" politicians to induce them to create legislation that improves economic efficiency (Posner, 1974, Becker, 1983). This argument, however, assumes that politicians behave rather as *homo economicus*. Within the theoretical framework of Virginia Public Choice this assumption in essence means that benevolent despots are constrained by constitutions efficiently.

The third section explains Virginia Public Choice theoretical arguments. It argues that it is more realistic to assume that politicians behave as benevolent despots rather than *homo economicus*, because in the world where bureaucracy (Downs, 1968, Niskanen, 1968) provides public goods politicians and bureaucrats are not always constrained by constitutions efficiently. Moreover, it needs to be emphasized that bureaucrats also provide the rule of law inefficiently (Tullock, 1967, Krueger, 1974).

In the fourth section we explain a rent-seeking model with corruption when rent is endogenous (Lambsdorff, 2002). We argue that economic efficiency might be reduced significantly when there is a low number of pressure groups, bureaucrats included, competing for rents through lobbying and corruption. Endogenous bureaucratic rent-seeking can

⁴ Politician-bureaucrat represents the government, which consists of both politicians and bureaucrats.

serve as a principal explanation of negative effects of lobbying and corruption on the overall efficiency.

In the fifth section we support our theoretical arguments empirically with selected unique anecdotic evidence of bureaucratic corruption from the early period of transition in the Czech and Slovak Republics. The source of the presented evidence is mostly the Czech and Slovak newspapers which reported on political corruption. It builds on previous studies presented by Otáhal (2006b, 2007a). Early transition of Central and Eastern Europe might be referred to as a period of creation of new legislation within old bureaucratic practices when a lot of interest groups were able to compete for the creation of legislation. For this reason, we understand this time period in Central and Eastern Europe as quasi-experimental environment allowing relatively intensive competition among interest groups. The conclusions present a brief summary and suggestions for public policy.

1 Public Choice Economic Analysis of Corruption

Brennan and Buchanan (1977) inspire the theoretical analysis of corruption. They developed a Leviathan model of the budget-maximizing or revenue-maximizing politician-bureaucrat. Assuming that the budget-maximizing or revenue-maximizing politician-bureaucrat represents a monopoly in provision of public goods, they argued that while tax payers are not uniform, progressive taxation might lead to maximum revenue levied by the politician-bureaucrat. However, this only applies if it is efficiently set in constitution otherwise it creates the danger of undesired tax revenue extracted from tax payers. Later Brennan and Buchanan (1981) argued that the task of the *homo economicus* microeconomic assumption is to provide an *as if* condition for testing whether particular institutions serve to transform private interests into public interests. Thus, according to Brennan and Buchanan (1981), it is more realistic to assume that politician-bureaucrat behaves as a benevolent despot since if we assume that the politician-bureaucrat behave as *homo economicus*, we cannot present that political organization transforms private interests into public interests as efficiently as freely operating markets.

Per analogic, the difference between the behavior of *homo economicus* and corrupt behavior might be explained. Without the explanation of institutional conditions where corruption happens, the theoretical analysis of corruption would not make any sense because there would be no difference between *homo economicus's* behavior and corrupt behavior and thus no explanation how corruption influences overall economic efficiency (Otáhal, 2006a). This is also the reason why it is difficult to rigorously define what corruption is. Most scholars use the simplest example of bribery as an illustration of corrupt behavior (*i.e.* Shleifer and Vishney, 1993, Rothbard, 2001, 172). It is useful to define corruption as bribery, which is a voluntary exchange between economic agents, where a bribe is the price paid by an agent buying a particular service provided by another particular agent because this wider definition of corrupt behavior allows us to synthesize several theoretical approaches. The economic problem of corruption then arises from the fact that when we speak about corruption, we usually do not assume only two parties in the corrupted exchange, but also a third party, whose interest is harmed if the corrupt exchange takes place (Otáhal, 2007b, Colombatto, 2003). The question of theoretical analysis of corruption therefore is: What are the institutional conditions which transform private interests

of corrupt agents so that they harm third party's interest or, alternatively, public interest or the overall efficiency?

2 Chicago Public Choice Theory and Lobbying

In a theory referred to as the theory of regulation, the Chicago Public Choice presents the argument that the legal lobbying improves economic efficiency. The seminal paper on the theory of regulation is credited to Stigler (1971). He argues that the purpose of governmental control of economic organizations is not the protection of the public interest, but the protection of controlled economic organizations against competition. Stigler (1971) generally argues that: "...every industry or occupation that has enough political power to utilize the state will seek to control entry. In addition, the regulatory policy will often be fashioned to limit the rate of growth of new firms." (Stigler, 1971, p. 5)⁵

Peltzman (1976) follows Stigler and provides the general theoretical apparatus that applies to the economic analysis of the state protection. The process is effective because political agenda is not transparent, political issues in political campaigns are mixed and displeased voters are not motivated to spend resources for gathering information to oppose the interest groups.⁶ In the Peltzman's (1976) model, interest groups get their wealth transfer from voters through taxation.

In compliance with Stigler (1971) and Peltzman (1976), Posner (1974) argues that the source of regulatory inefficiency is the fact, that the regulatory agencies are not profit-seeking organizations. Since the regulatory agencies are bureaucratic organizations they are not interested in lowering costs.⁷ More importantly, the problem with regulation is that the regulatory agencies are not able to recognize the costs of the regulated industry. Inability of the regulatory agencies to overcome the information asymmetry incites the interest groups to pressure politicians to create new legislation in a nontransparent political process. Posner (1974) even suggests that the competition between interest groups can thus result in efficient regulation.

Later, Becker (1983) elaborates on Posner's suggestion about efficient regulation. Becker (1983) assumes that the outcome of political competition is the result of competition among interest groups, not the result of voters' decision-making. Becker (1983) in compliance with Peltzman (1976) explicitly argues that since the transfers from voters to interest groups through taxes create dead-weight loss, the interest groups will compete only if the outcome of the political competition brings them the rent that covers the costs of political competition and the dead-weight loss as well. Thus if dead-weight loss from taxation is too high, the interest groups will not be encouraged to enter political competition

5 Olson (1971) develops the interest group theory in which interest groups influence political decision making independently on voters' preferences. Stigler (1971) uses a similar assumption.

6 This proposition is similar to Virginia Public Choice proposition referred to as rational ignorance (Buchanan and Tullock, 1967, chap. 4).

7 Rigorous theory of revenue maximizing bureaucrat is credited to Virginia Public Choice (Downs, 1965, Niskanen, 1968).

because the transfer will not cover losses. On the other hand, if the taxation from other interest groups covers too high dead-weight loss, the other interest groups will invest resources into changing the regulation. Thus the competition between interest groups reduces the dead-weight loss. From the perspective of the politicians' decision making, interest groups whose dead-weight loss is covered by taxation raise b to incite the politicians to create efficient regulation. From Beckers' (1983) perspective corruption leads to efficient regulation and thus improves overall economic efficiency.⁸

3 Virginia Public Choice Theory and Corruption

The Chicago Public Choice theory suggests that legal lobbying might improve overall economic efficiency. From the perspective of the Public Choice analytical apparatus this conclusion, however, represents the case when the politician-bureaucrat behaves as a *homo economicus* rather than a benevolent despot. Nevertheless, political organization is not a market therefore the exchange behavior similarly to lobbying ought to have less than efficient results within political organization.

From the perspective of the Virginia Public Choice theory, the Chicago Public Choice conclusion is not realistic because the behavior of the politician-bureaucrats is not, in reality, efficiently constrained by constitutions. As Becker (1983) explicitly says: "Groups compete within the context of rules that translate expenditures on political pressure into political influence and access to political resources. These rules may be embodied in political constitutions and other political procedures, including perhaps 'rules' about the use of force to seize power" (Becker, 1983, p. 374). Within the assumption of an efficiently constrained politician-bureaucrat Gary Becker's conclusion that legal lobbying improves the overall efficiency is valid, but there must be no space for illegal corruption which exists in the most political systems in the world, therefore the Virginia Public Choice theory raises another question of theoretical analysis of corruption: How does corruption reduce overall efficiency?

