



Univerza v Mariboru

Ekonomsko-poslovna fakulteta



Letnik: 63 | Številka: 3 | 2017 |  
Volume: 63 | Number: 3 | 2017 |

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**NAŠE GOSPODARSTVO**  
Revija za aktualna ekonomska in poslovna vprašanja

**OUR ECONOMY**  
Journal of Contemporary Issues in Economics and Business

# NAŠE GOSPODARSTVO

Revija za aktualna ekonomska in poslovna vprašanja

Letnik 63, št. 3, 2017

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Ekonomsko-poslovna fakulteta Maribor (EPF)

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## Spletna stran:

<http://www.ng-epf.si>

Revija je indeksirana v ABI/INFORM Global, EconLit in ProQuest ter vključena v EBSCO in Ulrich's Periodicals bazo.



**Lektorji:** Alkemist in ServiceScape Incorporated

**Dtp:** NEBIA, d. o. o.

Letno izidejo 4 (štiri) številke. Letna naročnina: za pravne in fizične osebe 46 €, za tujino 57,5 €.

**ISSN 0547-3101**

Revijo sofinancira Javna agencija za raziskovalno dejavnost Republike Slovenije.

# OUR ECONOMY

Journal of Contemporary Issues in Economics and Business

Vol. 63, No. 3, 2017

## Published by:

Faculty of Economics and Business, Maribor (FEB)

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The review is indexed in ABI/INFORM Global, EconLit and ProQuest. It is included in EBSCO and Ulrich's Periodicals Directories.

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# From Subprime and Eurozone Crisis with Full Speed into the Next Financial Crisis

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## Abstract

This paper offers an analysis of the road from subprime and eurozone crisis to the elements of a new systemic crisis. Our aim is to research common issues that accompany each of these crises and to explore elements that hint that the financial systems are moving toward a new crisis. By holding short-term interest rates near zero, the central banks have encouraged malinvestment and speculation. Fuelling the bubble is the fear of missing out on trade. We find that actual events and movements on security markets follow a typical pattern, which indicates a serious threat for the next financial crisis. We also find enough signs that old crises lessons haven't been learned.

**Keywords:** financial crisis, bubble, P/E ratio

## Introduction

The subprime, global, and eurozone crisis has reignited a new interest in understanding equity bonds, credit, and interest rate fluctuations in the macroeconomy and the crucial role they could play in generation of shocks. These financial crises have prompted empirical and theoretical research aiming at capturing the interactions between the financial and the real side of the economy. We find there is a renewed interest in correlations between macro-variables across broad ranges of countries and time periods, as in Reinhart and Rogoff (2009), Claessens et al. (2011), Schularick and Taylor (2012).

Historically, the study of the business cycle has focused on the behaviour of macroeconomic data with cycles lasting on average no more than eight years. But the recent evidence tells us that real and financial variables interact at lower frequencies than those of the traditional business cycles (Aikman et al., 2014, Drehmann et al., 2012). Research findings (Communale, Hessel, 2014) suggest that the domestic demand booms related to financial cycles may have been more important. Drehmann et al. (2012) and Borio (2012) reveal several characteristics of the financial cycle. First, the financial cycle is mainly driven by credit and house price growth. Second, the financial cycle has a much wider amplitude and longer duration than normal business cycles. While normal business cycles have a frequency of up to eight years, the frequency of the financial cycle is thought to be between 16 and 20 years. Finally, a downturn of the financial cycle is often accompanied by a financial crisis.

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ORIGINAL SCIENTIFIC PAPER

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RECEIVED: JULY 2017

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REVISED: AUGUST 2017

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ACCEPTED: AUGUST 2017

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DOI: 10.1515/ngoe-2017-0013

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UDK: 338.124.4

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JEL: W32, G01, G12

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**Citation:** Strašek, S. (2017). From Subprime and Eurozone Crisis with Full Speed into the Next Financial Crisis. *Naše Gospodarstvo/Our Economy*, 63(3), 3-11. DOI: 10.1515/ngoe-2017-0013

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**NAŠE GOSPODARSTVO  
OUR ECONOMY**

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Vol. 63 | No. 3 | 2017

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pp. 3–11

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This paper offers an analysis of the road from subprime and eurozone crisis to the elements of a new systemic crisis. Our aim is to research common issues that accompany each of these crises and to explore elements that hint that financial systems are moving toward new crisis. The paper is organized as follows. After the introduction in Section 2, we investigate what transforms a significant, but relatively mild financial disruption – subprime residential mortgages – into a full-fledged global financial crisis. Section 3 examines some important stylized facts of the drivers in the run-up to eurozone crisis. In Section 4, we discuss some growing signs of the next financial crisis. Section 5 concludes.

### **Subprime Crisis: Issues**

Baily et al. (2008) find that the subprime crisis had its origins in an asset price bubble that interacted with new kinds of financial innovations that masked risks; with companies that failed to follow their own risk management procedures; and with regulators and supervisors who failed to restrain excessive risk taking. The exponential growth of subprime lending after 2000 is due to the sustained rise in house prices along with financial innovations in the form of adjustable rate mortgages. Another important element of innovations was the so-called process of securitizing mortgages: collateralized debt obligations, structure investment vehicles, overnight repurchase agreements (repo loans), and asset-backed commercial papers became an important source of funding for many large institutions and a way for banks to rely on shorter-term borrowing to fund their assets. When this kind of funding suddenly dried up, financial institutions effectively faced a “run” and found themselves exposed with very little capital. Grenlaw et al. (2008) find that while commercial banks were on average leveraged 9.8:1, broker/dealers and hedge funds were leveraged at nearly 32:1, GSE (financial services corporation created by US Congress, like Fannie Mae and Freddie Mac) were leveraged at 24:1, even though they were regulated.

Another important element in this chain represents the growth of credit insurers and credit default swaps. The transactions with these instruments were done in over the counter (OTC) markets, so these were not overseen by any regulatory body, and there was no information and no public knowledge as to have many CDS transactions most institutions have made. Experts (Mishkin, 2010; Baily et al., 2008) admit that, while securitization was meant to spread out risk away from the center of financial system, exactly the opposite happened. When the subprime credit crisis hit in August 2007, risk that meant to be dispersed throughout the system was, in fact, heavily concentrated among leveraged institutions at the heart of the system. Mishkin

(2010) points out that signals of the resulting credit market disruptions appear in the interest rate spreads between safe and risky financial instruments. Data show that the TED spread jumped from an average of around 40 basis points before August 7, 2007, to 240 points by August 20, 2007. TED spread is calculated as the gap between three-month LIBOR (an average of interest rates offered in the London interbank market for three-month dollar-denominated loans) and the three-month treasury bill rate. The size of this gap presumably reflects some sort of risk or liquidity premium. We saw the continuation of this scenario in 2008 by the rise in the spread between interest rates on Baa corporate bonds and treasury bonds. The following chain of events therefore didn't surprise: the collapse of a major housing boom in the US, the plunge of mortgage backed securities, a crisis in the US Shadow banking system, liquidity shortages in the interbank wholesale markets, the spread to European banks via the drying up inter bank liquidity, and global downturn.

The meltdown spilled over from the US into other markets: Europe was the first area affected; thereafter, its contagion spread to the rest of the world. We agree with findings of researchers (Shirai, 2009) that the subprime crisis in the US is far more complicated in that any series of crises in the past and therefore is worth analyzing its lessons: (1) absence of precise information on OTC markets; (2) avoiding of regulatory requirements. Capital adequacy requirements were applicable only to deposit-taking banks, not to other financial institutions, which resulted in expansion to securitization and derivatives; (3) commercial banks attempted to circumvent regulatory monitoring by establishing SIVs and moving to other off-balance sheet activities; (4) unavailability of credit rating agencies to spot excesses; (5) financial markets are always subject to self-fulfilling prophesies; (6) accelerated contagion across countries and markets.

### **Eurozone Crisis: Origins**

Two main views have emerged about eurozone crisis. The first, so-called German view (Allesandrini et al., 2012), prescribes the necessity of fiscal austerity in the south of the eurozone to lessen the risk that the south may be forced to abandon the euro; the second, called the Keynesian view (Merler & Pisani-Ferry, 2012), which treat the eurozone sovereign debt crisis as being a balance-of-payment crisis, with the eurozone north benefiting from surpluses and the eurozone south suffering from deficits. This interpretation argues that the emphasis on fiscal austerity being counter-productive, given its negative impact on expected long-term growth rates (DeLong & Summers, 2012). Stylized facts and empirical evidence (Alessandrini et al., 2012; Sanches & Varoudakis, 2013) suggest, however, that both the fiscal

fragility of the south and the north–south divide of external imbalances have contributed to the eurozone crisis.

Debt financed consumption was among the chief causes as well as the global financial crisis and eurozone crisis (Strasek 2015). European stability and growth pact laid out in the 1990s with a goal to limit countries' budget deficits and total debt loans produced fast convergence of interest rates among Eurozone countries. Chinn and Frieden (2012) warned that investors interpreted the creation of the union as an implicit guarantee of members countries' government debt. These implicit guarantees pushed interest rates lower, which gave governments, businesses, and households incentive to borrow more than they would have had they properly understood the risks. This situation leads to a debt overhang and financial distress. Details of the debt overhang vary from country to country: in Greece and Portugal, massive capital flows were used to finance consumption; in Spain and Ireland, capital was used to sustain massive construction booms. Divergences in domestic demand growth in the euro area have been sizeable (Figure 1). The financial cycle led to booms and busts in domestic demand in Spain, Ireland, and Greece. By contrast, it allowed Portugal and Italy to mask low potential growth and to finance growing trade deficits that might be unsustainable under less benign financial conditions. Many of the core countries did not suffer from financial imbalances and therefore had a much less extreme reversal in domestic demand. This hold especially for Germany and Austria (Communale, Hessel, 2014).

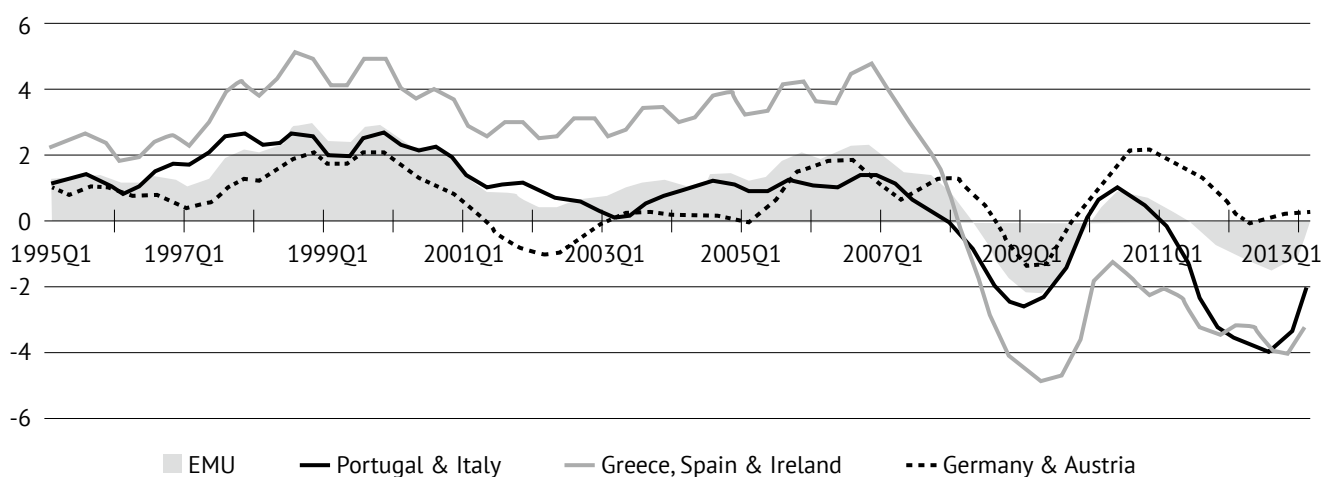
The result of north–south imbalances within Eurozone was seen in corresponding changes in net international asset position. Greece, Ireland, Italy, Portugal and Spain accumulated a large net foreign liability position, which amounts to about 20% of the Eurozone's GDP. The eurozone pattern shows diverging trends in credit growth and interest rates in

the eurozone periphery and core countries growth of credit to the private sector in the periphery surpassed by far credit in the core. The credit boom was accompanied by a decline in real long-term interest rates, which were significantly steeper in the periphery than in the core. The investment rate in the periphery grew, and savings rate declined; thus, this pattern materialized as current account deficits.

There were huge differences across countries of the eurozone in credit conditions. During the years of the credit boom, average interest rates on mortgages actually paid by borrowers in periphery (Ireland, Spain) were much lower relative to core members. Also credit access was easier in the periphery, allowing in Spain and Ireland loan-to-value ratios of 100%, compared with 60% in core countries. Jordà et al. (2011) show that the link between credit booms and current account deficits has become much closer in recent decade, so there is again a suggestion for the so-called financial cycle.

The eurozone experience seems to suggest that public debt is not sufficient as an explanation. The comparison of government debt levels and primary government balances in the eurozone south suggest that yield spreads may be a symptom rather than a proximate cause of the malady and that fiscal fundamentals are not enough to explain sovereign risk (Dadush & Wyne, 2012). Moreover, De Grauwe and Ji (2012) find evidence that a significant part of the surge in the spreads of the PIGS countries was disconnected from underlying increases in the debt-to-GDP ratios and fiscal space variables but rather was the result of negative self-fulfilling market sentiments that become strong at the end of 2010. The authors argue that this phenomenon can drive member countries of the eurozone into bad equilibria. There is no doubt that fiscal policy is vital to a viable monetary union. But this must be accompanied by the resolution of two main problems: the large intra-euro current account imbalances

**Figure 1.** Divergences in Domestic Demand Growth in the Euro Area



Source: Comunale and Hessel (2014)

and the emergence of massive cross-border capital flight (Sinn & Wollmershauser, 2011).

Holinski et al. (2012) provide evidence of the persistently rising current account imbalances within the euro area. Since 1991 the average current account balance of the north (Germany, Netherland, Austria, and Finland) has continuously grown from a small deficit in 1992 to a deficit of more than 6% of GDP in 2007, while at the same time the current account of South (Greece, Ireland, Portugal, Spain) has deteriorated from close to zero in the early 1990s to a deficit of almost 10% in 2007. Figure 2 shows that the strong divergence in current account imbalances is due mostly to private-sector behavior, where reduction in net private savings in the south was probably induced by lower real interest rates and increased availability of financial assets. Divergent consumer spending trends were a key driver of euro-area imbalances, as euro-area periphery households responded to lower interests by borrowing and spending. While Germany’s consumption remained essentially flat after 2001, Irish real consumption spending increased roughly 55% from 1999 to 2007, Greek and Spain roughly 35%.

Higgins and Klitgaard (2012) confirm that pre-crisis borrowing by the periphery countries went mainly to finance private consumption or housing booms rather than productivity – enhancing investments. In this way, such investment in non-tradable sector generates no foreign income stream to support repayment. The 2007 average net foreign liabilities were close to 80% GDP for South, with obvious

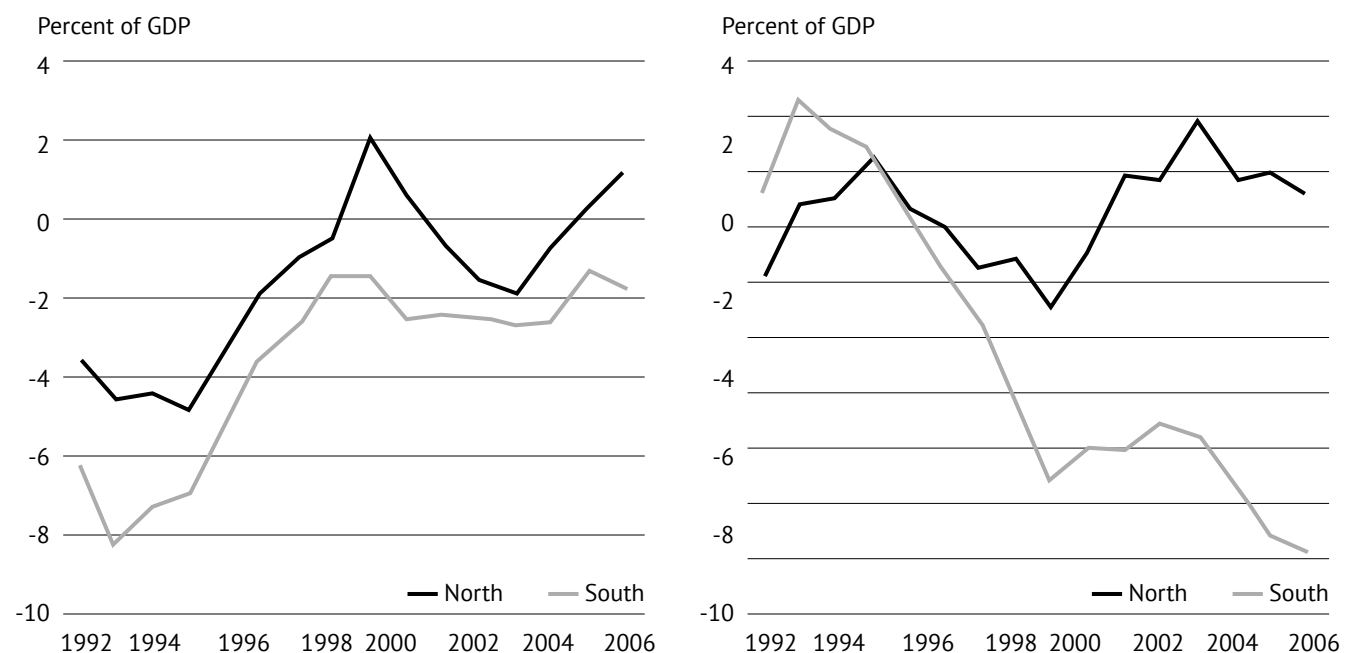
consequences for its future net factor income payments. Periphery countries were forced to pay an increasing share of GDP to service its debt to foreign creditors, almost 6% of GDP in 2007.

### Next Financial Crisis Ahead

Taylor (2011) define the period from the early 2000s as a period where macroeconomic policy became more interventionist, less rules-based, and less predictable. According to this thesis, the deviations from good policy started in 2003 with the Federal Reserve’s decision to keep interest rates lower than dictated by the monetary guideline known as the Taylor rule and have continued through various bailouts and monetary easing and fiscal stimuli in the US and Europe.

Many studies have documented that excess returns (investment returns from a security or portfolio that exceed the riskless rate on a security generally perceived to be risk free) on financial market move in cycles. Researches on the interactions between different types of cycles have produced a number of important policy lessons. Economic theory moved toward the study of economic fluctuations rather than cycles, and the term “business cycle” lost its original meaning. Starting with Fisher (1933), a number of researches emphasize the importance of financial cycles for the real economy. Communale and Hessel (2014) find that financial cycle explains domestic demand movements better than

Figure 2. Net Public (left) and Private (right) Savings (1992–2007)



Source: Holinski et al. (2012)



business cycle and that crisis countries experienced surprisingly similar divergences of financial factors, thus suggesting their importance. This finding is implicitly found also in Borio (2012). Studies (Forest et al., 2014) trying to assess the current position in the cycles through the prism of historical combinations of the business financial and monetary cycles suggest that, while business and monetary cycles move in tandem most of the time, financial cycles appear to follow their own path. They also find that business cycle expansion is clearly beneficial for risky bonds, while the re-leveraging and house price increases that take place during the financial cycle expansion tend to lower the returns on corporate bonds. Finally, the utmost priority, after synthesizing the changes in business, financial, and monetary cycles, is still to correctly measure the probabilities of the cycles moving into the contraction or expansion phase.

According to Dalio (2017), there are two important cycles to pay attention to: short-term debt cycle and the debt super cycle (or long-term debt cycle). A debt super cycle is defined by the period since the Second World War in which debt levels have inched persistently higher. This trend has been driven by the use of monetary policy in the wake of shocks. The policy's response ended in unsustainable levels of first private and now public debt. Lo and Rogoff (2015) argue that the financial crisis/debt supercycle view provides much more accurate and useful framework for understanding what has transpired and what is likely to come next. The symptoms of excessive debt are exhibiting themselves in the form of continued low economic growth and excessive volatility. As of 2017, we are eight years into the expansion phase of the business/short-term debt cycle, which lasts about eight to 10 years – and near the end of the expansion phase of long-term cycle, which typically lasts 50–75 years.

In this moment (June 2017), we believe that the developed markets are in an extremely dangerous situation. While record high stock and bond prices have become more detached from economic reality than ever before, some central bankers have encouraged debt level to surge to a record as well. Massive debt and leverage have simply shifted from primarily a private sector problem to an even larger public sector problem. Observers (Pento, 2017) find that, with major indices and stock indicators continuing to set record highs, there is further evidence that Wall Street is becoming more complacent with the growing dichotomy between equity and bonds prices (both moving higher) and the underlying strength of the US economy. The same picture is seen in European markets. Comparing total market cap to GDP, it becomes strikingly clear that economic growth has not at all kept pace with booming stock and bond prices in the past five years. The huge debt has been busted from new debt issuance, and debt compulsion which is the result of QE and zero interest rate policy.

There are different views about the danger of recent bubble: the Warren Buffet view is that the market isn't expensive, the American economy is doing well and long term investor should always be engaged; the same position hold Morgan Stanley strategists: they do not believe that the current forward P/E is excessive in light of exceptionally low interest rate environment. They find conceptually invalid to compare P/E ratio today to, say, ratio in the early 1980's when interest rates were in double digits. However, there is a growing number of financial experts that expect an upcoming financial crisis. Especially US markets are experiencing level of risk that is the highest since the 2008 financial crisis. The potential causes of crash scenario on Wall Street are building. Downside risks stem from several potential factors. Let us review some indicators that represent serious warning signals:

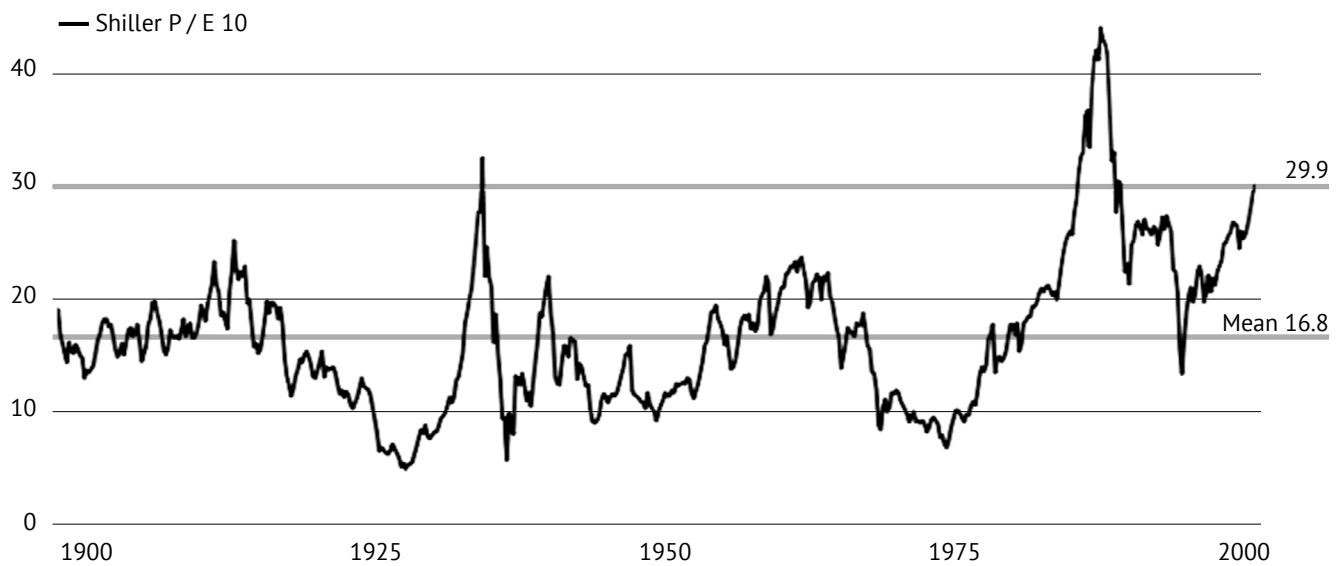
S&P 500 is overvalued almost on any metrics. More than a dozen measures of the markets' valuation are trading above their historical average. The Case Shiller CAPE ratio, which has a 10-year average of 16, is currently at 30; accordingly, the S&P 500 is overvalued by 75%. The ratio has only been higher twice. Analysts of Bank of America Merrill Lynch (Oyedale, 2016) point to the fact that median P/E is nearing tech bubble levels. The stocks most responsible for pulling up the P/E ratio where mid-caps, with the median stock in this category trading more than 92nd percentile of its history and 18 of 20 popular valuations of the stock market rate the S&P 500 as overvalued, one as high as 105% (WTI crude oil terms). Another key valuations metric is the Warren Buffet indicator, which compares the total price of all publicly traded companies to GDP. A reading over 100% indicate overvaluation. The market cap to GDP is currently at 127%. This indicator has only been higher twice since 1950.

Following the fact that riskier indices form a top before the overall market form a top (a lesson learned from the stock market crash 2008–2009; we can see that from the Russel 2000 small cap index, which is an index that tracks performance of small capitalization companies) deemed riskier than mega-cap companies, has been outright flat with downward momentum indicators, while the major key stocks indices are moving higher. This could be an early indicator of a stock market drop.

The momentum is also important. A growing number of S&P stocks are below their 200-day moving averages, as the index charges forward into uncharted territories. This suggest that the market is held up by only a handful of winning stocks. The market may be due to harsh correction.

Hussman (2017) calls the current environment “the most broadly overvalued moment in market history.” His main point is that, back in 2000 and 2007, there were a relatively

**Figure 3.** Case Schiller CAPE Ratio



Source: <https://www.gurufocus.com/shiller-PE.php>

small group of super expensive stocks that drove the average valuation of the stock market much higher than normal. Today is the median, not the mean; the S&P 500 valuation sits well above the peaks seen in 2000 and 2007, indicating that there are far more companies these days that share trade at much higher-than-normal valuation.

Many investors used the record bull market of S&P 500 to intensify the use of margin debt. In February 2017 the margin debt on NYSE hit the record the record of \$530 billion. Such speculation, which coincides with the high on the stock market, represents a clear hint before a huge correction. This scenario is a *déjà vu*: in March 2000 margin debt hit the record together with the record high of S&P 500; the same case happened in 2007, when credits achieve the record in July, just three months before the S&P 500. This picture is confirmed also in relation to GDP, where records were achieved in 2000 and 2007 (Figure 4).

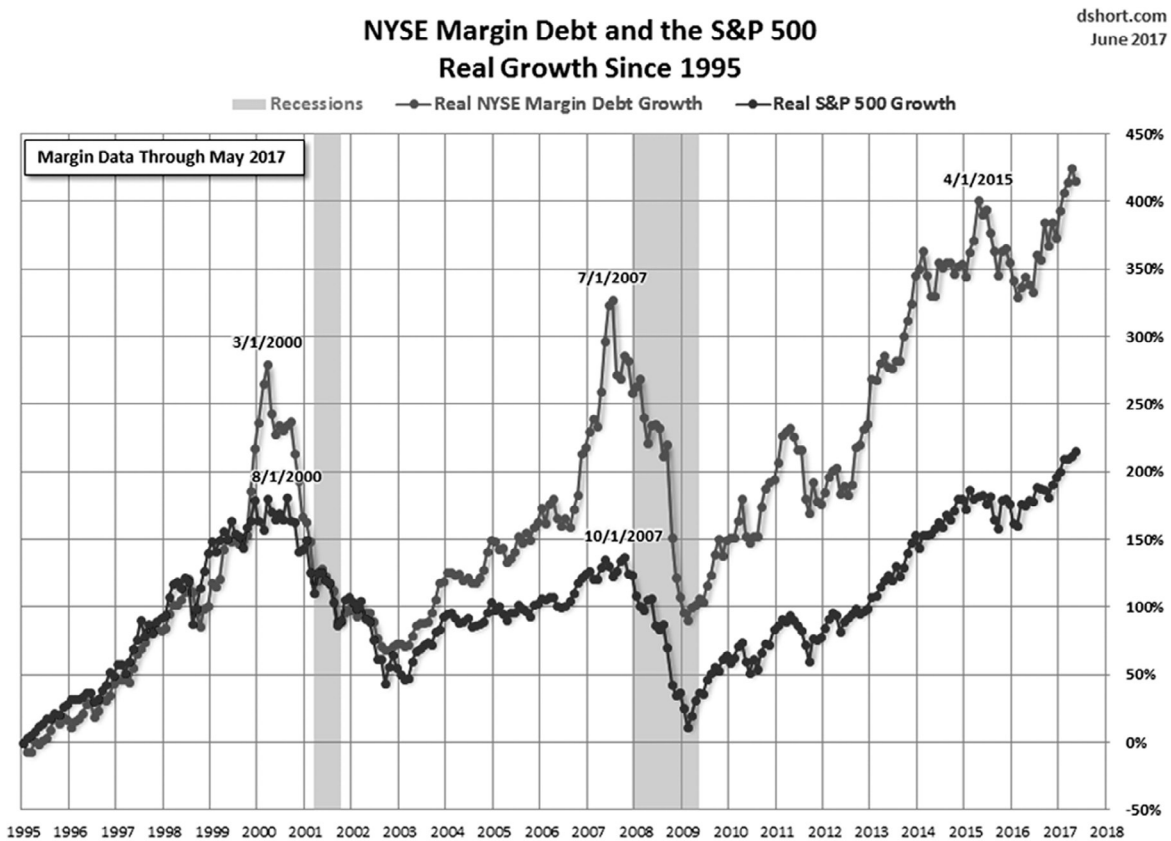
Stocks in the US are overpriced also by other metrics – and there’s a bubble. The economic fundamentals are simply not strong enough to warrant the current market values. If we define a bubble as any prolonged phenomenon where a stock’s value grows faster than a company’s profit, then it is clear that, for profits to continue, economic growth at a global level should be healthy. This is not the case because world GDP levels are not high enough. The Willshire-500-to-GDP also indicates overvaluation. This index is a marked-cap weighted index of all stocks actively traded US headquarters that trade on major exchanges. The ratio is at an all-time high of around 149. Volatility indicators are also warning: VIX hitting lows hints at a sell-off ahead. Over the

past 17 years we have seen that, whenever the VIX turns lower, we have market tops in the works, and, a few months later, a stock market crash follows. This scenario happened in 2007. Currently, the VIX stands at its lowest level since 2007 (Zulfigar, 2017).

US household indicators also deserve attention. Personal disposable income in the US has been on the decline since late 2014. If we compare US household financial assets invested in the stock market *vis-à-vis* to those in money market funds, the direct result of seven years of zero percent interest rate policy can be seen. Households have now more than 15 times as much money invested in stocks than they do in money market funds, which is a picture well beyond anything we have ever seen. The warning signal also is coming from the side of average equities portfolio allocation of US households. It is a contrary indicator with high allocation correlated (R-squared of 0.913) with poor subsequent returns – and vice versa. Currently, US households collectively have 39.2% of their financial assets invested in equities. This has been only one other time since 1950, when this allocation was any higher and that was in late 1990s. The standing ahead of 2008 financial crisis was 37.5%.

Asset managers and advisers do not like a sudden stop of quantitative easing policy. They have a fear against so-called tourists on the capital market, i.e., investors who usually invest only in safe papers; due to low yield, however, they began in the last years to invest heavier in riskier assets, so they could react with panic if the end of purchases will bring price drops for risk assets. On the high yields market we find around 30% buyers, who have no experience with such

Figure 4. NYSE Margin Debt and the S&amp;P 500 Real Growth Since 1995



Source: Mislinski (2017)

assets. However, we see problems in the financial industry as well. Rickards (2016) finds that leveraged positions of banks are still managed on the prevailing theory of VaR, i.e., value at risk. This theory assumes that risk in long and short positions are nettled, the degree distribution of price movements is normal, and extreme events are exceedingly rare and derivatives can be properly priced using a “risk-free” rate. The problem is all four of the assumptions are false.

Analysts (Durdan, 2017) differentiate among narrative and credit-driven bubbles. The first one is based on a story, or new paradigm, that justifies abandoning traditional valuation metrics (Nifty, Fifty bubble of early 1970s, dot.com bubble of 1990s). We are globally now in a credit-driven bubble, which doesn't need a narrative or a good story – just easy money. A credit bubble bursts when the credit dries up. There are already signs that hint of an impending bubble burst: interest rate hikes, preparations for QE reversals, tighter credit conditions. Actual FED projections forecast a 3% yield on 10-year treasuries, accordingly dividend yield on S&P 500 (obtained by a 12-month dividend per share/price) is around 2%. This is strong argument in favour of possible strong market correction.

Many investors are worried about the fact that investors are ignoring the real economy and focusing too much

on the financial economy. Some experts (Dalio, 2017) confirm this position and suggest that the problem is wider; namely, they don't see the problem as coming from the market themselves, as much as the author does from the overall economic and political situation (debt, Trump, N. Korea, etc.)

The fact is that a small trigger can lead to major financial crisis: subprime mortgage market with 4% of the overall mortgage market in the US crisis of 2007 or Greek debt problems in the euro crisis of 2010. Modern financial technology affect triggers of contagion: in the 1930s case, the panic begin with the run on small-town banks and spread until it hit the stock exchange. Today the financial panic starts in a computer algorithm, which triggers preprogrammed sell orders that cascade into other computers until the system spins out of control. Hence, likely triggers could include a cyber-financial attack, a major bank failure, and many other events. Because the system itself is of unprecedented scale and interconnectedness, the new crisis could be of unprecedented scale (Rickards, 2016). Modern markets are not only more complex, but the problem is worse because derivatives allowed asset liability mismatch (short-term borrowing and long-term landing) to be more highly leveraged and spread among more counterparties.

## Conclusion

Considering the “this time is different syndrome,” we agree with those economists (Kindelberger, Reinhart, Rogoff, etc.) who advocate the position that the behaviour of investors and government remains constant through history. There are enough signs that the public is not willing to learn. Old lessons are not embodied in behaviour. Speculative investing can lead to stock market crash and financial crisis. Fueling the bubble is the fear of missing out (FOMO) trade. Ever since the South Sea Trading Company bubble of 1720, the most common cause of irrational asset prices rises has been the FOMO.

Many respected market analysts see an abnormal market environment. By holding short-term interest rates near zero, the central banks have encouraged malinvestment and speculations. The cyclical bull market in stocks, bonds, and housing that began in early 2009 has developed into one of the largest bubbles of the past 100 years. The current stock and bond environment on developed markets is looking a whole lot like the dot.com stock market bubble in 1998–1999 and the subprime bubble in 2007.

Different indicators are showing that stocks and bonds are priced far above their fundamental value. Historically low interest rates and huge share buybacks have helped fuel explosive security markets higher and pushed security prices to

the historical highs. The Shiller P/E ratio has risen to levels only matched before the 1929, 2000, and 2007 bubble burst.