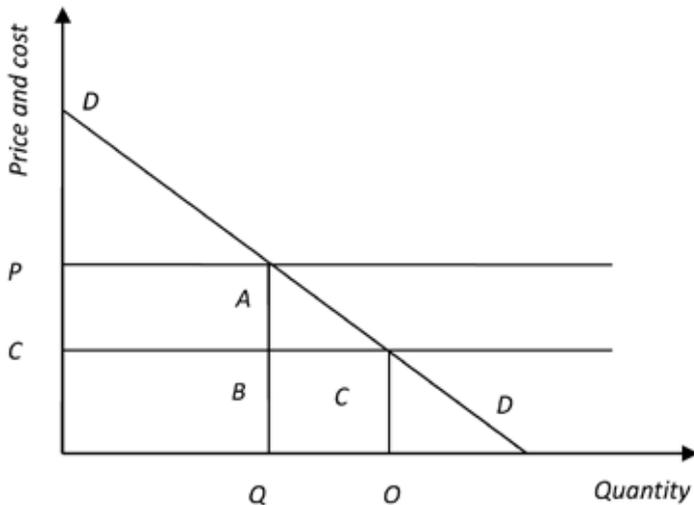
Brennan and Buchanan (1977, 1981) suggest that a benevolent despot⁹ might impose tax on private agents undesirably. Such undesirable taxation induces bureaucracies, which maximize revenues to extract undesired taxation from politicians.¹⁰ Therefore, both, the tendency of politicians to tax private agents undesirably and the tendency of bureaucracies to extract undesired taxation from politicians, represent rent-seeking. According to the Virginia Public Choice school of thought, rent-seeking is the reason for the rule of law (Tullock, 1996) and it is also the explanation of negative effects of corruption on the overall efficiency. Let us therefore explain how corruption reduces economic efficiency within a rent-seeking model.

⁸ This approach is highly criticized by Olson (1996).

⁹ This approach was more examined by Olson (1993), McGuire and Olson (1996), North and Wallis and Weingast (2009).

¹⁰ Here, we assume that a government consisting of politicians and bureaucrats is divided between both politicians and bureaucrats. This approach is typical for Virginia Public Choice that models behavior of both politicians (political parties) and bureaucrats. Politician-bureaucrats representing politicians and bureaucrats together is a typical proposition for Chicago Public Choice.

Figure 1: Rent-seeking



Source: Tullock (1967)

Figure 1 presents the classical rent-seeking diagram. Let us assume that in a competitive market a product for which there is a demand D can be produced at cost C . Quantity O would thus be produced at price C . Let us suppose, however, that it is possible for politicians to change the regulations in exchange for bribes so that they protect pressure group's production against competition. According to the theory of monopoly (Varian, 1995, chap. 23), the area of triangle ABC is a death-weight loss (DWL), but rent-seeking theory (Tullock, 1967, Krueger, 1974)¹¹ maintains this is an underestimation of true costs. Since inducing the politicians to change the regulations and changing the regulation itself is costly, rectangle $PCBA$ might be counted as the costs of monopoly. Interest groups and politicians might invest resources into changing the regulations until the present discounted value of invested resources equals the present discounted value of the monopoly, taking risk into account as well. The rent-seeking theory thus suggests that the waste of monopoly might be much greater ($PCBA$) than explained by the standard theory of monopoly.¹² However, modern governmental agencies use bureaucracies to change, control and enforce regulation.¹³ To be more precise, let us therefore include bureaucracy in the general rent-seeking model.

Downs (1965) defines bureaucracy as a relatively large organization, which is unable to objectively measure its profitability. Niskanen (1968) developed a theory of similarly de-

¹¹ For the dynamic rent-seeking theory see Buchanan (1980).

¹² For negative consequences of rent-seeking on economic growth see Murphy and Shleifer and Vishny (1993).

¹³ Stigler (1976) suggests that even the process of electing politicians might be ruled by bureaucracy.

financed bureaucracy.¹⁴ According to Niskanen (1968), bureaucracy might influence politicians' decision-making as a relatively strong interest group. Politicians provide taxation to fund bureaucracy and bureaucracy maximize the budget funded by taxation. In this model, Niskanen (1968) argues that since politicians' perception of efficiency of bureaucracy is limited, bureaucracy might raise budget so that it is above efficient provision of public goods.

Let us assume that politicians' perception of efficient provision of public goods is equal to:

$$B = B(Q), B' > 0, B'' < 0 \quad (1)$$

Bureaucracy buys resources in competitive market, thus its cost function is similar to firm's cost function:

$$C = C(Q), C' > 0, C'' > 0 \quad (2)$$

Since politicians' perceptions of efficiency of bureaucracy are limited, only bureaucracy knows its cost function. Politicians perceive only total output or total costs of bureaucracy. This makes bureaucracy a relatively strong interest group.

14 *Chicago Public Choice* (i.e. McChesney, 1987) does not assume bureaucracy as an independent interest group, but rather an organization of value maximizing agents. This assumption, however, misses principal difference between a bureaucratic management and a management of private organizations.

Downs (1965) characterizes a bureaucratic management as follows. "An organization is a bureau if and only if it possesses the following four primary characteristics:

1. It is large; that is, the highest ranking members know less than half of all the members personally.
2. A majority of its members are full-time workers who depend upon their employment in the organization for most of their income.
3. The initial hiring of personnel, their promotion within the organization, and their retention therein are at least theoretically based upon some type of assessment of the way in which they have performed or can be expected to perform their organizational roles rather than upon either ascribed characteristics (such as religion, race, or social class) or periodic election by some outside constituency.
4. The major portion of its output is not directly or indirectly evaluated in any markets external to the organization by means of voluntary quid pro quo transactions." (Downs, 1965, p.p. 439 - 440)

Niskanen (1968) characterizes bureaucracy as follows: "The model outlined in this section [bureaucracy model] is based on the following two critical characteristics of bureau: (1) Bureaucrats maximize the total budget of their bureau, given demand and cost conditions, subject to the constraint that the budget must be equal to or greater than the minimum total costs at the equilibrium output. (2) Bureaus exchange a specific output (or combination of outputs) for a specific budget. For this paper, thus, bureaus are defined by these two characteristics." (Niskanen, 1968, p. 293)

Crucial implication of both characteristics of bureaucracy is according to Niskanen (1968) following: "A careful analysis would indicate that the same output could be achieved at a lower budget, but the analyst should expect no cooperation from the bureau since it has no incentive to either know or reveal its minimum cost function." (Niskanen, 1968, p. 296)

This implication suggests that a bureaucratic management faces different incentives in comparison with private firms. Predecessor of this approach was Mises (2002) who argues that bureaucracy is principally inefficient.

Let us assume that bureaucracy does not turn funds back to the politicians. In this case equality might be set up as bureaucracy's objective function.

$$O_b = B(Q) + \lambda (B(Q) - C(Q)) \quad (3)$$

Let us derive first-order conditions

$$B'(Q) = \frac{\lambda}{1 + \lambda} C'(Q) \quad (4)$$

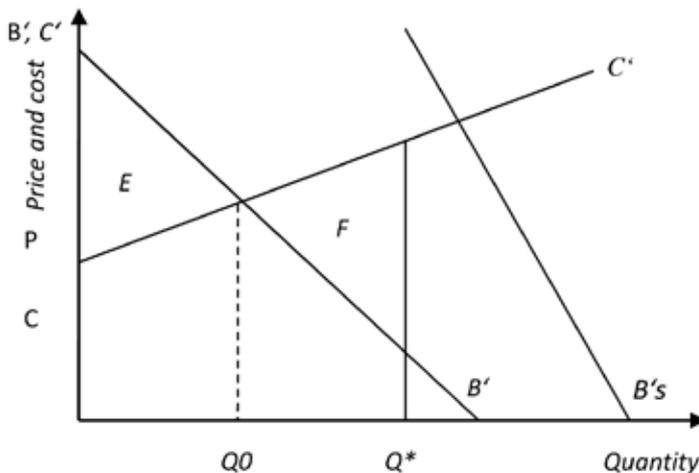
$$B(Q) = C(Q) \quad (5)$$

Nevertheless, efficient provision of public goods suggests that marginal public benefits of extra unit of bureaucracy's output are equal to marginal costs.

$$B'(Q) = C'(Q) \quad (6)$$

In equation (4), the Lagrangian multiplier represents the marginal utility of an extension of the bureaucracy's budget constraint. Since the Lagrangian multiplier is a positive number, the equation (4) implies $B' < C'$. Then the marginal public benefits of extra unit of bureaucracy's output are lower than marginal costs and bureaucracy's provision of public goods. This condition derived from equation (4) does not correspond with the condition of efficient provision of public goods in equation (6). For this reason, the provision of public goods by bureaucracy is inefficient.