Unlike the financial crisis of 2000, which was defined by the stock market crash, and the 2008 subprime crisis, which was about stocks and housing, in 2017 the story is defined dangerously wider, namely by stocks, bonds, and debt. The element that poses a warning is not the unusual bull market – the second longest since World War II, and not the fact that S&P soared more than 260% since bottoming at 666 on March 6, 2009, but the point that bull market has been fueled more by the central banks’ easy monetary policy than years of strong earnings and revenue growth, and the point that the US debt levels are soaring. Having in mind the well-known contagious impact of US events and trends on global economy in previous crashes and crises, the world has to carefully observe ever longer debt and bubble levels. The conditions for collapse are all in place. The financial environment is ready for the next financial crisis. Possible black swan events are waiting.

## Acknowledgments

The author acknowledges the financial support from the Slovenian Research Agency (research core funding No. P5-0027).

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# Od krize drugorazrednih posojil in evrske krize s polno hitrostjo v novo finančno krizo

## Izvleček

Članek podaja analizo prehoda od krize drugorazrednih posojil in evrske krize do elementov nove sistemske krize. Namen naše raziskave je raziskati skupno problematiko, ki spremlja te krize, in proučiti elemente, ki sugerirajo trend premika v novo krizo. Z vzdrževanjem kratkoročnih obrestnih mer blizu nič so centralne banke hrabrile napačne investicijske odločitve in špekulacije. Napihovanje balona je povezano s fenomenom strahu pred izgubo priložnosti. Menimo, da aktualni dogodki in premiki na trgu vrednostnih papirjev sledijo tipičnemu vzorcu, ki kaže na resno grožnjo naslednje finančne krize. Identificirali smo številne znake, da lekcije starih kriz niso bile upoštevane.

**Ključne besede:** finančna kriza, balon, količnik P/E

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ORIGINAL SCIENTIFIC PAPER

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RECEIVED: APRIL 2017

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REVISED: JULY 2017

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ACCEPTED: JULY 2017

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DOI: 10.1515/ngoe-2017-0014

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UDK: 331.2:336.22(497.5)

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JEL: C22, H24, H71

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**Citation:** Palić, I., Dumičić, K., & Grofelnik, B. (2017). Analysis of Personal Income Taxation Determinants in Croatia in Long Run: Evidence from Cointegration Analysis. *Naše gospodarstvo/Our Economy*, 63(3), 12-18. DOI: 10.1515/ngoe-2017-0014

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NAŠE GOSPODARSTVO  
OUR ECONOMY

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Vol. 63 | No. 3 | 2017

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pp. 12–18

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# Analysis of Personal Income Taxation Determinants in Croatia in Long Run: Evidence from Cointegration Analysis

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## Abstract

Personal income taxation remains an ongoing issue in Croatia. It is used as an important instrument of income redistribution. Moreover, it directly affects purchasing power of the working population. Numerous changes have been made in this type of taxation since the establishment of Croatian tax system. The aim of this paper is to analyse possible determinants of personal income taxation in Croatia. After offering brief insight into public finance theory regarding personal income taxation, the structure of personal income taxation in Croatia is explained. The empirical analysis of the determinants of personal income taxation in Croatia is conducted using cointegration analysis. Economic conditions, average monthly wage, and number of taxpayers are used as determinants of personal income tax used in this research. The cointegration analysis is conducted using monthly data from January 2008 to February 2016. The results of the research show a statistically significant negative impact of economic conditions and statistically significant positive impact of average monthly wage and number of taxpayers on personal income taxation in long run, what is in line with economic and public finance theory.

**Keywords:** personal income taxation determinants, economic conditions, wages, number of taxpayers, johansen cointegration approach, Croatia

## Introduction

The income taxation has been one of the most important questions of economic policy since the establishment of tax system in Republic of Croatia in 1994. The Croatian tax system has passed through numerous changes throughout years. Most of the changes were made in the field of personal income taxation, which is determined by the Income Tax Act and income tax ordinance. From 1994 to 2012, the Income Tax Act has changed 13 times (Šimović, 2012). There are two main concepts of income taxation: consumption and income concept. The consumption

concept is based on taxation of income, which is used for consumption. Parts of income used for saving and investments, such as dividends and interests, are excluded from taxation. On the other hand, income concept includes all types of income in the process of taxation. In Croatia, the hybrid concept, which includes both income and consumption concept characteristics, is mostly used (Šimović, 2012).

Personal income tax is used as the most important instrument of redistribution of income among households in economy (Egger et al., 2012). Public finance theory considers that progressive taxation of income ensures rightful distribution of tax burden. One of the most important roles of the government is to ensure social welfare, which is higher when resources are more equally distributed. On the other hand, redistributive taxes and transfers can cause a decrease in individuals' incentives to work, save, and earn income. Therefore, it is necessary for the government to find an optimal tax system to ensure social welfare and encourage individuals to work (Diamond & Saez, 2011).

In Croatia, Urban (2006) analysed the progressivity of personal income tax using a Gini concentration coefficient. However, prior to this research, the determinants of personal income taxation are not analysed in Croatia using econometric analysis. This research contributes to the existing literature due to the fact that it offers analysis of the determinants of personal income taxation in Croatia in the long run.

## Literature Review on Determinants of Personal Income Taxation

Personal income taxation is widely researched in economic literature due to great significance of tax revenues on government policies and overall economy. Castro and Ramirez (2014) concluded that determinants of tax revenues in OECD differ among high-income and middle-income countries. High-income countries with high GDP per capita, low share of FDI, and robust industrial sector have higher tax revenues. Also, lagged values of tax revenues are strong determinants of current tax revenues. On the contrary, tax revenues of middle-income countries depend less on their lagged values and the role of economic, institutional, social, and structural factors are more significant determinants of tax revenues. Aamir et al. (2011) analysed the impact of indirect and direct taxes on total tax revenue in Pakistan and India. They concluded that indirect taxes have a greater impact on total tax revenues in Pakistan, while in India direct taxes have a higher impact. Velaj and Prendi (2014) conducted regression analysis in order to determine what impacts tax revenues in Albania. They considered several variables: GDP, inflation, income tax, unemployment and imports. Their analysis has

shown positive correlation between tax revenues and with GDP growth, inflation and imports, while unemployment has shown negative correlation. Addison and Levin (2012) researched the determinants of tax revenue performance in sub-Saharan Africa, including the tax base, structural factors, and foreign aid and conflict, which are considered in the econometric analysis. Karagoz (2013) used regression analysis in order to investigate determinants of tax revenues in Turkey. Mentioned research showed that agricultural and industrial share in GDP, foreign debt stock, monetization rate and urbanization rate have a significant impact on total tax revenues. Aloo (2012) defined determinants of tax revenues in Kenya. The research demonstrated a positive correlation between tax revenues and changes in oil prices and exchange rates and negative correlation of tax revenues with GDP. Ivanitskaya and Tregub (2013) concluded that personal income tax revenue in the UK has a positive relationship with the number of taxpayers and inflation measured by the retail price index. Their research also showed a significant relationship between personal income tax revenue and oil prices, which can be positive or negative. On the other hand, research has shown that there is no correlation between personal income tax revenue and GDP growth.

## Personal Income Taxation in Croatia

Progressive income taxation is used in Croatia. It is based on division of income into three tax bases, and each base is taxed with different tax rate. Tax bases and tax rates are presented in Table 1.

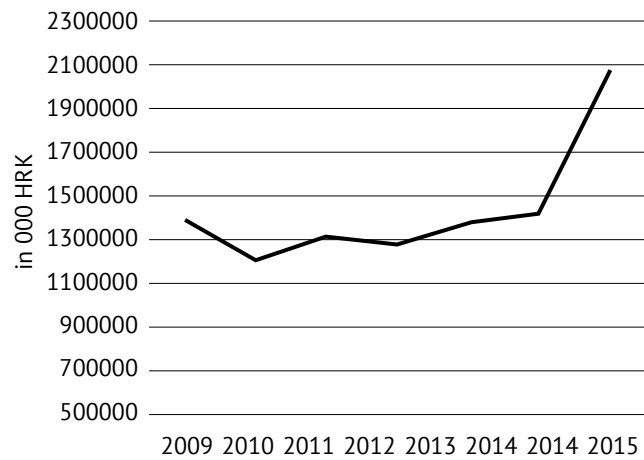
**Table 1.** Personal Income Taxation Structure in Croatia in HRK

Tax base	Tax rate
< 2.200,00	12%
2.200,00 - 13.000,00	25%
> 13.000,00	40%

Source: Ministry of Finance, Croatia: Tax Administration, 2016

A taxpayer is defined as a person who acquires an income. It is possible to distinguish six sources of income, which can be taxed according to the Income Tax Act: income from employment, income from independent personal activities (self-employment), income from property and property rights, income from capital, income from insurance, and other income. The total amount of income that the taxpayer obtains in Republic of Croatia can be calculated as sum of all types of taxable incomes reduced for personal allowance (Ministry of Finance, Croatia: Tax Administration, 2016). The personal allowance plays a crucial role in progressivity of personal income tax. Since 1994 the amount of personal

**Figure 1.** Yearly Personal Income Tax Revenue (in thousand HRK) in Republic of Croatia



Source: Croatian Ministry of Finance State Budget, 2016

allowance has grown faster than average incomes and in that way it decreased the progressivity of personal income tax (Urban, 2006). Since 2009 until 2014, personal income tax revenues in Croatia have slightly increased. Furthermore, from 2014 until 2015 personal income tax revenues made a huge jump, which is shown in Figure 1.

In order to explain the reason of presented movements in personal income tax revenues, it is necessary to define determinants of personal income tax.

## Empirical Analysis of Determinants of Personal Income Tax in Croatia

### Data and Model

The impact of three possible determinants on personal income tax revenues is examined in this research, namely,

economic conditions, average monthly wage, and number of taxpayers, in the period from January 2008 to February 2016. Monthly data on volume indices of industrial production, 2010 = 100 are used to approximate the output because information related to output is published on a quarterly basis. The aim of approximation is preserving degrees of freedom and reliability of econometric analysis.

Regarding the data on personal income tax revenues, data are derived from the Croatian Ministry of Finance State Budget (2016). An average gross monthly wage is derived from Central Bureau of Statistics of Republic of Croatia (2016). Personal tax revenues, average monthly wage, and industrial production indices are deflated using a consumer price index 2010=100, available at Croatian National Bank (2016) and defined in real terms. Data on number of taxpayers are approximated by number of employed persons and provided by Central Bureau of Statistics of Republic of Croatia (2016).

The descriptive statistical measures of real personal income tax revenues (denoted by *PIT*), real volume indices of industrial production (2010=100), denoted by *Y*, real average gross monthly wages in HRK, denoted by *W* and number of taxpayers denoted by *N*, in period from January 2008 to February 2016 are given in Table 2.

The provided descriptive statistical measures point to the fact that variable *PIT* exhibits the highest variability among these four variables, what is shown by the highest coefficient of variation of 56.488%. Therefore, due to high variability of personal income taxation, the analysis of its determinants gains in importance. The kurtosis and skewness are also the most distant from zero for variable *PIT*, pointing to leptokurtic and negatively skewed data distribution.

Prior to conducting econometric analysis, all variables are transformed into logarithmic values and seasonally adjusted using X-13 ARIMA SEATS adjustment method (see US Census Bureau, 2016). Therefore, seasonally adjusted logarithmic values of economic conditions (denoted by *LY\_SA*),

**Table 2.** Descriptive Statistical Analysis of Selected Variables from January 2008 to February 2016

	PIT	Y	W	N
Mean	120084.5	95.214	7573.674	1403892
Median	136645.8	93.238	7548.063	1386615
Standard Deviation	67834.4	11.292	202.856	73833.15
Kurtosis	2.538	-0.284	-0.571	-0.769
Skewness	-1.547	0.549	0.297	0.619
Coefficient of variation	56.488	11.859	2.678	5.259

Source: Authors' calculation



average monthly wage (denoted by  $LW_{SA}$ ), and number of taxpayers (denoted by  $LN_{SA}$ ) and personal income tax revenues (denoted by  $LPIT_{SA}$ ) in the long run are used in empirical analysis.

First, in order to test the stationarity of selected variables, the ADF unit root test is conducted. The results of the test are shown in Table 3.

All variables are shown to be non-stationary in levels but stationary in first differences at 1% significance. In other words, all selected time series are integrated of order (1) at 1% significance. According to Enders (2015), if a linear combination of non-stationary variables is stationary, the variables are cointegrated. Thus, the Johansen cointegration approach is used to examine the impact of  $LY_{SA}$ ,  $LW_{SA}$  and  $LN_{SA}$  on  $LPIT_{SA}$ . The Johansen approach is used for determining the number of cointegrating relations. The basis of the Johansen procedure is the estimation of the vector error correction (VEC) model. If variables are cointegrated, the long run relationship between non-stationary variables exists (Enders, 2015). The Johansen procedure uses the maximum eigenvalue test and trace test for determining the number of cointegrating relations (Bahovec, Erjavec, 2009).

### The results of cointegration analysis

Prior to model estimation, on the basis of the lowest value of Akaike information criteria, the model in which the constant is present only in cointegrating equation, and the trend is not present in the cointegrating equation nor in vector error correction model, is selected for the analysis. This model is used when analysed data does not contain a trend. The constant is present only in the cointegrating equation, which means that variables cointegrate around the constant. This model is often used in analysis of financial variables (Bahovec, Erjavec, 2009). The selected lag number in model is  $k=6$ .

Trace and maximum eigenvalue tests are conducted in order to assess the number of cointegrating relations. These tests are carried out until the first time the null hypothesis cannot be rejected (Enders, 2015). Results of both tests are presented in Table 4.

At 5% significance, results of the trace test, as well as maximum eigenvalue test, show that one cointegrating relation exists in the model. The decision is made by comparing empirical test statistics and critical values of the tests. A detailed explanation of both tests is given in Bahovec and Erjavec (2009).

**Table 3.** ADF Unit Root Test T-Test Statistics for Selected Variables in Levels and First Differences

Variable	None	Intercept	Intercept and Trend
$LPIT_{SA}$	-0.424	-3.011	-3.742
$LY_{SA}$	-0.726	-0.472	-1.782
$LW_{SA}$	-1.584	-2.616	-1.074
$LN_{SA}$	0.784	0.627	0.906
$\Delta LPIT_{SA}$	-8.763*	-8.747*	-8.736*
$\Delta LY_{SA}$	-8.331*	-8.383*	-8.359*
$\Delta LW_{SA}$	-6.119*	-6.340*	-6.947*
$\Delta LN_{SA}$	-5.073*	-5.072*	-5.178*

Note: \*denotes the stationarity of time series at 1% significance  
Source: Authors' calculation (EViews 8)

**Table 4.** Determining the Number of Cointegrating Relations

Hypothesized Number of Cointegrating Equations	Eigenvalue	Trace Statistic	0.05 Critical Value (Trace Statistic)	Max-eigen Statistic	0.05 Critical Value (max-eigen statistic)
0*	0.3168	67.039	54.079	37.337	28.588
1	0.1326	29.701	35.193	13.946	22.299
2	0.1138	15.756	20.262	11.836	15.892
3	0.0392	3.920	9.166	3.920	9.165

Note: \*denotes rejection of null hypothesis at 5% significance  
Source: Authors' calculation

Since the existence of cointegrating relation is shown, the following long run equation is estimated (with  $t$ -statistics in parentheses):

$$PIT = -414.91 - 13.932Y + 25.34W + 18.69N$$

$$(-473) \quad (-5.40) \quad (2.90) \quad (3.97). \quad (1)$$

Based on Eq. (1), all the selected variables are significant in explaining personal income tax in the long run in Croatia. Moreover, the error correction term (ECT) equals -1.1343, with corresponding  $t$ -statistics equal to -4.182. The negative sign of ECT indicates that personal income tax returns to the long-run equilibrium, while its value provides information about the adjustment speed. Namely, 113.43% of disequilibrium is corrected in each month and personal income tax returns to the equilibrium level for less than one month.

Furthermore, model adequacy is also examined. First, the White heteroskedasticity test is conducted for testing the appropriateness of the model. The  $\chi^2$  test statistic equals 466.017, with a corresponding  $p$ -value of 0.8597, suggesting that the null hypothesis of homoscedasticity cannot be rejected at any reasonable significance level. Moreover, the LM test of autocorrelation is conducted. At 5% significance level, the null hypothesis of no autocorrelation of residuals cannot be rejected up to lag length  $k=12$ , so it can be concluded that there is no autocorrelation problem in the model. Concerning the stability of VEC model, the model with  $r$  cointegrating relations is stable if  $k-r$  roots are equal to unity and the remaining roots have modulus less than one, where  $k$  is the number of endogenous variables and  $r$  is the number of cointegrating relations. The stability of model is checked by calculating the inverse roots of characteristic AR polynomial using EViews 8. The AR roots calculation has shown that VEC specification imposes three unit roots and the remaining roots have a modulus less than one. Since there are four variables and one cointegrating relation, the existence of three unit roots indicates that the system is stable. Therefore, the VEC diagnostic tests show that the estimated model is adequate. For explanation of heteroskedasticity and autocorrelation tests as well as AR roots calculation, see Enders (2015).

The results of the research show a significant negative impact of economic conditions and a significant positive impact of average monthly wage and number of taxpayers

on personal income taxation, what is in line with economic and public finance theory. Results of the impact of economic conditions confirm the results of the empirical research of Aloo (2012). Velaj and Prendi (2014) showed the negative correlation between unemployment and tax revenues, which is in line with the estimated positive impact of number of taxpayers approximated by number of employed persons on personal income tax. The mentioned result is also in line with results of the research of Ivanitskaya and Tregub (2013).

## Conclusion

Determining the appropriate level of personal income taxation in the Republic of Croatia is one of the most difficult challenges the government has dealt with for decades. Therefore, this paper analyses determinants of personal income tax revenues in Croatia.