Figure 2: Bureaucratic inefficiency



Source: Niskanen (1968)

Figure 2 shows a diagram of bureaucratic inefficiency. Niskanen (1968, p. 75) assumes that B and C are quadratic functions, thus B' and C' are linear functions. According to the politicians' perception of efficient provision of public goods, the bureaucracy is sup-

posed to extract funds for provision of Q_0 . Nevertheless, since the politicians' perception of bureaucracy's costs C' is limited and bureaucracy is a relatively strong interest group, it might request funds for provision of Q^* public goods. With the provision of Q^* public goods, bureaucracy receives consumer surplus of triangle E , which is equal to triangle F . Bureaucracy thus might invest resources into requesting F until the present discounted value of invested resources equals the present discounted value of the bureaucracy, taking risk into account. Thus, if corruption induces politicians to rent-seeking and politicians use bureaucracy to change, control and enforce regulations, the waste of politicians' rent-seeking is even greater.

Let us briefly summarize. According to the Virginia Public Choice analytical apparatus, benevolent despots might change regulations so that they protect pressure group's production against competition in exchange for bribes and thus waste resources on changing the regulations. Nevertheless, in reality, regulations are changed, controlled and enforced by inefficient bureaucracies. Therefore politicians' attempts to change the regulations in exchange for bribes are even more wasteful. This denies the Chicago Public Choice assumption of politicians behaving as *homo economicus*, because it suggests that when politicians are corrupt they are wasteful in order to cover their rent-seeking and bureaucratic rent-seeking costs by undesired taxation.

4 A Rent-seeking Model with Corruption When Rent is Endogenous

Previous arguments of the Virginia Public Choice proponents were based on the assumption that rent is exogenously given. In this section, let us introduce endogenous rent (Lambsdorff, 2002) into the general rent-seeking model (Mueller, 2009, chap. 15).

Let us assume that the probability that any interest group extracts the rent is assumed to be proportional to the interest groups' investment,

$$\pi_i(l_i) = \frac{f_i(l_i)}{\sum_{j=1}^n f_j(l_j)} \quad (1)$$

where $\partial \pi_i / \partial l_i > 0$. Investment in rent-seeking might exhibit constant returns as $\partial^2 \pi_i / \partial^2 l_i = 0$. Now, let us assume that investment in rent-seeking l with constant returns might be rewritten as $f_i(l_i) = l_i$.

Under the assumption that all rent-seekers are risk-neutral, each chooses a value of l that maximizes interest groups' expected gain $E(G)$.

$$E(G) = \left(\frac{l}{l+T} \right) R - l \quad (2)$$

where T is the impact of the total investment of the other $n-1$ rent seekers, $T = \sum_{i \neq j} l_j$

and R is rent. Under the Cournot-Nash assumption that the other rent-seekers' investment remains fixed, the first order condition from equation (2) can be derived.

$$I = \frac{(n-1)}{n^2} R \frac{R}{I+T} - \frac{IR}{(I+T)^2} - 1 = 0 \quad (3)$$

If we assume a symmetric equilibrium, from equation (2), we get

$$I = \frac{(n-1)}{n^2} R \quad (4)$$

Interpretation of the basic rent-seeking model (Mueller 2009, chap. 15) is the following. Risk-neutral interest groups invest I given in equation (4), as long as this I , when substituted into equation (2), yields non-negative expected gain. The basic rent-seeking model (Mueller 2009, chap. 15), however, assumes that rent R is given exogenously. Under the assumption of an endogenous rent (Lambsdorff, 2002), the basic rent-seeking model is more in compliance with our argumentation. Since real benevolent despots are not constrained by constitutions efficiently, they might impose taxes on private agents undesirably and thus create rents endogenously.

To explain this theoretically, let us assume that the size of the rent R is positively dependent on total rent-seeking investments $I = \sum_{i \neq j} I_i + \sum_{i=j} I_j$. Then $R = R(I)$, with $R' > 0$. This as-

sumption also corresponds with our argument that in the world where bureaucracies provide public goods, the rule of law included, benevolent despots are furthermore incited to tax private agents undesirably to cover the bureaucratic inefficiencies. In our model, undesired tax presents a rent for the benevolent despots through which they also fund bureaucracies. Consequently, equation (2) might be rewritten.

$$E(G) = \left(\frac{I}{I+T} \right) R(I+T) - I \quad (2')$$

under the same assumptions, we can also rewrite the first order condition derived from equation (2').

$$\frac{R'I}{I+T} + \frac{R}{I+T} - \frac{IR}{(I+T)^2} - 1 = 0 \quad (3')$$

Assuming a symmetric equilibrium, from equation (2'), we get

$$I = \frac{(n-1)}{n(n-R')} R \quad (4')$$

Interpretation of equation (4') is that if R is larger (smaller) than 1 and I is larger (smaller) than R . an increase in the number of competitors n will decrease (increase) the total expenses for rent-seeking. In other words, with the assumption that politicians behave as benevolent despots, this model proves that in the case of a low number of interest groups engaging in corruption and lobbying, rent-seeking competition through corruption and

lobbying reduces overall economic efficiency. This implication theoretically corresponds with a situation, where the rent is provided to a low number of interest groups with strong negotiating power – typically bureaucracies.¹⁵

There are regional empirical studies supporting our argument with respect to corruption (i.e. Hanousek and Kočenda, 2011). Nevertheless, this kind of studies supports our argument rather through investigation of relations among variables than through illustration of endogenous emergence of corrupt organizations. To fill this gap in recent empirical research let us illustrate this implication using a specific example. In Central and Eastern Europe after the collapse of the communist regime, a lot of interest groups were able to compete for the creation of legislation. However, in this period of replacement of old politicians by new ones, old bureaucracies remained relatively unchanged. Early transition of Central and Eastern Europe thus might be referred to as a period of creation of new legislation within old bureaucratic practices. According to some literature, even though this period was a period of increased activity of interest groups which led to corruption and lobbying, efficient regulation was not set up. For instance, Johnson et al (2000) argue that the so-called “tunnelling” was the result of weak political institutions, especially their inability to set and enforce an efficient legislative framework. Cull, Matesová and Shirley (2002) argue that inefficient law enforcement and inefficient regulations resulted in the problems of looting or asset-stripping.

Corrupt practices like theft, “tunnelling” and asset stripping provided evidence that old bureaucracies participated on rents provided by earlier communist politicians. Communist politicians respected bureaucratic’ claims on rents (Levy, 1990, Shleifer and Vishny, 1992, Anderson and Boettke, 1997) As a result, later, when communist politicians were replaced, privatization of the state ownership officially targeted to general public led to the legalization of communist bureaucratic claims for rents in most cases. Bureaucrats were a strong interest group in the privatization process, therefore “tunnelling” and asset stripping together with other corrupt practices prevailed over the establishment of efficient legislation and regulation, i. e. efficient rule of law.

5 Selected Anecdotic Evidence of Bureaucratic Corruption in the Czech and Slovak Republics

To support our theoretical arguments empirically, let us present selected unique anecdotic evidence of bureaucratic corruption from the early period of transition in the Czech and Slovak Republics. The reason for choice of relatively “old” historical examples was that this period in the history of the Czech and Slovak Republics is revolutionary with respect to construction of legal system. Even though the legal system in the Czech and Slovak Republics is changing such deep change was not repeated yet. The source of the presented evidence is mostly the Czech and Slovak newspapers which reported on political corruption. We believe that despite of newspapers’ commercial bias, some publicly presented

15 In Virginia Public Choice framework the higher number of competitors for privileges lowers inefficiency of the system.

cases of bureaucratic corruption in the transition period of the Czech and Slovak Republics can provide clear and realistic illumination of the modelled political process.