This research analyses the impact of three selected determinants on personal income tax revenues: economic conditions, average monthly wage, and number of taxpayers. Data used in analysis are collected on monthly basis and refers to the period from January 2008 until February 2016. Limitations of the empirical research are mostly related to approximation of data used in model. Personal income taxation is approximated by personal income tax revenues on the monthly basis. The long-run relationship among selected variables is analysed using the Johansen cointegration approach. The White heteroskedasticity test and autocorrelation tests have shown there is neither heteroskedasticity nor autocorrelation problem in the model, and the vector correction model is estimated.

The results of the research show a negative significant relationship between economic conditions and personal income tax revenues and positive significant relationship of average monthly wage and number of taxpayers with personal income tax revenues, which is in line with economic and public finance theory.

## Acknowledgments

This work has been supported by the Croatian Science Foundation under the project STRENGTHS no 9402.

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# Analiza determinant odmerjanja dohodnine na Hrvaškem na dolgi rok: izsledki kointegracijske analize

## Izvelek

Na Hrvaškem je še vedno aktualno vprašanje o odmeri dohodnine. Uporablja se kot pomemben instrument prerazporeditve dohodka. Poleg tega neposredno vpliva na kupno moč delovnega prebivalstva. Od vzpostavitve hrvaškega davčnega sistema so bile pri tej vrsti obdavčitve uvedene številne spremembe. Namen tega prispevka je analizirati možne determinante odmerjanja dohodnine na Hrvaškem. Po kratkem vpogledu v teorijo javnih financ glede dohodnine je pojasnjena struktura dohodnine na Hrvaškem. Empirična analiza determinant odmerjanja dohodnine na Hrvaškem je bila opravljena s pomočjo kointegracijske analize. V tej raziskavi so kot dejavniki dohodnine uporabljene gospodarske razmere, povprečna mesečna plača in število davkoplačevalcev. Kointegracijska analiza se izvaja z uporabo mesečnih podatkov od januarja 2008 do februarja 2016. Rezultati raziskave kažejo na statistično pomemben negativen vpliv gospodarskih razmer in statistično pomemben pozitiven vpliv povprečne mesečne plače in števila davkoplačevalcev na dolgotrajno odmerjanje dohodnine, kar je v skladu z ekonomsko in javnofinančno teorijo.

**Ključne besede:** determinante dohodnine, ekonomske razmere, plače, število davkoplačevalcev, Johansenov kointegracijski pristop, Hrvaška

# Greenfield and Brownfield Investments and Economic Growth: Evidence from Central and Eastern European Union Countries

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## Abstract

Global foreign direct investment flows in terms of greenfield and brownfield investments have increased during the recent three decades resulting from the accelerating globalization. The considerable increases in the flows of foreign direct investment have many eventualities for the national economies. This study investigates the mutual effects among greenfield and brownfield (mergers and acquisitions) investments and economic growth in Central and Eastern European Union countries during the 2003–2015 period employing panel data analysis. The findings revealed that both greenfield and brownfield investments had positive influence on the economic growth, but the influence of greenfield investments was found to be relatively higher. Furthermore, one-way causality was discovered from both greenfield and brownfield investments to the economic growth.

**Keywords:** Greenfield investments, brownfield investments, economic growth, panel data analysis, Central and Eastern European Union countries

## Introduction

Cross-border capital flows have risen substantially in terms of both foreign direct investment (FDI) and portfolio investments during the last 40 years. In this context, global FDI inflows rose to US \$2,135.7029 billion in 2015 from US \$10.1724 billion in 1970 (World Bank, 2017). FDIs can be implemented in two ways: as a greenfield investment or brownfield investment (transnational mergers and acquisitions [M&A]). Brownfield investments consist of merging with or buying an existing facility; greenfield investments include constructing a new non-existent facility in a country.

FDI inflows can influence the economic growth positively by way of making contributions to the capital accumulation within the context of neoclassical growth theory or through knowledge and technological spillovers within the scope of endogenous growth theory (Solow, 1957; De Mello, 1999). Moreover, FDI inflows can affect the economic growth indirectly by means of enhancing the financial development. Nonetheless, the FDI-growth nexus can differ depending on the type of FDI inflows. Theoretically greenfield investments can contribute to the capital accumulation and productivity with forming the new facilities. But brownfield investments, including M&As, may not raise capital accumulation and/or productivity in the host country. Nevertheless, brownfield investments also

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ORIGINAL SCIENTIFIC PAPER

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RECEIVED: JULY 2017

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REVISED: AUGUST 2017

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ACCEPTED: AUGUST 2017

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DOI: 10.1515/ngoe-2017-0015

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UDK: 339.7:330.34

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JEL: F21, F23, F43, O40, C33

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**Citation:** Bayar, Y. (2017). Greenfield and Brownfield Investments and Economic Growth: Evidence from Central and Eastern European Union Countries. *Naše gospodarstvo/Our Economy*, 63(3), 19-26. DOI: 10.1515/ngoe-2017-0015

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OUR ECONOMY**

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Vol. 63 | No. 3 | 2017

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pp. 19–26

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can influence the economic growth positively by means of new knowledge and technology transfer. Consequently, the net impact of both greenfield and brownfield investments on economic growth is unclear considering the theoretical considerations. Furthermore, empirical literature summary in Section 2 also supports this assertion.

In this research paper, the interplay among greenfield and brownfield investments and economic growth will be investigated for the sample of Central and Eastern European Union (CEEU) countries (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia), which have attracted significant amount of greenfield and brownfield investments resulting from institutionally and economically transformation with the contribution of European Union membership. The short-and-long run interaction among greenfield and brownfield investments and economic growth will be analyzed with panel cointegration test of Basher and Westerlund (2009) and panel causality test of Dumitrescu and Hurlin (2012). The extensive researches have been implemented to analyze the influence of FDI inflows on the economic growth in the CEEU countries. But the present paper will make a contribution to the relevant literature by researching the interplay between brownfield investments, greenfield investments, and economic growth for CEEU countries. In other words, the paper investigates the impact of two main types of FDIs on economic growth in CEEU countries. In this context, the relevant empirical literature will be taken place in the coming section, then data and method will be summarized in Section 3. Section 4 includes empirical analysis and the major findings. Finally, the paper comes to the conclusion in Section 5.

## Literature Review

The considerable increases in the global FDI flows have directed scholars to investigate the economic impacts of FDI flows. In this context, some scholars have focused on the FDI-growth nexus and discovered that FDI inflows made a positive contribution to the economic growth (e.g., see Borensztein et al., 1998; Li & Liu, 2005; Pegkas, 2015; Iamsiraroj & Ulubaşoğlu, 2015; Iamsiraroj, 2016). However, few scholars have investigated the interaction among greenfield and brownfield investments and economic growth and revealed different findings (e.g., see Calderon et al., 2004; Wang & Wong, 2009; Neto et al., 2010; Harms & Meon, 2014; Eren & Zhuang, 2015; Zvezdanović-Lobanova et al., 2016).

In one of the early studies, Moon et al. (2003) researched the impacts of brownfield FDI in South Korea, China,

and Hong Kong during the 1999–2002 period with case studies employing a diamond model and revealed that brownfield investments positively affected the economic growth. On the other side, Calderón et al. (2004) analyzed the interaction among greenfield FDI inflows, brownfield investments, and economic growth in 72 countries (50 developing and 22 developed countries) during the 1978–2001 period employing vector autoregression analysis and revealed that economic growth affected the both types of FDI inflows positively, impact of economic growth on the greenfield and brownfield FDI inflows were found to be larger in the developed countries, while both greenfield and brownfield investments had no significant impact on the economic growth.

In another study, Wang and Wong (2009) researched the influence of greenfield and brownfield FDIs on the economic growth in 84 countries during the 1987–2001 period employing panel regression and discovered that greenfield FDIs positively affected the economic growth, while brownfield FDIs negatively influenced economic growth. Neto et al. (2010) researched the same question for a sample of 53 countries during the 1996–2006 period using causality test and regression analysis and revealed that greenfield FDI inflows positively affected economic growth, but brownfield investments did not make a significant contribution to economic growth.

Zhuang and Griffith (2013) also analyzed the impact of greenfield and brownfield FDI inflows on the inequality in 93 countries during the 1990–2009 period employing panel regression and found that greenfield FDI inflows positively affected the income inequality, while brownfield FDI inflows had no significant effects on the income inequality. On the other hand, Ashraf et al. (2015) explored the influence of greenfield and brownfield FDIs on the productivity in 123 developed and developing states during the 2003–2011 period employing panel regression and revealed that brownfield FDIs positively affected total factor productivity, while greenfield FDI inflows made no significant contributions to the productivity. Furthermore, both greenfield and brownfield investments had no significant effects on the productivity in developing countries, while brownfield FDIs positively affected total factor productivity.

On the other hand, Harms and Meon (2014) analyzed the influence of greenfield and brownfield FDIs on the economic growth in 78 countries from emerging and developing economies over the period of 1987–2005 employing panel regression and revealed that greenfield FDIs positively influenced the economic growth, while brownfield FDIs made no significant contributions to economic growth. Eren and Zhuang (2015) researched the influence of greenfield and brownfield FDIs on economic growth in 12 EU members

(10 Central and Eastern European states, Cyprus and Malta) over the period of 1999–2010 employing panel regression and discovered that both greenfield and brownfield FDIs did not make a significant contribution to the economic growth on their own, their impacts depend on the absorptive capacities of the countries. Furthermore, a certain minimum human capital level is essential for the positive interplay among greenfield FDIs and economic growth, while a developed financial sector is necessary for the positive interaction between brownfield FDIs and economic growth.

In another study, Zvezdanović-Lobanova et al. (2016) researched the impact of brownfield FDIs on economic growth in 22 European transition economies over the period of 2000–2014 using panel regression and discovered that brownfield FDIs had a negative effect on economic growth in the current period, but the lagged values of brownfield FDIs positively influenced economic growth. Finally, Luu (2016) researched the influence of greenfield and brownfield FDIs on economic growth in emerging economies during the 2003–2014 period employing dynamic panel regression and discovered that both types of FDI inflows positively affected the economic growth.

## Data and Econometric Methodology

In this paper, the long- and short-run interaction among greenfield investments, brownfield investments, and economic growth in the CEEU countries during the 2003–2015 period was analyzed with panel data analysis.

### Data

In our study, economic growth was represented by growth rate of real GDP per capita and extracted from the database of World Bank (2016), as seen in Table 1. On the other hand, greenfield FDI inflows and brownfield FDI inflows were extracted from the database of UNCTAD (United Nations Conference on Trade and Development) (2016) and used as a percent of GDP in the model.

The study period was selected as 2003 and 2015 by considering the existence of data and the sample of the study consisted of 11 CEEU countries including Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. Finally, empirical analysis was implemented with the software packages of Eviews 9.0, Stata 14.0, and Gauss 11.0.

### Econometric methodology

In the empirical analysis, first cross-section dependence among the cross-section units of the panel was investigated by  $CD_{LM1}$  test of Breusch and Pagan (1980) and  $LM_{adj}$  test of Pesaran et al. (2008), while homogeneity of the cointegrating coefficients was examined with the adjusted delta test of Pesaran and Yamagata (2008). Then integration levels of the series were analyzed by PANKPSS (Panel Kwiatkowski, Phillips, Schmidt and Shin) test of Carrion-i-Silvestre et al. (2005), taking notice of the cross-sectional dependence and structural breaks in the study period and the existence of cross-sectional dependence and heterogeneity among the variables. The causal interplay among greenfield and brownfield FDIs and economic growth was examined by means of error correction model. The long-run interaction between the series was analyzed with cointegration test of Basher and Westerlund (2009). Furthermore, the slope coefficients were estimated with panel an augmented mean group (AMG) of Eberhardt and Bond (2009). Finally, causal interaction among the series was analyzed with causality test of Dumitrescu and Hurlin (2012).

### Empirical Analysis

In our study, the long- and short-run interaction among greenfield investments, brownfield investments, and economic growth in CEEU countries during the 2003–2015 period was analyzed with panel cointegration test of Basher and Westerlund (2009) and panel causality test of Dumitrescu and Hurlin (2012).

**Table 1.** Data Description

Variables	Symbols	
Real GDP per capita growth (annual, %)	GRW	World Bank (2016)
Greenfield FDI inflows (annual, % of GDP)	GFDI	UNCTAD (2016)
Brownfield FDI inflows (annual, % of GDP)	BFDI	UNCTAD (2016)

Source: Authors' own elaboration

### Cross-sectional dependency and homogeneity tests

The presence of cross-sectional dependence among greenfield and brownfield investments and economic growth was researched with  $CD_{LM1}$  test of Breusch and Pagan (1980) and  $LM_{adj}$  test of Pesaran et al. (2008) because time dimension of the variables ( $T=13$ ) is higher than the number of cross-section units ( $N=11$ ). The  $LM_{adj}$  test of Pesaran et al. (2008) was also employed because the  $CD_{LM1}$  test may yield biased results while ensemble average equals to zero, but individual average does not equal to zero. In this case, the bias was eliminated with adding the mean and variance to the test statistic. The results of both tests about cross-sectional dependence are displayed in Table 2.

The null hypothesis was rejected because the  $p$ -value was found to be lower than 5%, and we concluded that there was cross-sectional dependence among the series. Furthermore, the homogeneity of slope coefficients was analyzed with an adjusted delta tilde test of Pesaran and Yamagata (2008) (the test results are displayed in Table 2). We declined the null hypothesis; the cointegrating coefficients are homogeneous because  $p$ -value was found to be lower than 5%. Thus, the cointegrating coefficients were found to be heterogeneous.

### PANKPSS unit root test

The cross-section dependence and heterogeneity of the cointegrating coefficients were discovered in consequence of the test results in Table 2. The presence of the international financial crisis and Eurozone sovereign debt crisis in the study period and cross-sectional dependence dictates us to select a unit root test considering structural breaks and cross-sectional dependence. Therefore, the integration levels of the series were analyzed with the PANKPSS test of Carrion-i-Silvestre et al. (2005), thus

enabling the structural breaks in constant and trend (the test results of first-differenced variables are displayed in Table 3). We revealed that all the variables were  $I(1)$ . Furthermore, the test revealed structural breaks in 2008, 2009, 2010, 2011, and 2012 corresponding to the global financial crisis and Eurozone sovereign debt crisis for the cross-section units.

### Basher and Westerlund (2009) cointegration test

The cointegration test of Basher and Westerlund (2009) can examine the cointegrating relationship for nonstationary series at the level, taking into account cross-sectional dependence and structural breaks. But the test can allow for maximum three breaks. The cointegration test of Basher and Westerlund (2009) was conducted, and the major findings are displayed in Table 4. The null hypothesis (there is cointegrating relationship among the series) was accepted when the test version considered the structural breaks were applied, and we discovered a cointegrating relationship among greenfield and brownfield investments and economic growth. However, the test version, via disregarding the structural breaks, indicated no cointegrating relationship among the series.

The slope coefficients were estimated with the panel AMG method of Eberhardt and Bond (2009), which regards cross-sectional dependence and heterogeneity (the findings are displayed in Table 5).

The problems of heteroscedasticity and autocorrelation were dissipated by the Newey–West method. The results showed that both greenfield FDI inflows and brownfield FDIs positively affected the economic growth. After all, the positive influence of greenfield investments on economic growth was found to be relatively higher when compared with brownfield investments.

**Table 2.** Results of Cross-Section Dependence and Homogeneity Tests

Variables	$CD_{LM1}$ test statistic	$CD_{LM1}$ $p$ -value	$LM_{adj}$ test statistic	$LM_{adj}$ $p$ -value
GRW	9.372	0.002	19.453	0.001
GFDI	8.026	0.003	12.044	0.015
BFDI	9.561	0.000	16.722	0.002
Homogeneity tests of cointegrating coefficients				
Test	Test statistic		$p$ -value	
$\Delta$	23.56		0.002	
$\Delta_{adj}$	18.03		0.014	

Source: Authors' own elaboration based on the results of cross-sectional dependence and homogeneity tests



**Table 3.** Results of PANKPSS Unit Root Test

Country	DGRW		DGFDI		DBFDI	
	Test Statistic	Structural Breaks	Test Statistic	Structural Breaks	Test Statistic	Structural Breaks
Bulgaria	0.097*	2009, 2010, 2012	0.241*	2009, 2010	0.138*	2009, 2010, 2012
Croatia	0.140*	2009, 2010, 2012	0.159*	2009, 2010, 2011	0.226*	2009, 2011
Czech Republic	0.082*	2009, 2012, 2013	0.143*	2009, 2011, 2012	0.191*	2011, 2012
Estonia	0.119*	2008, 2009, 2011	0.227*	2009, 2011	0.157*	2010, 2011, 2012
Hungary	0.126*	2009, 2010, 2012	0.186*	2009, 2010, 2011	0.106*	2010, 2011
Latvia	0.092*	2008, 2009, 2010	0.193*	2009, 2010, 2011	0.213*	2009, 2010, 2011
Lithuania	0.197*	2009, 2010	0.219*	2009, 2010, 2011	0.188*	2010, 2011, 2012
Poland	0.082*	2009, 2010	0.125*	2009, 2010	0.203*	2009, 2010, 2011
Romania	0.141*	2009, 2010	0.116*	2009, 2010	0.127*	2010, 2011
Slovakia	0.173*	2008, 2009	0.271*	2009, 2010	0.173*	2009, 2010, 2011
Slovenia	0.145*	2009, 2010, 2012	0.207*	2010, 2011	0.236*	2009, 2010
Panel	0.137*		0.225*		0.185*	

Source: Authors' own elaboration based on the results of PANKPSS unit root test

Notes: \* it is stationary at 5% significance level.

Critical values were generated with 1000 simulations.