The even more negative perception of corruption in the Czech Republic was greatly affected by the scandal of Jaroslav Lizner and Viktor Kožený. Jaroslav Lizner was convicted of abusing the authority of a public official in connection with the privatization of the Klatovy dairy (KD). A tender for a 34% share in KD during the second wave of the voucher privatization was cancelled in July 1994 by Minister Karel Dyba, because of doubts about the negotiation process with the winning company Trans World International (TWI). A representative of TWI, Luboš Sotona passed on a suitcase planted by the police to Lizner on April 31st 1994, containing 8,334,500 Czech crowns (Reed, 1996, p. 225). Jaroslav Lizner, as the former head of the centre for the voucher privatization, former head of the central registry of securities and the member of the securities commission, was the only high-ranking public official responsible for the voucher privatization, who was sentenced to 6 years in prison.¹⁶ In 2004 he requested the reopening of the case, however this request was denied.

The name of Viktor Kožený stirred emotions in most Czech citizens, which often led to the condemnation of the privatization process based on the role of corruption in it. Viktor Kožený, the founder of the Harvard Company and Consulting (HC&C), became the owner of several important Czech companies after the first wave of the voucher privatization. During the year 1992, on eight occasions, he met with a former agent of the communist secret police and later with an employee of FBIS (the Federal security and information service), Václav Wallis. Reportedly, Kožený bought information from Wallis for about half a million crowns. In March 1994, Wallis was found guilty and sentenced to 37 months in prison. Subsequently, however, he was acquitted of any wrongdoing, because the alleged deal could not be proved.¹⁷

A subsequent anti-corruption program "clean hands", which was part of the anti-corruption initiative in 1998, was a specific answer of the Zeman government to the deteriorating perception of corruption linked to the privatization process in the Czech Republic. Based on this resolution, the government created an interdepartmental committee for the protection of economic interests. It was chaired by Stanislav Gross with a mandate to battle economic criminality and corruption. The committee was dissolved in the spring of 2000. According to a report by the European commission from the year 2000 (EC, 2000), the institutions created under this initiative prepared 209 cases to be prosecuted, only 70 of which were investigated by the police. 18 cases were cancelled, 10 were closed and only 6 made it to the court.

¹⁶ Lizner rejected the accusations, reasoning that "the costs associated with a privatization project are always a subject for discussion influenced by one's political views" (Reed, 1996, p. 224).

¹⁷ Václav Klaus declared: "I regard as completely absurd the idea that Mr. Kožený wanted to buy information of this type. The playing of this card is an ideological attack on the transformation of Czech Republic and an evil ideological attack on one of the foundations of the transformation process, that is, privatization." (Reed, 1996, p. 231)

Another scandal involving a high ranking official in the Czech Republic was the “Srba” case. This case illustrates the connections of high ranking state officials and organized crime. Karel Srba allegedly traded without a mandate with the privileges for construction and reconstruction of governmental buildings, both at home and abroad. For example, according to the investigators, the company that was reconstructing the embassy in Zagreb (Block), paid Srba a five million crown bribe. “This amount was found in the car of Srba upon his arrest. The ex-secretary of the Ministry of Foreign Affairs of the Czech Republic defended himself, claiming that Jiří Sitár from Block only left the money for safekeeping” (Hospodářské noviny, 26th June, 2003). Srba was sentenced to eight years in prison not for corruption but for an attempt to murder a journalist Sabina Slonková. She presented a series of articles about the reconstruction of the Czech House in Moscow, managed by Srba, with unnecessary expenses for the state. Later, other corruption cases involving Srba emerged. However, none of the cases of corruption were proved, therefore he was cleared of all corruption charges. Jan Kavan, the head of the Ministry of Foreign Affairs, resigned because he appointed Srba in 1998 to paradoxically guarantee the “clean hands” program of the Zeman government.

In Slovakia, the privatization process after 1993 was even more under political control. After the division of the Czech and Slovak Federative Republic, the Slovak government abandoned the route of voucher privatization and embarked on the road of direct sales. The higher discretionary decision power and more space for corruption was probably the ultimate motivation for the abandonment of the voucher privatization process managed by a system of automatic auctions (Tříška, 2002). Clearly, the Slovak political elite was exposed to pressure directly calling for unfair advantages, something considered non-standard in a democracy by foreign observers. Thus, the Slovak privatization process illustrates not only the bureaucratic corruption mode of privatization, but also the behavior of politicians as benevolent despots.

According to the daily newspaper *Hospodářské noviny* (30th September, 2002), the HZDS (Movement for Democratic Slovakia) representatives originally without any considerable assets, must have obtained most of the wealth from bribes and non-transparent privatization, since it could not be afforded from their official salaries. However, this will be ever harder to prove, since the only way to find the origins of their fortune would be to get official declarations of personal assets of the people involved. However, there was no such law in effect in Slovakia between 1990 and 1998.

The OECD report from the year 1999 (OECD, 1998, p. 101) highlights the lack of transparency using the example of Slovnaft, the Slovak refinery, which was sold to an unknown company Colorin for 620 million Slovak crowns. The Fund of National Assets did not provide any specific information to the shareholders of the company during a general shareholder meeting shortly before the privatization.

At this point it is important to mention Ján Ducký. He was an interesting person, who later became publicly known. He was the former secretary of the Minister of Interior in the communist government and a minister in three Slovak governments, including the first transformational government. He allegedly lobbied for the Slovak entrepreneurs which he had known during the communist years who acquired wealth suspiciously eas-

ily (Schutz, 1999). During the years when Jan Ducký was the Minister of Economy, another company, Nafta Gbely was controversially privatized. He publicly denied any connections, even though he directly supervised the privatization process. The lucrative business was purchased by a company called Druhá obchodná with anonymous owners residing in an abandoned house in Bratislava suburbs. Nafta, originally being on a list of strategic companies not-to-be privatized at all, was sold for 500 million Slovak crowns, while its market capitalization was 3.2 billion Slovak crowns (Žitňanský, 2001). Later it turned out that Nafta Gbely belonged to the regional chairman of HZDS in Trnava and a former waiter Vladimír Poór. In 1996 Ducký was dismissed from the ministry for embezzling billions of crowns in revenues from the Slovak state treasury by issuing illegal export licenses to several businessmen.

Jan Ducký, the former secretary of a communist ministry, minister in three HZDS governments and the manager of the profitable Slovak Gas Company was found murdered in January 1999.

The most bizarre event demonstrating the political practices during the HZDS government was the abduction of Michal Kováč, the son of the Slovak president at that time. In 1995, he was transferred to Austria against his will. This operation was led by Ivan Lexa, the former head of the Slovak Intelligence Service (SIS) during the years 1994-1998. Lexa was accused of organizing the abduction and investigated, however after a direct order of the Prime Minister Mečiar he was subject to amnesty in 1998. According to The Economist (2002), it was Lexa who was responsible for the execution of dirty political tasks initiated by the prime minister.

In 1998 the investigations of Lexa were reopened by the order of the new Prime Minister Mikuláš Dzurinda. In March 1999, at that time the member of parliament, Lexa faced three charges: i) abuse of power as a state official, ii) abduction of a Slovak citizen abroad and iii) robbery. The Slovak National Council stripped Lexa of his immunity. This could have been done only after the mandate and immunity commissions of the Slovak National Council agreed with prosecution of Lexa for the abuse of power as a state official in November 1999 and Lexa spent a few months in prison.

In May 2000, despite the ban on leaving the country, even with a diplomatic passport, Lexa left Slovakia. "In fact, he was sunning himself at Umhlanga Rocks, a beach resort just north of Durban in South Africa, from a hotel owned by, guess who, his former secretary, who slipped the country around the same time as her boss, telling her mother she was off to Australia to learn English." (The Economist, 2002).