**Table 4.** Results of Basher and Westerlund (2009) Cointegration Test

Model	Test Statistic	p-value
Exclusion of structural breaks in the constant term and trend	1.472	0.016
Consideration of structural breaks in the constant term and trend	32.983	0.194

Source: Authors' own elaboration based on the results of Basher and Westerlund (2009) panel cointegration test

**Table 5.** Estimation of Cointegrating Coefficients

Variables	Coefficient	p-value
DGFDI	0.1891*	0.013*
DBFDI	0.1374*	0.005*

Source: Authors' own elaboration based on the results of AMG estimation

### Dumitrescu and Hurlin (2012) panel causality test

The causal relationship among greenfield investments, brownfield investments, and the economic growth was investigated with the causality test of Dumitrescu and Hurlin

(2012), which takes notice of the heterogeneity (the results are displayed in Table 6).

The null hypothesis, "there is no causality relationship" for the causality interaction between both DGFDI and DGRW

**Table 6.** Results of Dumitrescu and Hurlin (2012) Panel Causality Test

Lags: 2			
Null Hypothesis	W-Stat.	Zbar-Stat.	p-value
DGRW → DGFDI	2.9854	0.36342	0.1375
<b>DGFDI → DGRW</b>	<b>6.4858</b>	<b>7.9535</b>	<b>0.0064</b>
DGRW → DBFDI	3.0531	0.89342	0.2375
<b>DBFDI → DGRW</b>	<b>7.6343</b>	<b>4.7731</b>	<b>0.0274</b>

Source: Authors' own elaboration based on the results of Dumitrescu and Hurlin (2012) panel causality test

and DBFDI and DGRW, was rejected, because the  $p$ -values were found to be lower than 5%. Thus the test results revealed a one-way causality from greenfield and brownfield investments to the economic growth. In other words, greenfield and brownfield investments had significant impact on the economic growth in the short term.

## Conclusion

FDI inflows have potential to positively influence economic growth by way of making contributions to the capital accumulation or through knowledge and technological spillovers. Furthermore, FDI inflows can indirectly affect the economic growth through enhancing financial development. But FDI-growth interaction can differ depending on type of FDI inflows. On the one hand, greenfield investments can contribute to the capital accumulation and productivity with forming new facilities, while brownfield investments, including M&As, can positively influence economic growth by means of new knowledge and technology transfer.

This study researched the influence of foreign direct investment inflows in terms of greenfield and brownfield investments on economic growth in Central and Eastern European Union countries during the 2003–2015 period, via employing the Basher and Westerlund (2009) cointegration test and Dumitrescu and Hurlin (2012) causality tests, because Central and Eastern European Union countries have

attracted a significant amount of foreign direct investment flows after transition, especially as of the mid-1990s. The results of the econometric analysis revealed that both greenfield and brownfield investments made a positive contribution to economic growth, but the influence of greenfield investments was found to be relatively higher. Furthermore, the results of causality analysis revealed a one-way causality from greenfield and brownfield investments to economic growth.

Our findings support the theoretical considerations, which suggest both greenfield and brownfield investments positively influence economic growth by raising the accumulation of capital, productivity, and transfer of knowledge and technology. However, future studies can be conducted to see that through which channels greenfield and brownfield investments affect economic growth. Finally, policymakers should consider the positive effects of greenfield and brownfield investments on economic growth and take economic and institutional measures to attract especially greenfield investments.

## Acknowledgments

This study was presented at the International Conference on “Economic policy for smart, sustainable and inclusive growth,” Belgrade University, Republic of Serbia, 15-17 June 2017.

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# Greenfield in brownfield tuje neposredne naložbe in gospodarska rast: izsledki iz srednje- in vzhodnoevropskih držav članic Evropske unije

## Izvleček

Tokovi globalnih greenfield in brownfield tujih neposrednih naložb so se v zadnjih treh desetletjih zaradi pospešene globalizacije povečali. Znatna povečanja tokov tujih neposrednih naložb imajo veliko možnih vplivov na narodna gospodarstva. V študiji z uporabo analize panelnih podatkov raziskujemo medsebojne učinke greenfield in brownfield (spojitev in pripojitev) naložb in gospodarske rasti v srednje- in vzhodnoevropskih državah članicah Evropske unije v obdobju 2003–2015. Izsledki kažejo, da imajo tako greenfield kot tudi brownfield tuje neposredne naložbe pozitiven vpliv na gospodarsko rast, pri čemer je vpliv greenfield naložb relativno večji. Nadalje, ugotovljen je bil enosmerni vpliv tako greenfield kot tudi brownfield naložb na gospodarsko rast.

**Ključne besede:** greenfield tuje neposredne naložbe, brownfield naložbe, gospodarska rast, analiza panelnih podatkov, srednje- in vzhodnoevropske države članice Evropske unije

# Effect of Depreciation of the Exchange Rate on the Trade Balance of Albania

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## Abstract

The paper investigates the effect of the real effective exchange rate depreciation of the lek on the trade balance of Albania using quarterly data from 1994 to 2015. Bounds testing cointegration approach, vector error correction model (VECM), and impulse response were used for the empirical analysis. The results of the study show a long-term cointegration between the real effective exchange rate (REER) and the trade balance (TB). Specifically, the REER depreciation positively affects the trade balance of Albania in both the long and short run, indicating the weak presence of the J-curve effect. Important recommendations were derived from the results.

**Keywords:** J-curve, cointegration, elasticity, short-term effect, long-term effect

## Introduction

There is a strong argument among international trade economists that depreciation causes a decrease in the trade balance deficit (Bahmani-Oskooee, 1985). The real exchange rate is an important macroeconomic measure underlying the adoption of certain economic policies. It indirectly affects the allocation of resources in the economy, i.e., traded and non-traded goods. An overvalued exchange rate is interpreted as a reduction or a decline in price competitiveness, while an undervalued exchange rate is interpreted as a way toward faster economic growth (Rodrik, 2008; Cakrani et al., 2013). Real exchange rate depreciation leads in the short term to deterioration in the trade balance, while in the long term it leads to balance (Šimakova, 2013; Šimakova & Stavarek, 2015). Trade balance represents a relationship between the volume of exports and imports. In the case of imports being higher than exports, we have a deficit, and vice versa, we have a surplus (Krueger, 1983). Trade balance can be improved in two ways. The first is through an internal approach, which is based on supply-side policies that improve

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ORIGINAL SCIENTIFIC PAPER

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RECEIVED: FEBRUARY 2017

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REVISED: JULY 2017

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ACCEPTED: JULY 2017

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DOI: 10.1515/ngoe-2017-0016

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UDK: 339.5

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JEL: F14, F31, F32

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**Citation:** Kurtović, S., Halili, B., & Maxhuni, N. (2017). Effect of Depreciation of the Exchange Rate on the Trade Balance of Albania. *Naše gospodarstvo/Our Economy*, 63(3), 27-36. DOI: 10.1515/ngoe-2017-0016

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**NAŠE GOSPODARSTVO  
OUR ECONOMY**

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Vol. 63 | No. 3 | 2017

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pp. 27–36

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productivity, reduce inflation and taxes, and lead to a more efficient labor market. In the end, these measures lead to the growth of GDP and exports. Another way is currency depreciation, which leads to changes in relative prices of imports and exports (Krueger, 1983; Stučka, 2004; Kurtovic et al., 2016).

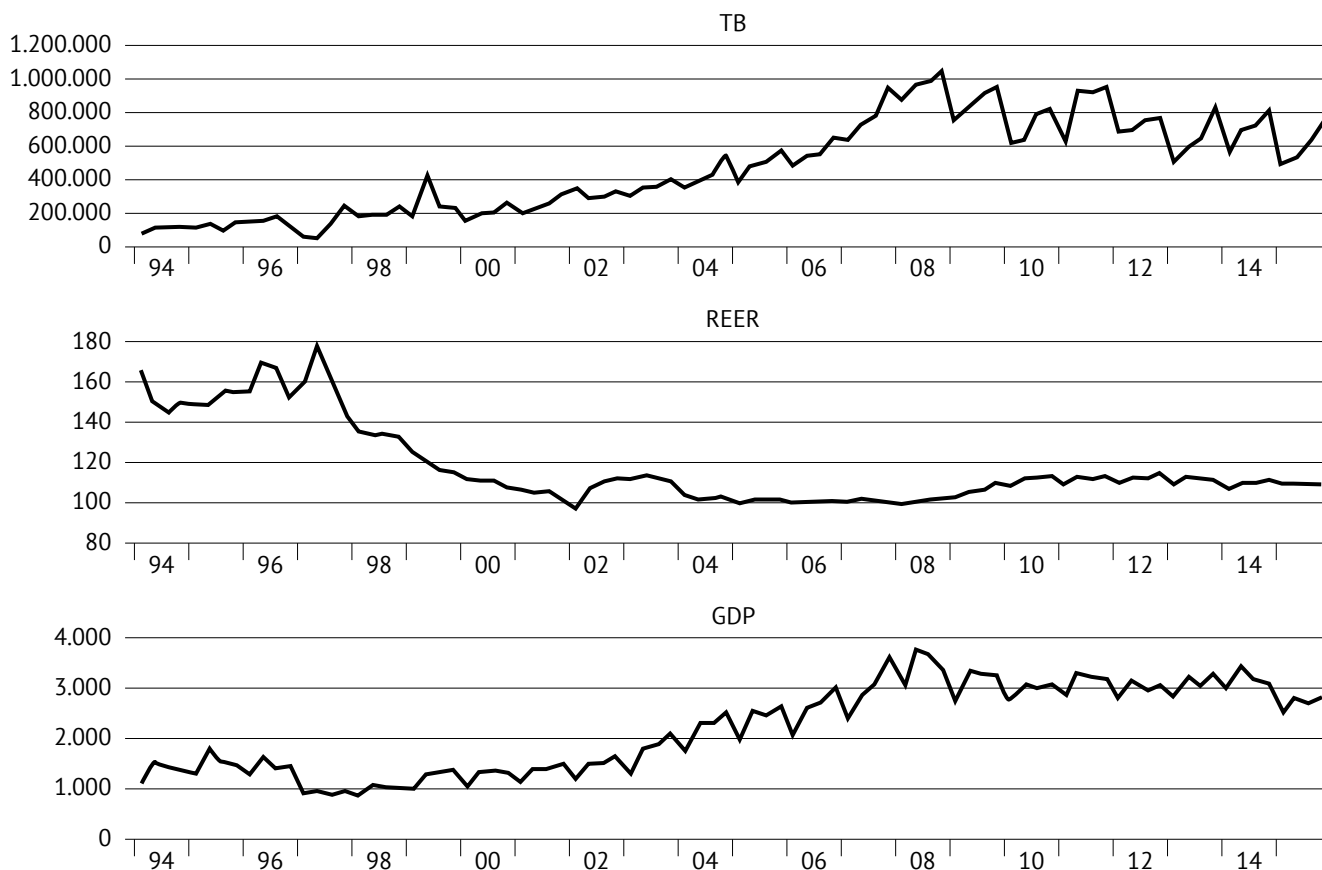
The economic concepts of J-curve and devaluation of exchange rate are closely related. Magee (1973) was the first to introduce the concept of J-curve. Real exchange rate devaluation in the short term worsens the trade balance because the volume of imports remains stable but more expensive due to a lower exchange rate. In the long run, there is an increase in exports and reduction in imports, leading to improved trade but not enough to achieve a surplus. The effect of depreciation leads to a decline in the prices of exports relative to imports (Khieu Van, 2013; Nagpal, in press; Sahlan et al., 2008; Kurtovic et al., 2016). Such a condition causes the trade balance to have a movement in the form of a slanted J-curve (Magee, 1973; Bahmani-Oskooee & Kantipong, 2001; Bahmani-Oskooee & Goswami, 2003; Harvey, 2013; Kurtovic et al., 2016). After depreciation, there is the effect of a time lag in the trade balance. The time lag is a result of the slow recognition of resulting changes, making

the right decisions, delivery delays, procurement of raw materials and the cost-effectiveness of continuing the process of production (Janz et al., 1973; Krugman & Baldwin, 1987; Bahmani-Oskooee, 1985; Kurtovic et al., 2016).

After the fall of the communist regime in 1990, Albania had begun the process of democratization and transition (Cera et al., 2013). Until 1992, Albania had a fixed exchange rate, which, due to the poor state of the economy, was no longer viable. In late 1992, Albania introduced a floating exchange rate regime. The flexible or floating rate influenced the strong devaluation of the lek and the emergence of inflation, which had a negative impact on the growth of the prices as a result of higher imports in relation to the volume of the GDP (Agolli, 2004; Kola & Likko, 2008). As in other countries in southeast Europe, Albania recorded a negative trade balance in the period from 1994 to 2015 (see Figure 1). The crucial question is: What are the major causes of trade balance deterioration in a country?

The main objectives of this work are: 1) to investigate potential presence of cointegration variables; 2) to investigate whether there is a short-term effect and long-term effect of the real depreciation of the ALL on the trade

Figure 1. Display Variables Used in the Analysis



Source: Author’s compilation using data from the Bank of Albania, World Bank (WDI), and International Financial Statistics (IMF database).

balance of Albania or whether there is the presence effect of the J-curve.

To achieve these objectives, the remaining sections are arranged as follows: Section 2 reviews the related literature, Section 3 contains databases used in the research and economic analysis, Section 4 presents the research results, and Section 5 gives the conclusion.

## Literature Review

It is well known that numerous studies are attempting to confirm the presence of the J-curve, based on the traditional approach. The existence of the J-curve is confirmed by the following research of authors such as Spittaler (1980), Bahmani-Oskooee (1985), Krugman and Baldwin (1987), Demirden and Pastine (1995), Marwah and Klein (1996), Bahmani-Oskooee and Brooks (1999), Bahmani-Oskooee and Kantipong (2001), Willson (2001), Hacker and Hatemi-J (2003), Stučka (2004), Bahmani-Oskooee and Kutan (2006), Bahmani-Oskooee and Ratha (2007), Hsing (2008), Kalyoncu et al. (2009), Petrović i Gligorić (2010), Šimakova (2013; 2014). On the other hand, a slight or no presence of the J-curve was found by authors such as Flemingham (1988), Rose and Yellen (1989), Demeulemeester and Rochat (1995), Bahmani-Oskooee and Goswami (2003), Yuen-Ling and Wai-Mun (2008).

Hacker and Hatem-J (2003) investigated the presence of the J-curve in the example of north European economies. The study used econometric techniques, Johansen and Juselius maximum likelihood approach, and vector error correction methods. The results showed the presence of the J-curve or a positive effect of real depreciation on the trade balance of the analyzed countries. Stučka (2004) investigated the effect of the depreciation of exchange rate on the trade balance of Croatia. The study used quarterly data from 1994 to 2001 and applied the cointegration approach. The results showed the presence of the J-curve phenomenon. Bahmani-Oskooee and Kutan (2006) investigated the effect of depreciation on the trade balance of 11 countries in central and eastern Europe. The study used quarterly data from 1990 to 2005, and then applied cointegration approach and error-correction modeling. The results showed the presence of the J-curve in the cases of Russia, Croatia, and Bulgaria. Vika (2006) investigated the response of exports and imports to the change of income, relative prices, and exchange rate in Albania in the period from 1996 to 2005. The study used quarterly data and applied the vector error correction. The results showed that real income has a dominant influence on trade flows, particularly on exports in the long term, while changes in prices have a greater impact on imports than the

currency exchange rate. In addition, the study investigated the presence of M-L conditions and whether depreciation has a positive effect on reducing the trade deficit of Albania.

Petrović and Gligorić (2010) investigated the presence of the J-curve or the effect of depreciation on trade balance of Serbia. The study applied the ARDL model and Johansen's approach analysis. The results showed the presence of the J-curve. Hoda (2013) investigated the effect of depreciation of exchange rates on the trade balance of Albania. The study used quarterly data from 1998 to 2012 and applied the model of imperfect substitution and the Johansen's approach. The results showed that income has a particular impact on trade flows, while the effect of exchange rate is present in exports and has a significant impact on reducing the trade deficit. Šimakova (2013) investigated the effect of depreciation on the trade balance of Hungary with major trading partners. The study applied the Johansen cointegration test and used the quarterly data from 1997 to 2012. The results showed the presence of the J-curve in the case of the bilateral trade with the United Kingdom. Šimakova (2014) investigated the effect of depreciation on the trade balance of Slovakia in the process of the bilateral trade with Poland, the Czech Republic, and Hungary. The study used aggregate and disaggregate quarterly data from 1997 to 2013. In addition, the study applied the cointegration approach. The results showed the presence of the J-curve in the cases of Hungary and the Czech Republic.

## Data and Methodology

The interpolated (no-seasonally adjusted) quarterly data 1994–2015 was used in this study to estimate the effect of real depreciation of the real effective exchange rate (REER) on the trade balance of Albania. Data were taken from the Instat - Bank of Albania, World Bank (WDI), International Financial Statistics (IMF database) and Eurostat. Appendix to this research contains data resources and description of variables.

This study uses the standard model, based on the model of imperfect substitution "two country," developed by Goldstein and Khan (1976) and Rose and Yellen (1989). The model of imperfect competition assumes that two countries are in partial equilibrium with imperfect substitution, where import and domestic products are imperfectly substituted. In fact, the model is based on the following assumptions; first, one country is either an importer, and the other an exporter or vice versa – but not both simultaneously. Second, there are different prices of the same products in both countries, indicating that the law of one price does not apply (Cheng, 2009):

$$TB = TB(Q, Y, Y^f), \tag{1}$$

where  $TB$  is the trade balance between the domestic country and its trading partners;  $Q$  is the real exchange rate;  $Y$  the real incomes of the domestic country;  $Y^f$  the real incomes of the trading partners.

Equation (1) is the basic equation for the analysis and can be written if as in log-linear form (Hameed & Kanwal, 2009):

$$\ln TB_t = \beta_0 + \beta_1 \ln REER_t + \beta_2 \ln GDP_{i,t} + \beta_3 \ln GDP_{j,t} + e_t, \tag{2}$$

where  $\ln TB_t$  represents the trade balance between the domestic country and its trading partners in time  $t$ ;  $\ln REER_t$  represent the real effective exchange rate at time  $t$ ;  $\ln GDP_{i,t}$  represent the real incomes of the domestic country  $i$  at time  $t$ ;  $\ln GDP_{j,t}$  represent the real income of the trading partners  $j$  at time  $t$ ;  $\ln$  represent the natural logarithm;  $\beta_0, \beta_1, \beta_2, \beta_3$  represent the parameters;  $e_t$  represent the error term.

Upon preliminary testing, it turns out that foreign income is not significant statistically. In this light, the model to be estimated becomes

$$\ln TB_t = \beta_0 + \beta_1 \ln REER_t + \beta_2 \ln GDP_{i,t} + e_t. \tag{3}$$

The research is based on the application of the cointegration approach, better known as the autoregressive distributed lag (ARDL). It is cointegration modelling, which is widely accepted by researchers. The ARDL model was developed by Pesaran and Shin (1999) and Pesaran et al., (2001). The ARDL model has the following characteristics: the model is statistically more efficient in the process of determining cointegration relationships in small samples; the model can be applied when the regressors are not of the same order or when the regressors are I(1) and/or I(0), i.e., it is not necessary to perform pre-testing for the existence of problems of the standard deviation; it is not necessary to operate a unit root test in the model, which means that it can be applied regardless of the fact of whether the regressors in the model are stationary, nonstationary, or mutually cointegrated (Pesaran et al., 2001; Pahlavani, et al. 2005; Ketenci & Uz, 2011).

The ARDL model requires the following two steps (Pesaran et al., 2001). The first step relates to the process of determining any significant long-term relationship between the variables using the F-test. The second step relates to the long-term relationship variables and determining their value, along with assessment of the short-term elasticity of

variables showing the error correction representation of the ARDL model. The result of the error correction model tells us about the speed of adjustment from the short-term shock to the long-term balance (Siddiqui et al., 2008; Kurtovic et al., 2016). The ARDL model is represented by the following equations:

$$\begin{aligned} \Delta \ln TB_t = & \beta_0 + \beta_1 t + \beta_2 \Delta x_t + \\ & + \sum_{i=1}^m \alpha_{1i} \Delta \ln \Delta TB_{t-1} + \\ & + \sum_{i=0}^m \alpha_{2i} \Delta \ln REER_{t-1} + \\ & + \sum_{i=0}^m \alpha_{3i} \Delta \ln GDP_{i,t-1} + \lambda_1 TB_{t-1} + \\ & + \lambda_2 REER_{t-1} + \lambda_3 GDP_{i,t-1} + e_t, \end{aligned} \tag{4}$$

where  $\Delta \ln TB_t$ ,  $\Delta \ln \Delta TB_{t-1}$  represent the first difference of the trade balance between the domestic country and its trading partners at time  $t$  and  $t - 1$ ;  $\Delta \ln REER_{t-1}$  represents the first difference of the real effective exchange rate at time  $t - 1$ ;  $\Delta \ln GDP_{i,t-1}$  represents the first difference of the real incomes of the domestic country  $i$  at time  $t - 1$ ;  $\beta_1 t$  and  $\beta_2 \Delta x_t$  represent the trend;  $\alpha_2$  and  $\alpha_3$  represent the short-term effect of the exchange rate and the domestic income on the trade balance;  $\lambda_2$  and  $\lambda_3$  represent the long-term effect of real depreciation of the exchange rate and the effect of income on the trade balance;  $m$  represents the number of lags;  $\beta_0, \beta_1, \beta_2, \beta_3$  represent drifts;  $\ln$  represents the natural logarithm;  $e_t$  represents the error term.

In Equation (4), we expect  $\alpha_2$  and  $\lambda_2$  to have a negative sign. The real depreciation of the domestic currency leads to a reduction in imports, thus improving the trade balance. We also expect  $\alpha_3$  and  $\lambda_3$  to have a positive or negative sign. A decrease in the domestic income will lead to a decrease in imports from abroad; on the other hand, an increase in the domestic income will lead to an increase in exports as well as imports of raw materials and intermediate goods owing to the increased volume of the domestic production.

The steps in the bounds process are based on the F- or Wald statistics and represent the first phase of ARDL cointegration method. The second phase relates to the F-test of the null hypothesis of long-term variables with a time lag whose aggregate value equals zero, while in the case of the alternative hypothesis at least one long-term variable does not equal zero. This relationship is represented by the following relation (Bernstein & Madlener, 2011; Kurtovic et al., 2016):

*Null Hypothesis or  $H_0$ :  $\alpha_1 = \alpha_2 = \alpha_3 = 0$  and  $H_0'$ :  $\lambda_1 = \lambda_2 = \lambda_3$ , i.e., the long-run relationship does not exist.*

*Alternative Hypothesis or  $H_1$ :  $\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq 0$  and  $H_1'$ :  $\lambda_1 \neq \lambda_2 \neq \lambda_3$ , i.e., the long-run relationship exists.*



Pesaran et al., (2001) calculated two levels of the critical value for the given level of significance. One level assumes that all variables are I(0), and the second level assumes that all the variables are I(1). In order to perform the specified testing, we will use the OLS model (3) with or without the linear trend and with and without  $\Delta x_t$  (first difference of current exogenous variables). The length of lags is chosen based on the Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC) (Halicioğlu, 2005; Petrović & Gligorić, 2010; Kurtovic et al., 2016).

Finally, we will apply the impulse response function based on the calculated ECM, which allows the subsequent assessment of the trade balance for a certain period, i.e., the effect of real depreciation (Petrović & Gligorić, 2010). The impulse response function is defined as (Nguyen, 2011; Kurtovic et al., 2015):

$$IR(m, h, Z_{t-1}) = E\left(\frac{y_{t+m}}{e_t} = h, Z_{t-1}\right) - E\left(\frac{y_{t+m}}{Z_{t-1}}\right), \quad (5)$$

where  $m$  denotes time,  $h = (h_1, \dots, h_m)$  is  $n \times 1$  vector that denotes the size of a shock,  $Z_{t-1}$  denotes the accumulative information about economy from the past up to time  $t - 1$ .

### Empirical Results

Table 1 presents the results of the F-test or the Bond test. Based on the application of the F-test, we got the same number of lags for all variables, i.e. from 1 to 8. The optimal number of lags is obtained based on the AIC or the SBC. For the relation  $\beta_1 = 0$  and  $\beta_1 \neq 1$  the optimal number of lags is  $m = 6$ . The value of the F statistics for 6 lags is 14.36 which is greater than the 1% value of the bound test 3.61, i.e. we can reject the null hypothesis and say there is  $\beta_1 \neq 0$  at the level of 1% of statistical significance. Identical results were obtained in the cases of relations  $\beta_1 \neq 0$  and  $\beta_2 = 0$ , i.e. the optimal number of lags is at the level  $m = 1$  and  $m = 6$ , and the F value is 11.21 and 8.33, which is greater than 1% of value of the bound test 4.33. On the basis of the given parameters we reject the null hypothesis and accept the alternative hypothesis that there is  $\beta_1 \neq 0$  at the level of 1% of statistical significance. For the relations  $\beta_1 = 0$  and  $\beta_2 \neq 0$  and  $\beta_1 \neq 0$  and  $\beta_2 \neq 0$  the optimal number of lags is at the second and sixth level. In all cases, the F statistics is greater than the bond statistics which confirms the presence of cointegration. In the end, the values of the coefficients show that there is no trend.

**Table 1.** Results of the F-test

m – lag length	$\beta_1 = 0$			$\beta_1 \neq 0$		
	$\beta_2 = 0$			$\beta_2 \neq 0$		
	AIC	SC	F-stat	AIC	SC	F-stat
1	-0.93	-1.13	17.1	-1.40	-1.54	11.2
2	-0.98	-1.23	16.9	-1.39	-1.59	4.94
3	-1.01	-1.32	15.6	-1.34	-1.60	6.73
4	-1.04	-1.41	15.8	-1.38	-1.70	6.74
5	-1.06	-1.50	14.6	-1.33	-1.71	8.25
6	-1.10	-1.60	14.3	-1.37	-1.81	8.33
7	-0.72	-1.28	12.6	-1.12	-1.62	11.4
8	-0.74	-1.37	16.6	-1.15	-1.71	6.91
	$\beta_2 \neq 0$					
1	-1.10	-1.30	8.20	-1.11	-1.28	14.9
2	-1.15	-1.40	5.66	-1.17	-1.39	13.5
3	-1.15	-1.47	5.37	-1.14	-1.42	14.5
4	-1.18	-1.55	5.68	-1.17	-1.51	14.9
5	-1.18	-1.61	5.79	-1.16	-1.57	14.9
6	-1.20	-1.70	6.39	-1.18	-1.65	15.5
7	-0.79	-1.35	11.1	-0.76	-1.29	14.0
8	-0.83	-1.45	9.44	-0.80	-1.40	18.8

Notes: The relevant critical value bounds for F-statistics are taken from tables CI. iii case III in Pesaran et al. (2001). Unrestricted intercept and no trend (2.45–3.61) at 0.5% significance level, (3.15–4.33) at 0.1% significance level.

Source: Author’s compilation

After we investigated the presence of cointegration, our research is further directed towards the assessment of cointegration vectors. For the calculation of the cointegration vector, we again use model (4), on the basis of which we estimate the optimal number of lags for each variable - ARDL model (1,6,6) – represented in Table 2. The assessed ARDL (1,6,6) model in Table 2 gives the following cointegration coefficients (with  $t$ - coefficient in parenthesis):  $\lambda_1 = -0.47(-3.48)$ ,  $\lambda_2 = -1.98(-5.19)$ ,  $\lambda_3 = 0.76(5.00)$ . Then we got the long-term equation of trade balance by renormalization of the obtained cointegration vector, i.e. dividing by  $\lambda_1$ .

Theoretically, if you have  $x$  variables you can have  $x - 1$  cointegrating vectors. It does not have to be so, however: it’s perfectly all right if you find that variables are connected via a single cointegrating relationship. The cointegrating vectors describing a rule (equilibrium relationship) that bind a group of variables together. We found that variables are connected via a single cointegrating relationship or equilibrium relationship of long-term equation of trade balance.

$$\Delta \ln TB_t = 16.3 - 4.3 \Delta \ln REER_{t-1} + 0.7 \Delta \ln GDP_{t-1} \quad (6)$$

**Table 2.** ARDL (1,6,6) - long-term cointegration

Variable	Coefficients	t-stat
$TB_{t-1}$	-0.47	-3.48
$REER_{t-1}$	-1.98	-5.19
$GDP_{Alb_{t-1}}$	0.76	5.00
$\Delta \ln REER_{t-1}$	-2.31	-6.08
$\Delta \ln REER_{t-2}$	-2.30	-5.60
$\Delta \ln REER_{t-3}$	-2.18	-5.50
$\Delta \ln REER_{t-4}$	-2.11	-5.32
$\Delta \ln REER_{t-5}$	-2.03	-5.16
$R^2$	0.64	
Adj $R^2$	0.56	
Log likelihood	32.5	
S.D. dependent var	0.61	
Durbin-Watson stat	1.86	
Akaike infor. criterion	1.18	
Schwarz criterion	1.65	

Source: Author's compilation

Based on the resulting co-integration equation, ARDL (1,6,6) model shows the positive impact of real depreciation and income on the trade balance. Long-term real depreciation leads to an improvement of the trade balance, while, on the other hand, long-term appreciation leads to a deterioration in the trade balance. The estimated or calculated elasticity is 4.3%, which indicates that the real depreciation of 1% causes an improvement of 4.3% in the trade balance. In addition, based on the equation of trade balance, the growth of domestic income or the  $GDP_{i,t}$  leads to an improvement of the trade balance. The estimated elasticity of  $GDP_{i,t}$  is 0.7%. These results suggest that a 1% increase in domestic income or  $GDP_{i,t}$  would account for a 0.7% increase in Albanian trade balance. The growth of domestic income occurred as a result of the growth in domestic production and exports, i.e. the growth of foreign demand. Namely, research studies Rincón (1999), Petrović and Gligorić (2010), Vika (2006) have confirmed our results that the real depreciation and income growth have a positive effect on trade balance. The GDP growth of Albania from 1997 to 1999 experienced the largest decline as a result of political unrest that occurred then, to grow in the coming years, or more precisely to 2008. After 2008, the GDP significantly fell as a result of the global economic crisis and post-crisis cyclical years.

Table 3 presents the results of coefficients based on the introduction of error correction model (the coefficients of  $EC_{(t-1)}$  of the error-correction model). ECM model serves to show the short-term effect of real depreciation of exchange rate on the trade balance.

**Table 3.** ECM for trade balance on ARDL (1,6,6) model – short-term effect

Variable	Coefficients	t-stat
$\Delta REER_{t-1}$	-0.66	-0.49
$\Delta REER_{t-2}$	2.06	1.79
$\Delta REER_{t-3}$	2.36	2.04
$\Delta REER_{t-4}$	2.98	2.25
$\Delta REER_{t-5}$	4.50	3.69
$\Delta REER_{t-5}$	2.36	1.96
$EC_{(t-1)}$	-0.33	-2.99
$R^2$	0.67	
Adj $R^2$	0.59	
Log likelihood	-28.7	
S.D. dependent var	0.61	
Durbin-Watson stat	2.02	
Akaike infor. criterion	1.10	
Schwarz criterion	1.57	
LM	0.94	
RESET	0.76	
Normality	0.28	
CUSUM	stable	
CUSUM of squares test	stable	

Source: Author's compilation

$EC_{(t-1)}$  is obtained on the basis of equation (4) and the results of the coefficients are represented in Table 3. Based on the values of the coefficients, a weak effect of the J-curve has been observed, which assumes that the coefficients of exchange rate are negatively significant in shorter time lags, and positively significant in longer time lags.

Research studies Flemingham (1988), Rose and Yellen (1989), Demeulemeester and Rochat (1995), Bahmani-Oskooee and Goswami (2003), Yuen-Ling and Wai-Mun (2008) have also confirmed the presence of the J-curve, however to a greater extent compared to our result. Thus, in the first quarter we have a negative value of -0.66, while in other quarters the value is positive. The calculated value  $EC_{(t-1)}$  for  $REER$  is negatively significant, i.e. the value of the coefficient is -0.33 and the t-statistics -2.99. The negative value  $EC_{(t-1)}$  shows a direct deterioration of the trade balance after depreciation, whereas the effect of appreciation has a reverse effect.  $EC_{(t-1)}$  tells us about the speed of the equilibrium adjustment which is 42%, which means that the imbalance of the trade balance is corrected in less than a year. In the short-run real depreciation affects the deterioration of the trade balance, while in the long-run it affects the improvement of the trade balance.

In addition, Table 3 presents the diagnostic statistics.  $AdjR^2$  has an optimum value in all tested cases. LM test tells us that there is no autocorrelation in the disturbance of the error term. Jarque-Bera normality test shows us that the model errors are normally distributed. Heteroscedasticity tests are significant at the 5% level in all cases. The RESET test tells us that the models are correctly specified. In the cases of CUSUM and CUSUMSQ tests, the stability of our model is confirmed.

The impulse response function is obtained on the basis of  $EC_{(t-1)}$  and provides the ability to assess the evolution of the trade balance subsequently after real depreciation. The results are presented in Figure 2, and show that the trade balance worsened in the first ten quarters after real depreciation, and that it only improved and reached a new equilibrium value in the 11<sup>th</sup> quarter. The results of the impulse response show a weak presence effect of the J-curve in the relationship between the depreciation of the real effective exchange rate and the trade balance of Albania.

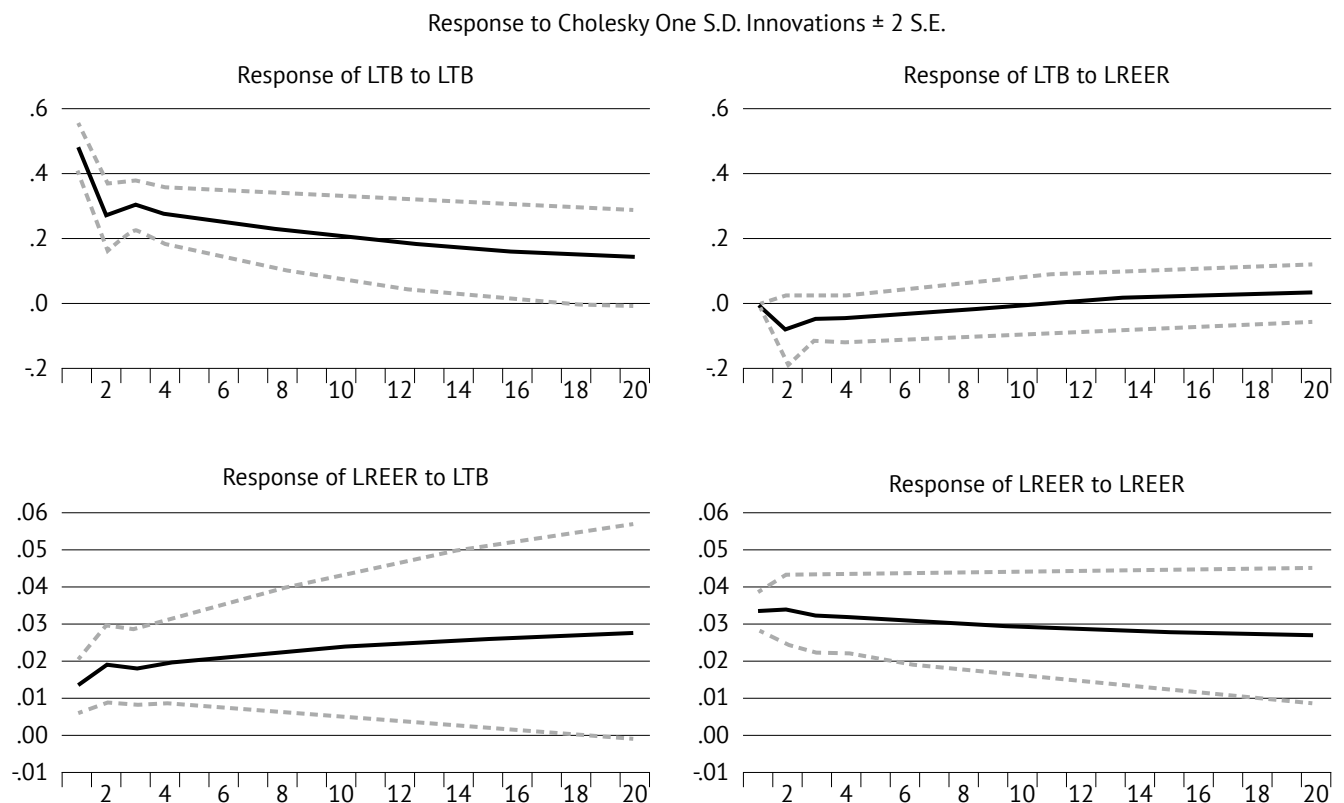
Finally, we want to emphasize that the scientific contribution of our research is reflected in the following. In the first place, we explored the presence of the short and the long-term effect of real depreciation of the exchange rate on the trade balance of Albania: the GDP of Albania has a positive effect on the

trade balance in the long term, and the real depreciation has a positive effect on the trade balance in the short run, i.e., a weak presence effect of the J-curve. Second, real depreciation has a negative effect on the trade balance worsened in the first quarter to gradually improve in the following quarters, and to achieve balance only in the eleventh quarter.