According to The Economist (2002), most of the fortune of Lexa and other accomplices of Mečiar was stolen from the state. In June 2006, after lack of sufficient evidence to convict Lexa, Vladimír Mečiar supported his rehabilitation in the Slovak National Council.

Conclusions

In this paper, we surveyed the theoretical discourse between the proponents of the Chicago Public Choice theory and the Virginia Public Choice school of thought on the

relationship between corruption and economic efficiency. We explained that while the Chicago Public Choice theory admits that legal lobbying might improve the efficiency of the rule of law and consequently also the economic efficiency, the Virginia Public Choice theory maintains that corruption and lobbying induces politicians and bureaucrats to rent-seeking behavior and thus reduces the overall economic efficiency. We argued that the Virginia Public Choice theory argument is more realistic because it does not ignore the effect of bureaucratic rent-seeking.

We explained the rent-seeking theory and bureaucracy theory using a theoretical model to present how corruption reduces efficiency. Our model suggests that in the world where public goods including the rule of law are provided by bureaucrats, their provision must be inefficient and thus funded from undesired taxation imposed by politicians behaving as benevolent despots. To illustrate our argumentation, we have proposed an advanced rent-seeking model with endogenous rent, implying that even though there is a low number of interest groups including bureaucrats competing for rents, economic efficiency is reduced. To support this conclusion empirically, we have added a short literature survey of experiences with the establishment of the rule of law in the early stage of transition in Central and Eastern Europe. We have chosen this example as experimental evidence allowing relatively free legal and illegal competition among interest groups. Our quasi-experimental anecdotic evidence illuminates the reality of privatization process in the Czech and Slovak Republic. It shows that the reality of relatively intensive competition among interest groups was closely connected with bureaucratic rent-seeking, which is principally inefficient.

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Contact address

Ing. Ladislava Grochová, Ph.D.

Department of Economics, FBE MENDELU in Brno
(ladislava.grochova@mendelu.cz)

Ing. Tomáš Otáhal (corresponding)

Department of Economics, FBE MENDELU in Brno
(tomas.otahal@mendelu.cz)

Generating Social Innovations: Some Recent Experience from Abroad

Inovace ve společenské sféře: některé zkušenosti ze zahraničí

IRENA JINDŘICHOVSKÁ

Abstract

Innovation is without doubts one of the key production factors. The aim of this paper is to analyze the recent development in the field of social innovation and, more importantly the practical impact of this concept to society. As we may observe, currently, the cheap and highly developed information technology in our open society is readily available to broad population. It is, therefore, ready to be used in both technical and social fields. The easiness with which the technology is now used may bring in some social patterns that are reflecting in communication and human conduct. Many developed countries have nowadays problems of funding the essential public needs like running public services or building necessary infrastructure. After touching on the concept of public private partnership and its feasibility our paper deals with explanation of the new notions: the Big Society recently introduced in the UK and Collective impact developed in the US. We also look in their impact on creating opportunities for authorized and legal reduction of services to citizens in some developed countries.

Keywords

innovation, open innovation, social innovation, Big Society, collective impact

JEL Codes

O31; O33; O38

Abstrakt

Inovace jsou nyní bezpochyby jeden z nejdůležitějších produkčních faktorů. Cílem tohoto článku je analýza vývoje na poli sociálních inovací a jejich praktického dopadu ve společnosti. Levná a vysoce kvalitní informační technologie je v dnešní otevřené společnosti široce dostupná. Proto je možné ji využívat jak v technických oborech, tak i v oblasti společenských potřeb. Dostupnost, s jakou se informační technologie nyní využívá, vytváří určité vzorce chování, které se odrážejí v komunikaci a ve společenském chování. Mnoho rozvinutých zemí má v současné době problémy s financováním společenských potřeb, jako jsou veřejné služby nebo budování infrastruktury. Tento článek nejprve vysvětluje koncept veřejno-soukromé partnerství (public private partnership) a hodnotí jeho účinnost a potom vysvětluje nové koncepce: britský projekt „the Big Society“ a americký projekt „Collective impact“. Tyto koncepce jsou hodnoceny z hlediska jejich účinnosti a dopadu na snižování výdajů na veřejné služby ve vyspělých státech.

Klíčová slova

inovace, otevřené inovace, společenské inovace, Big Society, collective impact

Introduction

As the basic production factors defined in classical political economy (Marx, Ricardo, Smith) are capital, labour, land and entrepreneurship (eg. Sojka, 2010). These factors enable individuals or companies to produce goods and provide services. Entrepreneurship is often interpreted as the driving force – innovation, most often understood as technological innovation. The aim of this article is to present the concept of social innovation in its current practical form and assess the implication to the general public.

Innovations are the key drivers in any developed country and nowadays even in less developed economies. These days, innovation and effectiveness became important survival conditions of future existence of every company. The main reason is that a timely implementation of innovations helps the country to reach the necessary competitive advantage and create economic strength in today's demanding international competition. A vast number of innovations are generated by private sector but due to the high start-up costs this activity is much more difficult these days without an appropriate access to funding. This is the reason why many states formulate their own pro-innovative strategies to promote so useful and fruitful activity.

The main hypothesis of this article is that although active dissemination of innovation spreads quickly to society and thus it can bring positive social values to all members. However, mechanical repetition of use of initially innovative ideas through certain cost saving governmental initiatives may bring unintended damage.

Before we approach this discussion on innovation and competition, we need to highlight that an important underlying presumption of this discourse is that more innovation is good for society because innovation is undoubtedly one of the key determinants of the welfare of humankind (Baker, 2007, p. 4). In addition, the benefits of innovation to society as a whole greatly exceed the benefits to those firms that originally develop particular innovation.

Competition brings in efficiency and forces price to converge to marginal cost. Technological innovations are crucial for further advances as well as for simple reproduction and development of human society. We can often see an argument that the primary generation of innovative ideas and patents remains in the domain of small and medium sized enterprises (SMEs), however elsewhere we have seen an argument that it is easier for big successful firms to explain to the suppliers of financial capital why their own research and development projects have selling potential (Schumpeter, 1934).

Each firm needs to react to competition. The result of competition is cheaper and better produce and/or more efficient organization of production. Competition is good because it leads firms to make more and/or higher quality goods and sell them for less. A firm can reduce its price after a close rival cuts price – so can be expected to lower price for final consumers in response. Or the firm can attract buyers by making improvements in product attributes closely related to price and add value for by consumers, like providing more rapid delivery, offering higher quality product, offering more colours or styles or other

additions to product variety, or by providing additional post-sale services. It can also alter its financial conditions.

There is distinction between so called *static* and *dynamic competition*. Firm dynamics during their life cycle make an integral part of dynamic competition. Dynamic competition selects out less efficient firms from more efficient ones and reallocates productive resources. New features of dynamic competition (or, competition between different systems to become the recognized standard in a market based on new technology) raise new challenges to policymakers. Policymakers should aim at insuring dynamic efficiency, rather than just static one at present (Ahn, 2002, p. 8).

With increasing globalization more contemporary thoughts on innovation are also pointing out the fact that there is significant shift in 'value proposition' or how innovations (especially those from product area) are perceived by customers. In the past the innovation usually meant delivery of better product that somehow naturally costs more, but nowadays in most cases it means to deliver better and usually also cheaper product. Value proposition is one of the core ideas of modern organization of production technology. It describes how much value the customer can expect from the goods or service. This concept is relevant today in the era of globalization and cost cutting justified by economic crisis, even though the original ideas of 'better and cheaper' product, better organization of work and improvement in production technology started with Japanese miracle during the period of record economic growth following the World War II.

With cheap and generally available communication technology the innovation spreads out in the community and resonates as a rapidly growing social innovation. Innovation potential of social networks is being explored and various social networks are spontaneously emerging to connect professionals with their customers to bring social innovation to diverse groups. This enables rapid dissemination of innovation to society as a whole. This again corresponds with the general idea of open innovation introduced in technology as classified by Erich von Hippel (Baker, 2011).

1 Definition of Innovation

The exact notion of innovation is not unambiguous. "A plethora of definitions for innovation types has resulted in an ambiguity in the way the terms 'innovation' and 'innovativeness' are operationalized and utilized in the new product development literature. The terms radical, really-new, incremental and discontinuous are used ubiquitously to identify innovations. One must question, what is the difference between these different classifications?" (Garcia, Calantone, 2002, p. 110).

From another standpoint the innovations are understood as not only a new product or service offered to customer. The classification is broader and the degree of innovation also depends on particular discipline.

Table 1.1: Generic classification of innovation in a knowledge creation perspective

	Knowledge creation	
Market knowledge	Tacit knowledge Socialization and externalization (Exploration)	Explicit knowledge Combination and internalization (Exploitation)
New market knowledge	Architectural innovation Radical innovation Major product/service innovation Radical innovation	Niche innovation Modular innovation Architectural innovation Market breakthrough
Existing market knowledge	Revolutionary innovation Architectural innovation Major process innovation Technological breakthrough	Regular innovation Incremental innovation Incremental product, service, process innovation Incremental innovation

Source: Popadiuk, Wei Choo (2006).

When we speak about social innovations on a company level we are usually concerned with accountability of managers and with corporate social responsibility. This is customary understanding of corporate ethics and corporate governance – referring managers' behaviour to some criteria of good conduct and acceptable performance. On the level of the whole society decision makers and innovators strive for better organisation and more efficient and ethical use of limited resources. To illustrate, nowadays, frequently even municipalities and town authorities call themselves 'information mediators' enabling communication between citizens, thus relying on their own "clients" to provide correct information to neighbours and fellow citizens. Is this still an innovation? The main hypothesis of our paper is that due to active dissemination innovation nowadays spreads quickly to all corners of community and as such it can bring positive social values to all members. On the other hand, mere mechanical repetition of use of initially innovative ideas through some cost saving governmental initiatives could initiate deterioration.

2 Innovation, Business Ethic and Sustainability

As for the ethical aspects, firstly, the major interest has came up from the area of *role of business in society* – social theory that originated in the middle of the 20th century together with concepts of environmental reporting and sustainability.

The basic model of role of business in society was inspired by several streams of thinking: sociology, political economy, theory of organization and role of business in society. Seminal work in the area of sustainable development of ever rowing population was the book of Donnella Meadows *The Limits to Growth* (1972)¹. Her work was the first warning piece on the sustainability of increasingly growing population on the planet. The area of

¹ On Club of Rome, see <http://www.clubofrome.org/eng/about/1/> [consulted on 15. 10. 2011].

The main objectives of *Social Innovation Europe* are:

- connecting projects and people who can share experiences and learn from each other;
- developing an easily accessible resource bank – to be able to find about other projects, organisations and ways of working;
- developing a resource bank of up to date policies at local and national levels and provide information on funding opportunities;
- facilitating new relationships between civil society, governments, public sector institutions and relevant private sector bodies;
- developing concrete recommendations in financing and in up scaling/mainstreaming of social innovation in Europe.

All innovations are relevant nowadays, especially taking into consideration the context of globalization, where innovations of all kinds have a powerful impact on society, whether we are referring to civil society, public administration, or professional associations. Certain authors particularly acknowledge the relevance of social innovations that, at present and in the future, will become indispensable (Hochgerner, 2011). "A social innovation is new combination and/or new configuration of social practices in certain areas of action or social contexts prompted by certain actors or constellations of actors in an intentional targeted manner with the goal of better satisfying or answering needs and problems than is possible on the basis of established practices." (Howaldt, Schwarz, 2010, p. 4)

The UK's *National Endowment for Science, Technology and the Arts* (NESTA) views the concept of social innovation in relation to the sources and purpose of social innovation. Social innovation may come from the private market, public sector, third sector or household.

According to the *Forum on Social Innovations*, 'Social innovation' seeks new answers to social problems by:

- identifying and delivering new services that improve the quality of life of individuals and communities;
- identifying and implementing new labour market integration processes, new competencies, new jobs, and new forms of participation, as diverse elements that each contribute to improving the position of individuals in the workforce.

From this perspective, social innovation is seen as a means to provide solutions for individual and community problems. It is equally important to identify factors that support social innovation in various areas of the society. In business for example, the key factors that are able to drive social innovation relate to competition, open cultures and accessible capital (Mulgan et al., 2007).

However, not enough attention is paid to social innovation as a lot of money is spent by business on innovation to meet both real and imagined consumer demands and far less money is spent by governments or NGO's or foundations to more systematically develop innovative solutions to common needs. It is therefore important to address the conditions for social innovation.

A 2009 report on social innovation *in Canada* shows that while governments in Canada have acknowledged the importance of social capital and the social economy and have been quite active in those areas in recent years, the country has not yet adopted broader models for public support, funding, and encouragement of social innovation as has been done in other countries, such as Australia, United Kingdom as well as the USA. According to the recommendations provided, Canada needs a strategy for advancing social innovation and a thorough examination of certain areas such as cross-sectoral strategies and relationships; social financing; funding models and mechanisms; governance issues; and accountability and evaluation in the social innovation field (Goldenberg et al., 2009).

Australia has been experiencing continuously-growing investment in innovation activities directed towards social outcomes (Australian Innovation System Report, 2011). In what concerns the source of social innovation, emphasis has traditionally been placed on the private non-profit sector. However, it is now understood that social innovation can happen in all sectors, including households. Public sector, for-profit and non-profit organisations can drive social innovation, which can be exchanged between sectors.

In Australia, various initiatives have been put forward to support social innovation, such as Social Enterprises Development and Investment Funds (SEDIF), Community Development Finance Institutions (CDFI) Pilot, or SA Government Integrated Design Commission.

At the moment the *European Union* is fully acknowledging the importance of social innovation in creating a dynamic and innovative new Europe. At the same time, it is relevant to shift our attention to the existing barriers that are hindering the development of social innovation. According to an external study commissioned by BEPA, one of the critical areas is represented by Europe's finance systems that are not well-suited to support social innovation and the traditional technical innovation. There is also a need for more developed networks as well as innovation intermediaries for mediating the connections needed to nurture and scale up social innovations.

At present, various studies and reports on social innovation relate the topic social innovation to the EU 2020 strategy (Hubert, 2010). Social innovation has potential in achieving environmental sustainability and helping the European Union to reach its 2020 emissions targets. It can also play an important part in the delivery of other policies and in more effective policy implementation, as well as in actions in favour of education and housing in sustainable cities and those intended to counter the more direct effects of economic recession.

4 Social Innovation in the Period after Financial Crisis

In Great Britain much of the 2010 election was fought around the issue of the recession and the public borrowing deficit. However, whilst economic policy was highly relevant, there was little fundamental difference between the parties over what needs to be done. All three major parties accepted the need to cut the deficit through reducing public expenditure. What the response to the crisis revealed was *fundamental differences between the parties over the role of the state and the relationship between the state and the market*. Labour's answer to the crisis was increasingly a traditional Keynesian and social democratic

response whilst the Conservatives raised the prospect of the 'Big Society' as a mechanism for reducing the size of the state and public expenses. "The important differences in application of Big Society the idea is that not only is power but so to are services transferred to community groups and volunteers So in human capital terms, the professional could be replaced by the amateur." (Barber, Oldfield, 2011, p. 63).

4.1 Building Blocks of the Big Society

According to the UK Government policy, there are three key components of the Big Society agenda: *community empowerment* (local councils and neighbourhoods able to take decisions and shape their areas replacing the old top-down planning system), *opening up public services* which would enable charities, social enterprises, private companies and employee-owned *co-operatives to compete to offer people high quality services and social action*, by encouraging and enabling people to play a more active part in society (Tunstall et al., 2011, Building the Big Society – CASereport 67).

A set of initiatives supported by the government were put forward to kick-start the 'Big Society' initiative and contribute to its development (NEF, 2010). One initiative referred to the setting-up of a 'Big Society Bank' in order to support the development of a social investment market, crucial for social entrepreneurs, that would be effective in attracting capital to achieve social impact. Making capital, expertise and management skills available to social entrepreneurs is highly important in what concerns sustaining a powerful wave of social entrepreneurship (The Big Society Bank Outline Proposal, 2011).