### Conclusion

The results of this study showed the presence of the short-term and the long-term effect of real depreciation of the exchange rate on the trade balance of Albania. The results showed that the GDP of Albania has a positive effect on the trade balance in the long term. Namely, research studies Gupta-Kapoor and Ramakrishnan (1999), Rincón (1999), Petrović and Gligorić (2010), Vika (2006) have confirmed our results that the real depreciation and income growth have a positive effect on trade balance. In addition, using vector error-correction model, or ECM, we explored the positive effect of real depreciation on the trade balance in the short-run, i.e. a weak presence effect of the J- curve. ECM model showed that real depreciation has a negative effect on the trade balance in the first quarter, followed

**Figure 2.** The reaction of the trade balance on the real depreciation



Source: Author's compilation

by an improvement in the following quarters. Research studies Flemingham (1988), Rose and Yellen (1989), Demeulemeester and Rochat (1995), Bahmani-Oskooee and Goswami (2003), Stučka (2004), Kutan (2007) have also confirmed the presence of the J-curve, however to a greater extent compared to our result. Along these lines, we applied the impulse response and the impulse response of the trade balance to the real depreciation. The result showed a weak presence effect of the J-curve, calculated on the basis of  $EC_{(t-1)}$  and unrestricted VAR model, i.e. the trade balance worsened in the first quarter to gradually improve in the following quarters, and to achieve balance only in

the eleventh quarter. Research studies Noland (1989) and Petrović and Gligorić (2010) have confirmed our results.

It is evident that the real exchange rate depreciation can improve the trade balance in the long run. However, the use of depreciation can't be significantly effective without the use of appropriate macroeconomic policies. When combined, real depreciation and macroeconomic policies can improve the competitiveness of an economy, i.e. export activity.

**Acknowledgments:** I would like to thank Ilir Vika and reviewers for helpful comments.

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## Appendix

### Data sources and description

It refers to the interpolated (no seasonally adjusted) quarterly data 1994–2015 taken from the following databases:

- a) International Financial Statistics of IMF (CD-ROM)
- b) Eurostat: Database
- c) OECD: data
- d) Instat: Bank of Albania

### Variables

*TB<sub>t</sub>*: Measures the ratio of trade balance between the domestic country and its trading partners (data were taken from sources b, c).

*REER*: Real effective exchange rate based on CPI. The real effective exchange rate (*REER*) on CPI is the weighted average of the Albanian lek relative to an index or basket of other six major currencies, adjusted for the effect of inflation. The weights are determined by comparing the relative trade balance of a country's currency against each country within the index (data were taken from source d).

*GDPalb*: Real income of Albania. Income of an individual, organization, or country, after taking into consideration the effects of inflation on purchasing power (data were taken from sources b, d).

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## Učinek depreciacije deviznega tečaja na trgovinsko bilanco Albanije

### Izvleček

Namen članka je raziskati učinek depreciacije realnega efektivnega deviznega tečaja leka na trgovinsko bilanco Albanije z uporabo četrletnih podatkov med letoma 1994 in 2015. V empirični analizi so bili uporabljeni test meje kointegracije, model vektorske korekcije napak (VECM) in impulzni odziv. Izsledki raziskave kažejo, da obstaja dolgoročna kointegracija med realnim efektivnim deviznim tečajem (REER) in trgovinsko bilanco (TB). Specifično, depreciacija REER ima pozitiven učinek na trgovinsko bilanco Albanije tako dolgoročno kot tudi kratkoročno, kar nakazuje šibek učinek J-krivulje. Iz rezultatov smo izpeljali pomembne zaključke.

Ključne besede: J-krivulja, kointegracija, elastičnost, kratkoročni učinek, dolgoročni učinek

# CSR EMAT Is an Opportunity for Responsible Decision-Making

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## Abstract

Corporate social responsibility is an expected behaviour in Western countries, but the approach still does not have a clear interpretation in Hungary. As a result of the increasing prestige of the CSR approach, socially responsible thinking and action also are expected from the companies operating in Hungary. Company executives carry out CSR activities in many cases – but not consciously. The objective of this research therefore was the development of a guidance and evaluation criteria that can support managers in responsible decision-making and applying the CSR approach to a strategic level. On the other hand, this management tool allows the measurement of CSR excellence in companies; therefore, they become comparable in their CSR performance, which offers opportunities for further research. The study presents the development of CSR EMAT and the results achieved through the measurements.

**Keywords:** corporate social responsibility, EFQM excellence model, CSR EMAT, CSR excellence management, assessment tool

## Introduction

Corporate social responsibility has a several decades' old history. One of the first definitions of CSR came from Howard Bowen who refers to the obligations of businessmen to make those decisions that are desirable in terms of the objectives and values of our society (Bowen, 1953). People began to deal with the CSR approach to the modern sense since the early 1950s in the United States and other developed countries. We hear more and more about sustainable development, ethical corporate governance, ecological footprint, and similar concepts, which are inspiring us to behave and operate responsibly – from individuals to large enterprises. In today's globalized world, there is often a blurring of geographical boundaries in business; therefore, corporate executives must keep pace with the parent companies and partners' expectations as well as with the needs of the market and society (Braun-Line, 2007). Beyond profit making, companies must respond to environmental and social challenges in order to maintain competitiveness (Braun, 2013). In our country, however, this effort is still unfolding; one reason for this is that there is no available guideline or interpretation in Hungarian for company managers. On the other hand, the approach originally launched from the US and Western cultures, carrying the particularities of the certain culture, which are not always interpretable in the Hungarian practice. The Hungarian research results confirmed that the development of a CSR guideline and supporting tool are needed (Szlávik, 2009, p. 160).

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ORIGINAL SCIENTIFIC PAPER

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RECEIVED: NOVEMBER 2016

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REVISED: MARCH 2017

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ACCEPTED: APRIL 2017

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DOI: 10.1515/ngoe-2017-0017

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UDK: 005.35:005.53

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JEL: M14

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**Citation:** Rodek Berkes, N. (2017). CSR EMAT Is an Opportunity for Responsible Decision-Making. *Naše gospodarstvo/Our Economy*, 63(3), 37-46. DOI: 10.1515/ngoe-2017-0017

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**NAŠE GOSPODARSTVO  
OUR ECONOMY**

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Vol. 63 | No. 3 | 2017

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pp. 37–46

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According to Lepoutre and Heene, the leaders of small- and medium-sized enterprises have professional qualifications rather than management knowledge; since they are typically focused on the daily operation, there is not enough time for strategic development (Lepoutre & Heene, 2006). We have MBA training at University of Pannonia, where we ask students in each year about their CSR activities. This is a management training course in four different towns in Hungary. Our personal experience has highlighted the fact that most of the company executives are not aware of the concept of CSR, and they identify CSR as environmental protection and charity. The CSR concept has, however, many more elements. We cannot expect managers to be able to decide responsibly without knowing this information. In many cases, when we started introducing the elements of the CSR concept and their practical implementation, the managers realized that they carry out many similar activities in their own company – but not in a conscious way. Universities have major responsibilities in knowledge transfer; they should inform their students and the companies operating in their environment about the new management approaches and tools (Birkner-Máhr, 2016). To find a solution for this problem, we aimed to develop a quality management system and guideline to help managers understand the CSR approach. This guideline can contribute to the application of the CSR approach at a strategic level as well.

The research questions are as follows: 1) Can the EFQM excellence model serve as the base for a CSR excellence management tool and guideline?; 2) Can this management tool help managers to assess their company?

The first step in the research was to find the right excellence model and then to collect its content. While developing this management system, we found it important to keep the CSR framework, but tailoring it according to the corporate operating conditions in Hungary, functioning as a guideline for the management-level application. A further importance of the research is that the approach has no universally accepted measuring system (Venturelli et al., 2017). The methods used by Western countries to measure CSR activities are not always applicable in the Hungarian corporate practice. Following the literary background of the CSR approach, the CSR excellence model and the assessment criteria will be presented with the results obtained during the evaluation.

## Literature Review

Corporate social responsibility is an important means of achieving sustainability (Berkes et al., 2015). Sustainable development meets the needs of the present, without compromising the needs of the future generations

(Brundtland, 1987). Although the conscious and environmentally aware decisions promoting sustainability refer to the future, they need to be taken into consideration in the present (Laszlo, 2008). Since changing opinions and attitudes is a slow process, it is expedient in the case of present decisions to take into account the circumstances with the support of appropriate management techniques in order to enhance effectiveness. Responsible managers should think of social efficiency as an evaluation criterion of their own management processes (Maak-Pless, 2006). How much social welfare is created? Are the employees satisfied with the working conditions? Are they motivated well? Are they growing as human beings in their work, or are they exploited so that they present a lost social capital? Performance for a responsible manager is defined as a combination of social, environmental, and economic performances (Laasch, 2015). Waddock and Bodwell have coined the term “total responsibility management” (TRM) to describe a framework that translates total quality management tools and practices to the field of responsible management (Waddock–Bodwell, 2007). If we take the definition of sustainability into consideration, we can see that the two concepts are related and complementary. CSR means the activities of a company that support the society while relating to legal standards and the direct interests of the company (Broomhill, 2007). Sustainable development meets the needs and expectations of humanity without threatening the future generation (Crowther–Martinez, 2004). The responsible operation has a number of results that support sustainability and thereby the long-term competitiveness as well (Benn, 2011).

The implementation of the corporate social responsibility concept is affected by the people who make up the organization. The key element of CSR-oriented management is the leadership itself and its commitment, habit, ethical compliance, disposition, and socialization experience (Laash–Conaway, 2013). The social commitment of the company to the practical aspects of CSR: 1) Unifying the CSR orientation of the management; 2) the development and operation of reporting and measurement systems; 3) the continuous improvement of the quality of work; 4) social and eco-labels, the purposeful and conscious use of product marks; 5) implementing socially responsible investments (Kun, 2004).

Table 1 summarizes the results of the responsible operation. The stakeholders’ loyalty and motivation are among the results of the utmost importance, which also is a prerequisite for competitiveness (Harrison–Wicks, 2013). Beyond the positive results of responsible operations, CSR also can be a solution for the challenges of generational change. Currently, the labour market is represented by three generations who differ not only in their characteristics but in their working relationship and their needs about the working conditions



**Table 1.** Results of Responsible Operation

Results of Responsible Operation
● the company profit will grow; it will be easier to obtain corporate resources as the company will be more attractive to investors
● it improves the company's reputation and image
● the loyalty and motivation will rise among the stakeholders, especially the consumers and staff, which reduces internal monitoring and coordination costs
● improves the competitive position of the company, increases the market share - niche markets also can be reached
● cost savings can be achieved (environmental investments), the company will be attacked less by the NGOs, the media, and other stakeholders: risk management
● reduces the risk of tightening legislation
● transaction costs will be reduced because of the relationship and trust
● as the governments and international organizations consider CSR as a more important question, the company can obtain subsidies easier through its responsible behavior
● CSR can be a tool of stakeholder relationship management
● it develops proactivity
● it provides opportunities for innovation (e.g., SRI, responsible investment products, or environmentally friendly products)

Source: Author's research data (2015)

are very different as well (Adelina, 2007). The next generation of employees typically is characterized as having much more environmentally conscious thinking, and the Z-Generation is also called the "Responsible Generation." Therefore, in the future, companies will need to place greater emphasis on the challenges arising from human resource management that fit the needs of future generations (Tari, 2011). There are many aspects that prove that it is necessary for company executives to be familiar with the CSR concept and to apply it on the management level.

CSR has several definitions as a result of growing interest in the topic from companies, governments, and the general public (Blowfield–Murray, 2008). Matten and Moon have highlighted the heterogeneous nature of the various definitions (Matten–Moon, 2008). The numerous definitions of CSR that have emerged are well summarized in a work by Dahlsrud (2008). We have chosen some definitions, which in our opinion the best summarize the essence of the approach. According to the World Business Council for Sustainable Development, the definition of CSR is as follows: commitment of business to contribute to sustainable economic development, with the employees, their families, local community, and society cooperating in order to improve the quality of life (WBCSD, 2000). CSR is regarded as a set of tools that improves working conditions beyond legal requirements and is favourable for the society (Vogel, 2006). Many companies are focusing on corporate social responsibility issues, but, unfortunately, most companies are still based on self-interest and make CSR as part of their economic calculation, which is the opposite of altruistic ethical behaviour (Holliday, 2002). The main

points of CSR concepts are that, after mapping, who their stakeholders are; thus, the company has to incorporate these CSR values and interests into their business operation while maintaining their profitability. Socially responsible behavior radiates confidence toward both employees and consumers (Frank, 2004). Many companies, however, see that a few donations and environmental measures are enough for responsible behavior, but for sustainable development a long-term strategy is needed. ISO (2010) offers the following definition for CSR: "The awareness of an organization/area for the impacts of its decisions on society and environment through transparent and ethical behavior that contributes to sustainable development, it takes into account the expectations of stakeholders, it is in compliance with international norms of behavior and integrated throughout the organization."

Corporate social responsibility concentrates not only on environmental issues but also on communication and employee care, so applying this concept can be a great tool in order to build trust and raise employee satisfaction and motivation. Employee satisfaction and motivation can even influence the success of an organisational project. Based on Kaszás et al.'s study, it is evident that the external motivation of the project manager is definitely an important influencing success factor with regard to time (Kaszás et al., 2016: 17-18; Németh-Péter, 2016). The essence of CSR activity is communication, including an internal and external relationship with stakeholders. The stakeholders' views and ideas are becoming increasingly important, so the bidirectional communication is essential (Boutilier, 2009). There are many positive effects of CSR that can be observed in case of companies.

### Research Framework and Method

Our research was motivated by the idea to develop a guideline of CSR, which enables companies to learn about the concept and its elements, so this information could help them in responsible decision-making. The research focused on the following two hypotheses.

*H1: The EFQM excellence model can serve as the base for a CSR excellence management tool and guideline.*

*H2: CSR EMAT can help managers to assess their company; therefore, they will be comparable in their CSR performance.*

The research was structured as follows: 1) Collect the elements of international standards and directives for social responsibility and sustainability; 2) Find a quality management system whose framework is appropriate to develop the CSR excellence model; 3) Develop the CSR excellence management and assessment tool (CSR EMAT) based on the logic of the EFQM excellence model; 4) Validate the model at the companies; 5) Use the improved and validated assessment tool at the companies and compare the results.

In order to develop the CSR EMAT model, the first step was to collect the elements of international standards and directives for social responsibility and sustainability.

Table 2 demonstrates the international CSR guidelines and standards and their core subjects. Since the early 1990s, the European Commission has taken an active interest in corporate social responsibility. In 2001, this interest manifested itself in the form of a green paper (or consultation document) entitled “Promoting a European framework for corporate social responsibility.” This 35-page document sets out the principles underlying CSR and introduces some of the sustainability tools at the disposal of companies and governments (EC, 2001). The UN Global Compact is a call to companies everywhere to 1) voluntarily align their operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment, and anti-corruption and 2) take actions in support of UN goals, including the millennium development goals (UN Global Compact, 2006). The global reporting initiative (GRI) is a leading organization in the sustainability field. GRI promotes the use of sustainability reporting as a way for organizations to become more sustainable and contribute to sustainable development. GRI has pioneered and developed a comprehensive sustainability reporting framework, which is widely used around the world. A sustainability report is a report published by a company or organization about the economic, environmental, and social impacts caused by its everyday activities (GRI, 2006). ISO 26000:2010 provides guidance rather than requirements, so it cannot be certified, unlike some other well-known ISO standards. Instead, it helps clarify what social responsibility is, helps businesses and organizations translate principles into

**Table 2.** CSR Guidelines and Standards

European Commission (2001)	UN Global Compact	GRI	ISO26000	Core subjects of CSR
Social responsibility integrated management			Organizational governance	1. Leadership
Adaptation to change		Economic		2. Employee
Human rights	Human rights	Human rights	Human rights	3. Environment
Human resource management/ Health and safety at work	Labour	Labor practices and decent work	Labour practices	4. Society
Management of environmental impacts and natural resources/ Global environment concerns	Environment	Environmental	Environment	5. Product and service
	Anti-corruption		Fair operating practices	
Local communities		Society	Community involvement and development	
Business partners, suppliers and consumers		Product responsibility	Consumer issues	
Social and eco- labels				
SRI (Socially responsible investment)				
Quality in work				
Social responsibility reporting and auditing				

Source: Authors’ research data (2016)

effective actions, and shares best practices relating to social responsibility globally. It is aimed at all types of organizations, regardless of their activity, size, or location (Mulej et al., 2012). The standard was launched in 2010 following five years of negotiations between many different stakeholders across the world. Representatives from government, NGOs, industry, consumer groups, and labour organizations around the world were involved in its development (ISO, 2010).