Another important initiative which has been pursued is that of recruiting and training 5,000 community organizers that will help communities act together for the 'common good'. Necessary support will thus be offered to people to enable them to take action on their own behalf in order to deal with important issues.

Such a political programme that involves civic action brings also certain risks associated with this type of undertaking. Some of the risks refer to the way it might be perceived by the people, as a mask for government spending cuts, as well as appearing too party-political from the perspective of the people involved in community activities.

A recent report issued by the New Local Government Network (NLGN) in the UK pointed out that alongside community activism, a Big Society needs an active local state and, in this regard, Councils should place a higher value on social wealth – trust, engagement and belonging. The same report recommends a much clearer role for local government in helping the Big Society grow from within localities (Keohane et al., 2011).

ACEVO set up the 'Commission on the Big Society' whose main objective is to recommend practical steps that government (at all levels), third sector organisations and others need to take in order to make the vision of what the Big Society should mean a reality. One of the recommendations put forward was that Government should articulate a clearer definition of what it is that it is trying to achieve. At the same time, Government needs to adopt a consistent and supportive attitude to the voluntary sector that recognises the need for partnership and respect within the sector.

The following recommendations were put forward (ACEVO, 2011):

- “We make recommendations to the Cabinet Office’s Behavioural Insight Team, the Prime Minister, the Chief Secretary to the Treasury, and the National Audit Office on issues relating to definition of, measurement of, and accountability for success in fostering the Big Society. We also recommend a new, reformulated, Big-Society focused version of the Invest to Save Budget to invest in ground-breaking Big Society-related initiatives.”
- “...we recommend a programme to support culture change and workforce training in local government, a new focus for the Government’s £10 million support programme for new mutuals, a cross-government strategy led by DCLG, Cabinet Office and Treasury on use of public sector assets, and that the Big Society be put centre stage in the upcoming Public Service Reform White Paper.”
- “We recommend that rather than launching a ‘national day to celebrate and encourage social action,’ the Government amend the Employment Rights Act 1996 to extend employees’ existing right to take reasonable time off for certain public duties (e.g. to serve as magistrates, councillors or on the governing bodies of schools) to enable them to take reasonable time off, with the permission of their employers, to serve a voluntary organisation. We also recommend that brokerage between business and voluntary organisations be scaled-up, and that Government incentivise employers to encourage and facilitate employee engagement with charitable giving.”
- “We recommend that the Government introduce a UK version of the American Community Reinvestment Act, using transparency to promote responsible lending to the financially excluded and voluntary organisations, and that the Treasury introduce new tax incentives to encourage such ‘social investment’. We also call on all UK banks to commit to reinvesting 1% or more of their pre-tax profits for social benefit.”

Because it is about creating a set of conditions for change rather than forcing an agenda, Big Society relies on individual and corporate responsibility and action (Brandon, 2011). The Big Society is not supposed to be a clear, structured top-down movement, and it will very much depend on the people and groups who get involved.

There is also the question as to how the success of proposals is actually measured. What kind of outcomes should be considered in measuring the success of proposals put forward, is it crime rates, unemployment or is it something less tangible, such as how easy it is to start new community initiatives?

Important role is also played by businesses, as they often see their role in getting involved in community problems. A frequent example is when particular issue concerns environment. This involves the whole area of corporate social responsibility. “Governments, activists, and the media have become adept at holding companies to account for the social consequences of their activities. Myriad organizations rank companies on the performance of their corporate social responsibility (CSR), and, despite sometimes questionable methodologies, these rankings attract considerable publicity.” (Porter, Kramer, 2006, p. 78).

Companies are thus attempting to improve the impact of their activities on environment and society. But these activities are not as efficient as one might expect. The reason might be that the basic purpose of every enterprise is to make profit and any other interests comes second.

5 The Big Society and the Collective Impact

In the US, nowadays an initiative that is becoming more and more popular in the social sector is the initiative is called *'the collective impact'*.

Collective impact represents the commitment of a group of important actors from different sectors to a common agenda for solving a specific social problem. Collective impact initiatives involve a centralized infrastructure, a dedicated staff, and a structured process that leads to a common agenda, shared measurement, continuous communication, and mutually reinforcing activities among all participants.

A Stanford Social Innovation study points out five key success factors that together lead to excellent results: a common agenda, shared measurement systems, mutually reinforcing activities, continuous communication, and backbone support organizations (Kania, Kramer, 2011). Most of the examples of collective impact today are in the field of education (Bornstein, 2011). 'Strive' is a subsidiary of an operating foundation that focuses on improving the education system and remains its core fonder. Their recent goal is to establish 20 partnerships by 2015. However, collective impact is not only about education. Other examples in this regard would be 'Shape up Somerville', the community programme that targeted weight gain reduction among children or the 'Conservation Alliance for Seafood Solutions' connecting 16 conservation organizations in the U.S. and Canada, willing to work together in order to build a sustainable seafood industry from fish harvesting to market (Jindrichovska, Purcarea, 2011).

6 Discussion

As we can see technological and non-technological innovations are closely interlinked. Several authors debate upon the role played by the government in the case of the two approaches mentioned above (Bastianel, 2011). If the Big Society is perceived as being driven by 'too-pervasive state intervention' collective impact does not give the US government a defined role.

What it is common to both approaches is that they rely on civil society to lead public reform but the question remains whether these types of approaches can actually drive public reform or there is a need for breakthrough public policies to significantly improve education, healthcare, and social services.

As a useful practical application the "Big Society had a practical application in terms of delivering spending cuts and associated agenda" (Barber, Oldfield, 2011, p. 59).

In the US however, there are two strategies in action at the moment: a policy with strong elements of discontinuity for developing a new healthcare system and a civil society-led approach for advancing education reform.

Studies on social innovation address the barriers that prevent social innovation, emphasizing the tension between bringing social innovations to scale and ensuring that programs address the needs of local constituents. The results point out four major opportunities that contribute to scaling the most promising solutions, such as technology innovation, geopolitical shifts, cross-sector collaboration and knowledge sharing (Vienna Declaration, 2011). Social innovation it is more about Business Model Innovation and Social Entrepreneurship. Both concepts are very important in these areas, as they base on extended partnerships (Nidumolu et al., 2009).

6.1 Diffusion of Innovation in Social Area

Diffusion of innovation in social area is usually realized by “soft means” through communication media and through measures and suggestions of social and local authorities like town-halls, district authorities. “Social innovations together with physical and human capital, determine the rate of economic growth.” (Peyton Young, 2010, p. 2).

Social change tends to be perceived as a difficult process. One of the features that make social change difficult is the fact that social innovations represent technologies that require coordination with others in order to be successful (Peyton Young, 2010). When looking at the diffusion of innovations, valuable insights are offered on the process of social change related to the qualities that make an innovation spread successfully, the importance of peer-peer conversations and peer networks and understanding the needs of different user segments (Robinson, 2009).

There are marked differences between the diffusion of innovations in the social and market economies with the social economy favouring the rapid diffusion of an innovation. In terms of sharing innovation, the social economy is oriented especially towards collaborative networking as a way of sharing innovation, an example in this regard being the Communities of Practice as one important type of collaboration.

Conclusions

Ever since Schumpeter (1934) promulgated his theory of innovation, entrepreneurship, and economic development, economists, policymakers, and business managers have assumed that the dominant mode of innovation is a ‘producers’ model’. That is, it has been assumed that most important designs for innovations would originate from producers and then be supplied to consumers via goods and services. This view seemed reasonable – producer-innovators generally profit from many users, each purchasing and using a single producer-developed design. Different concept was represented by Von Hippel in 1980s. Von Hippel introduced a notion of ‘open innovation’, which is a paradigm that assumes that firms can use external ideas for creating and developing better products or processes. External ideas are used together with internally generated ideas as the firm strives to im-

prove its technology. The concept of open innovation diminishes the boundaries between a firm and its client, between supplier and customer and competitors.

Innovations have been spread out also to social area. The potential of social networks is now being explored and various social webs are spontaneously emerging to connect interest groups and professionals with their customers to bring social innovation to diverse segments of society. New technology enables rapid dissemination of innovation to their users and to whole society.

Globalization changes the way industries operate by decreasing the costs of production through outsourcing and rapid development of innovation through new technology. Modern world, impact of globalization and cost cutting requires different approaches to social life. This was emphasized by recent financial crisis that affected firstly America and then effectively spread put throughout the whole world. The reason is the interconnection of the world of finance with the rest of the economy that started to be important in the early years of the 21th century. We find that the determinants of the technological and non-technological innovations are very similar and that both types are closely related. We can also conclude that in terms of sales of market novelties and cost reductions through process innovations a combination of key types – technological and non-technological innovations is the most profitable. Social innovations are needed at the same time as technical innovations and, besides, they originate from the same roots and use similar diffusion processes.

The aim of this paper was to analyze the recent development in the field of social innovation and its implication to society. In conclusion, we claim that innovation in products, services, processes and business models can have a significant impact on gaining sustainable competitive advantage. Social innovation might be the most important factor in business model of social entrepreneurship. Competitive advantage can thus become an important part of a sustainable competitive strategy. In the social sector, however, too much attention is devoted to providing more of the same to narrow populations that are already served. In conclusion of this paper we therefore express a concern of mechanical repetition of virtually all the same innovation pattern in different areas and not to disperse the same routine mistakes in the field of social innovation as in the Anglo-Saxon world. It seems it is time for a fundamentally different approach.

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Contact address

Ing. Irena Jindřichovská, CSc.

Department of Business Economics

University of Finance and Administration / Vysoká škola finanční a správní, o. p. s.

(irena.jindrichovska@mail.vsfs.cz)

Money from the Perspective of Economic Theory

Peníze z pohledu ekonomické teorie

MOJMÍR HELÍSEK

Koderová, J., Sojka, M., Havel, J.: *The Theory of Money. Second supplemented edition (Teorie peněz. Druhé doplněné vydání)*. Praha, Wolters Kluwer 2012. 284 pages. ISBN 978-80-7357-640-0.

“We give parties to enjoy ourselves, wine makes us cheerful and money has an answer for everything” claims the Old Testament (Ecclesiastes 10: 19). The importance of money in this folk concept is undisputable; however, if we wish to become familiar with the deeper laws of its functioning, we have to turn to professional economic literature. “The Theory of Money” of erudite authors Koderová, Sojka, and Havel presents readers with a well-arranged explanation of the development of money theories, comprising opinions on the substance and forms of money, its value and functions, including the impact of money on national economy.

The book discusses, in historical succession, opinions of ancient and medieval thinkers, of classical French and English economics, of Neoclassical economics with subsequent Austrian School, Monetarist theory, individual partial movements of Keynesian economics, and finally the contemporary opinions of New classics, including the real business cycle theory, and New Keynesians. The attention paid to individual opinion trends is balanced, with the exception of grandly expressive focus on Post-Keynesian and New Keynesian economics in the last two chapters.

Various interpretations of the central bank’s monetary policy functioning also form an integral part of the theory of money. This area is explained with the use of several alternatives of the quantitative theory of money, starting with its early periods (Hume and English classics), moving on to neoclassical versions (Fisher, Marshall, and Wicksell), and all the way to modern interpretation of Monetarists (Friedman) and new classics (Lucas). The Keynesian perception of monetary theory is not left out, starting with Lord Keynes himself, moving on to Neo and Post-Keynesianism, and going all the way to the contemporary New Keynesianism. Naturally, the authors did not forget alternative approaches, namely the proposals of the Austrian School for partial or full commodity backing of money or replacement of public money with private money.

Compared to the first edition, the second supplemented edition of the successful publication is upgraded with the chapter “Opinions concerning money and monetary theory in Czech economic thinking between the two World Wars”. This is more than beneficial supplementation that instructs readers in detail on opinions and monetary policy of the main representatives of the national economic science at the time, i.e. of Karel Engliš and Josef Macek. The deflationary policy of Alois Rašín is not left out either.

Even though the publication is a challenging professional economic text, it is written in a well-arranged and comprehensible style. Verbal explanations are supported by a number of charts that will allow better understanding of individual theories. Readers will also appreciate the publication for the many references to original literature, with potential information about Czech translations.

It is possible to point out insufficient final proofing of the text, e.g. typing errors, that should especially be prevented in names (Fisher, Viner, Soskice), missing updates of biographical data (P. A. Samuelson, J. Tobin, F. Modigliani) or incomplete Figure 10. 1. However, these are only formal imperfections that do not lessen the quality of the contents.

The publication is intended not only for the purpose of teaching at the University of Economics in Prague (as the authors state in the Preface), but it will certainly find its readers from within the wide academia and economic professionals, namely in the banking sector. The second edition of the book is thus only welcome.

PREVIEW / PŘIPRAVUJEME:



Next issue of the journal ACTA VSFS will contain the fifth winning paper of "Prof. F. Vencovsky Prize" on the topic of decomposition of financial market dependencies in relation to the financial crisis understanding. Other articles deal with the changes in the role of insurance branch, outsourcing by private and public organisations and managerial support provided by venture capital investors.

Následující číslo ACTA VŠFS bude obsahovat pátou vítěznou práci ze soutěže o Cenu prof. F. Vencovského na téma dekompozice závislosti na finančních trzích a jejich vztah k pochopení finančních krizí. Další stati se zabývají změnami v postavení odvětví pojišťovnictví, outsourcingem u veřejných a soukromých organizací a manažerskou podporou ze strany investorů rizikového kapitálu.

INSTRUCTIONS FOR AUTHORS / POKYNY PRO AUTORY:



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The length of manuscripts, using the usual structure of research papers, is 15 – 20 PC pages (single spacing). Please submit the manuscripts in good English in electronic format together with a printed copy. Attached, submit the executive summary – abstract (150 words max.) and keywords (6 – 8), both also in Czech.

Please number your notes as you go along. Add a bibliography in alphabetical order, including page numbers when citing magazines or a journal. Inside the text, please use e.g. Afonso (2001), and when citing include the page number. Use the compatible forms for tables and figures. Highlight where pictures, graphs and tables will be placed in the text. Write your contact address: full name and titles, name and address of your work, telephone number and email, including the same for all co-authors.

(Detailed instructions can be found at <http://www.vsfs.cz/acta>)

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Rozsah rukopisů, dodržujících obvyklou strukturu vědecké práce, činí 15 – 20 PC stran (jednoduché řádkování). Rukopisy předkládejte v dobré angličtině v elektronické podobě spolu s vytištěným exemplářem. Současně předejte abstrakt (max. 150 slov) a klíčová slova (6 – 8), obojí rovněž v češtině.

Poznámky číslujte průběžně. Dále uveďte seznam literatury v abecedním pořadí, u časopisů a sborníků i stránky. V textu pouze odkazujte, např. Afonso (2001), pokud citujete, uveďte i stranu. Tabulky a obrázky dodávejte v kompatibilním formátu. Umístění obrázků, grafů a tabulek v textu vyznačte. Uveďte kontaktní adresu: plné jméno s tituly a vědeckými hodnostmi, přesný název a adresu pracoviště, číslo telefonu a e-mail. Stejně údaje uveďte i u spoluautorů.

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The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every receipt, invoice, and bill should be properly filed and indexed for easy retrieval. This not only helps in tracking expenses but also ensures compliance with tax regulations.

In the second section, the author provides a detailed breakdown of the company's financial performance over the past year. This includes a comparison of actual results against budgeted figures, highlighting areas of both success and concern. The analysis covers revenue growth, cost management, and overall profitability.

The third section focuses on the company's strategic initiatives and future outlook. It outlines the key goals for the upcoming year and the specific actions being taken to achieve them. This includes plans for market expansion, product development, and operational improvements.

Finally, the document concludes with a summary of the key findings and recommendations. It reiterates the importance of strong financial controls and strategic planning in driving the company's long-term success. The author expresses confidence in the team's ability to meet the challenges ahead and achieve the company's vision.