We collected the guidelines and standards related to CSR into a table to provide an overall picture about the approach and demonstrate the core subjects they have in common. As a result, the determined elements of the CSR concept can be found in the last column of the table.

After collecting the content, the next step was to find a framework that is appropriate to develop the CSR excellence model. The two most popular excellence models are the Malcolm Baldrige National Quality Award (MBNQA), which recognizes US organizations in the business, health care, education, and nonprofit sectors for performance excellence (NIST, 2014). The other one is the EFQM excellence model, which was introduced in 1992. It is based on a set of European values and served as a powerful tool for integrating quality in organizations (EFQM, 2017).

We have chosen the European model, which is closer to that of Hungarian business culture. Today, it is the most widely used business excellence model in Europe; more than 30,000 organizations use it to improve performance. The model is a practical, nonprescriptive framework that enables organisations to assess where they are on the path to excellence and provides a basic structure for the organisation’s management system (Neergaard–Pedersen, 2012). Kumar and Balakrishnan have identified how the EFQM excellence model explains the concept of putting CSR into practice to support social responsibility and sustainability (Kumar-Balakrishnan, 2011). Other researchers such as Neergaard, Pedersen, Avlonas, Jankal, and Jankalova also examined the relationship between CSR and the excellence models (Avlonas, 2004; Neergaard-Pedersen, 2012;

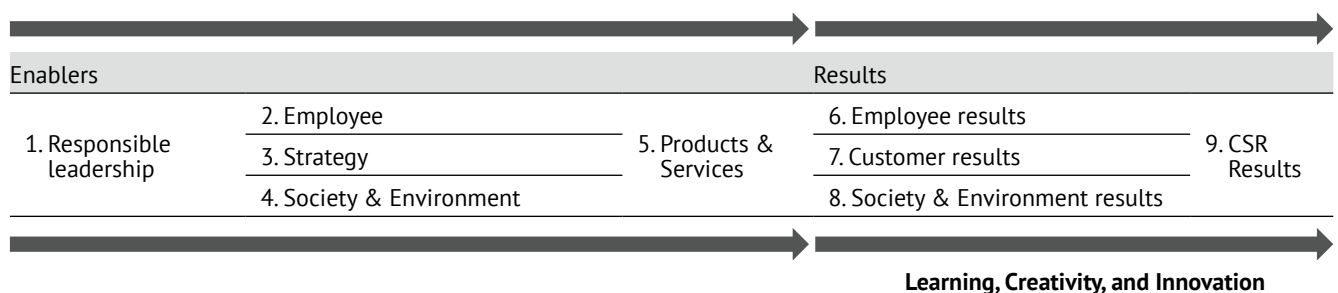
Jankal-Jankalova, 2016). Their research focuses on the implementation of CSR with the help of the excellence models as well as to analyse various approaches for the evaluation of CSR. These researches present the CSR elements in the excellence models, while we collected all the CSR elements from the guidelines and standards and developed a model based on the framework of the EFQM excellence model. The EFQM excellence model contains three integrated components: the fundamental concepts of excellence; the EFQM excellence model; and the RADAR logic. The fundamental concepts of excellence are the underlying principles that are the essential foundation of achieving sustainable excellence for any organisation. The EFQM excellence model is a framework to help organisations convert the fundamental concepts and RADAR logic into practice. Radar logic is a dynamic assessment framework and management tool that provides a structured approach to question the performance of an organisation. It also supports the scoring mechanism behind the assessment schemes and can help to lead change and manage improvement projects in an organisation (EFQM, 2017).

The EFQM excellence model is a framework based on nine criteria. Five of these are “enablers” and four are “results.” The enabler criteria cover what an organisation does and how it does it. The results criteria cover what an organisation achieves. Results are caused by enablers, and enablers are improved using feedback from results. Each criterion is supported by a number of criterion parts. Criterion parts are statements that describe in further examples what should be considered in the course of an assessment.

## Results and Discussion

The areas of the CSR excellence model were determined on the basis of the international standards and guidelines. The certain areas of the model also are divided into criterion parts on the basis of the sub-areas of international standards and guidelines, and the collected content elements of 250

**Table 3.** CSR Excellence Model



Source: Author’s illustration

European CSR reports. The assessment tool is intended to evaluate the CSR activities of organisations of all sizes and from all sectors in order to be able to compare them. It was therefore important to collect all the elements of CSR from the reports and standards that are used in practice. Beyond the assessment, the aim of the CSR EMAT system is to provide guidance for company managers in the interpretation of the CSR approach and a type of best practice database that can help them to learn about the opportunities of applying this concept. The fundamental concepts of the CSR excellence management and assessment tool (CSR EMAT) are 1) responsible and ethical management; 2) strategy for responsible and sustainable operation and development; 3) creating value for the society; 4) taking into account the interests of stakeholders; 5) employee appreciation and motivation; 6) relations with partners and customers; 7) responsible product and service; 8) responsibility for the environment. The CSR EMAT is a complex management guidance that, besides the fundamental concepts and their definitions, also contains the assessment tool, which can evaluate the intensity of the CSR activity of a certain company.

The validation process was carried out at the partner companies of the University of Pannonia. Thirty structured interviews were made with managers in various fields where they checked the content of the assessment tool and carried out the company's self-assessment as well. Following the validation, 90 more companies (small, medium, and large companies) in Budapest (49%) and in the country (51%) carried out their self-assessment with the help of CSR EMAT. Based on the opinion of business leaders, they were

able to successfully apply CSR EMAT and identify the areas for improvement after the assessment. The results have been continuously recorded in a database.

Table 4 shows the summary table of the company's CSR excellence at the end of the assessment tool. Each company has this table and a graphic illustration of its results following the completion of the evaluation system. The assessment tool consists of statements concerning the nine areas (enablers and results) of the CSR excellence model. The results show the percentage that the analysed company received out of 100% in the listed areas. In addition to the summary table and the graphic illustration, the company also received a text summary on the basis of the results. Conclusions can help the companies to pinpoint the development directions.

Table 5 shows the best results of the evaluated companies.

The results show a mixed picture; in the sample, there are small, medium, and large companies with different areas of activity and ownership structures. It was important to examine all these aspects. As we stated, the CSR EMAT is applicable for small, medium, and large companies regardless of their profile. We assumed that the foreign-owned large companies will be the most excellent in CSR activity, as they are more familiar with the approach. We also assumed that the CSR intensity is higher in case of companies in Budapest (the Hungarian capital city) than in rural businesses. Micro businesses are not included in the sample because, in their case, the management-level application cannot be interpreted. For Table 5, we collected the best 10 evaluated companies. The results

**Table 4.** Summary Table of the Company's CSR Excellence

Result of the Company's CSR Excellence						
Record the Number of Ticks Scored	E	D	C	B	A	% Achievement
Responsible leadership	0	0	1	2	2	80
Employee	0	0	0	0	6	100
Strategy	0	0	0	2	2	87.5
Society & Environment	0	0	1	2	2	80
Products & Services	0	0	0	0	5	100
Employee results	0	0	1	1	5	89.3
Customer results	1	0	0	1	3	75
Society & Environment results	0	1	0	0	4	85
CSR results	1	0	1	2	1	60
Total number of ticks (a)	2	1	4	10	30	47
Factor (b)	0	25	50	75	100	
Value (a x b)	0	25	200	750	3000	3975
Total/47= 84.6% CSR excellence						

Source: Author's illustration

**Table 5.** Best results of the evaluated companies with CSR EMAT

Company's headquarters	Year of foundation	Company's activity	Number of employees	Ownership structure	Responsible leadership	Employees	Strategy	Society & Environment	Product&Service	Employee results	Customer results	Society & Environment results	CSR results	CSR Excellence
Countryside	1995	industrial	10.000+	foreign	80%	100%	100%	100%	100%	39,28%	55%	55%	50%	73,94%
Countryside	1896	industrial	2200	foreign	90%	100%	93,75%	95%	100%	46,40%	40%	45%	35%	70,75%
Budapest	2003	service	15	foreign	90%	95,80%	93,75%	90%	100%	67,86%	90%	85%	30%	79,80%
Budapest	1935	service	60.000+	foreign	80%	100%	87,50%	80%	100%	89,30%	75%	85%	60%	84,60%
Countryside	2007	industrial	75	foreign	80%	66,60%	93,75%	85%	100%	67,86%	65%	65%	20%	71,80%
Budapest	1995	service	20.000	foreign	60%	62,50%	75%	90%	75%	60%	90%	85%	75%	74,40%
Countryside	1915	industrial	2700	foreign	70%	62,50%	81,25%	90%	95%	42,86%	70%	70%	80%	71,81%
Budapest	1999	service	1600	foreign	75%	91,60%	81,25%	85%	95%	39,20%	90%	70%	75%	76,59%
Countryside	2002	service	110	Hungarian	100%	100%	100%	100%	100%	53,57%	75%	85%	60%	84,57%
Countryside	1996	service	180	Hungarian	85%	100%	81,25%	85%	90%	46,43%	30%	75%	45%	70,21%

Source: Author's illustration

**Table 6.** Worst Results of the Evaluated Companies with CSR EMAT

Company's headquarters	Year of foundation	Company's activity	Number of employees	Ownership structure	Responsible leadership	Employees	Strategy	Society & Environment	Product&Service	Employee results	Customer results	Society & Environment results	CSR results	CSR Excellence
Countryside	2000	industrial	650	foreign	40%	70,84%	18,75%	70%	75%	25%	60%	35%	0%	44,15%
Countryside	2004	industrial	249	Hungarian	40%	87,50%	6,25%	95%	90%	21,43%	50%	30%	30%	52,66%
Countryside	1993	industrial and service	38	Hungarian	90%	79,20%	12,50%	90%	65%	32,10%	45%	45%	10%	53,72%
Countryside	2001	industrial and service	17	Hungarian	70%	58,30%	12,50%	85%	70%	35,70%	35%	35%	5%	47,34%
Countryside	1939	industrial	330	foreign	25%	50%	31,25%	35%	80%	32,14%	50%	65%	25%	43,62%
Countryside	2001	industrial	130	foreign	65%	83,30%	62,50%	30%	95%	28,60%	40%	10%	0%	45,75%
Budapest	2008	service	53	Hungarian	55%	66,67%	43,75%	60%	65%	28,57%	40%	55%	30%	47,34%
Countryside	1996	industrial	535	foreign	45%	95,80%	37,50%	65%	100%	42,86%	45%	40%	5%	53,72%
Countryside	1989	industrial	65	Hungarian	75%	87,50%	37,50%	90%	80%	25%	20%	45%	15%	52,66%
Countryside	2004	service	120	Hungarian	35%	70,83%	18,75%	65%	70%	42,86%	60%	45%	10%	47,34%

Source: Author's illustration

show that the companies can be found both in Budapest and the countryside, and all sizes are represented. Nevertheless it can be stated that *the most CSR excellent companies are from the service sector with foreign ownership*. The results also show that *those companies are the most excellent in CSR whose strategy includes commitment to social responsibility*.

It is important to have the CSR goals in a written form and to inform the stakeholders about it as well. Most of the companies in this table prepare CSR reports regularly.

Contrary to the Table 5, Table 6 shows the worst results of the evaluated companies. The results show that *most of the*

least-excellent companies are located in the countryside, and they are mainly from the industrial sector. It is proven that the application of the CSR approach depends on the leadership. The results from Table 6 confirm this statement, as the area of responsible leadership and strategy received a small percentage. It means that *the leadership is not committed to CSR, and they do not have this approach in their strategy*. The poor results (employee results) also show that they do not even provide more to their employees than is required.

## Conclusions

Summing up the results of the research, it can be stated that both hypothesis are confirmed, as the EFQM excellence model is an appropriate framework for developing a CSR excellence model. The CSR EMAT can help managers to identify the CSR activities of their companies; it also shows improvement opportunities, as the model is based on the logic of TQM (total quality management). With the use of the assessment tool, the CSR intensity of different companies (in size, profile, and ownership structure) can be comparable. Our primary goal was to develop a management tool for the Hungarian company executives that

can help them in responsible and sustainable operation. The leaders of the evaluated companies confirmed that they have successfully applied the CSR EMAT. The evaluation revealed that the most CSR excellent companies are from the service sector and have foreign owners. The results also show that the strategy of the most excellent companies includes commitment to social responsibility. Conversely, in the case of the least excellent companies, the leadership is not committed toward CSR, and they do not have this approach in their strategy. Most of these companies are located in the countryside, and they are mainly from the industrial sector. These results once again confirm the fact that the leadership needs to understand the CSR approach because responsible operation depends mainly on their commitment. The results of the evaluated companies are collected into a database providing an opportunity for further research, correlation studies, cluster analysis, and formulation of general statements.

CSR EMAT is available also in English; therefore, company executives from other countries can use it as well. As a further research, together with IT experts, we plan to develop an online platform for CSR EMAT and evaluate different companies in other countries as well and compare the results to see whether there is a correlation between CSR intensity and national culture.

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# 'Orodje za upravljanje in ocenjevanje odličnosti družbene odgovornosti podjetij' EMAT je priložnost za odgovorno odločanje

## Izveček

Družbena odgovornost podjetij je pričakovano ravnanje v zahodnih državah, vendar še vedno nima jasne opredelitve na Madžarskem. Zaradi vse večjega ugleda družbeno odgovornega pristopa podjetij se pričakujeta tudi družbeno odgovorno razmišljanje in delovanje podjetij, ki delujejo na Madžarskem. Vodstva podjetij v številnih primerih izvajajo dejavnosti družbene odgovornosti podjetij, vendar se tega niti ne zavedajo. Zato je bil cilj te raziskave razvoj smernic in ocenjevalnih kriterijev, ki lahko pomagajo menedžerjem pri odgovornem odločanju in uporabi družbeno odgovornega pristopa podjetij na strateški ravni. Po drugi strani pa to menedžersko orodje omogoča merjenje odličnosti družbene odgovornosti podjetij in primerjavo njihove uspešnosti, kar ponuja priložnosti za nadaljnje raziskave. Študija predstavlja razvoj orodja za upravljanje in ocenjevanje odličnosti družbene odgovornosti podjetij in rezultate, dosežene z meritvami.

**Ključne besede:** družbena odgovornost podjetij, model odličnosti EFQM, 'orodje za upravljanje in ocenjevanje odličnosti družbene odgovornosti podjetij' EMAT



# Intergenerational Cooperation at the Workplace from the Management Perspective

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## Abstract

The labor market is currently experiencing employees of four generations. Each generation has different behavior patterns, attitudes, expectations, habits, and motivational mechanisms. As generational gaps play an important role in the business process, organizations have to find ways to balance the needs and views of different age groups. To overcome the negative outcomes arising from generational differences and to use the strengths of each generation, the implementation of comprehensive and proactive model of intergenerational cooperation, presented in the paper, is becoming the necessity for each organization because of the benefits.

**Keywords:** employees, generation, intergenerational cooperation, intergenerational learning

## Introduction

The concept of generation is based on the idea that people have developed different values and beliefs about life because of the influence that comes from a time period in which they grew up. Dencker et al. (2008) posited that generational identities emerge in the workplace based on collective memories of shared events that take place within each generation's late formative years. Knowledge about generations can help us to understand the behavior, handling, and motivation of older and younger than us. Often, in practice there are also arguments that the belonging to each generation is more a state of "spirit" of the individual rather than the actual biological age. Therefore, the identity of one's generation may vary by age, gender, race, and education and is not strictly tied to birth cohort membership.

Whatever the concerns, it is clear that, in terms of age, people have different needs, values, and attitudes as well as a variety of experience and knowledge. Depending on experience, the older generation can have a historical view of the developments in the working environment due to long years of working experience, while younger generations are more qualified in the field of new technologies and media, but they lack experience. In the same way, the younger generation is more focused on career development, while the older generations focus more on high level of employment and income security (Crumpacker &

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REVIEW PAPER

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RECEIVED: FEBRUARY 2017

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REVISED: MAY 2017

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ACCEPTED: JUNE 2017

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DOI: 10.1515/ngoe-2017-0018

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UDK: 331.5:005.9

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JEL: I24, M12, M53

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**Citation:** Veingerl Čič, Ž., & Šarotar Žižek, S. (2017). Intergenerational Cooperation at the Workplace from the Management Perspective. *Naše Gospodarstvo/Our Economy*, 63(3), 47-59. DOI: 10.1515/ngoe-2017-0018

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OUR ECONOMY**

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Vol. 63 | No. 3 | 2017

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pp. 47–59

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Crumpacker, 2007). Intergenerational cooperation and generational management at work are becoming a necessity in business, if the organizations want to maintain the knowledge and experience of older generations and at the same time obtain and retain talented and devoted young employees. The times when the older workers could be immediately replaced with younger, qualified employees will soon be over due to declining fertility rates in Europe. Therefore, the intergenerational leadership is a challenge that we all face. Besides, this replacement is not easy for professional reasons; generations are more complementary than competitive (Zupančič, 2016).

A diverse and multigenerational workforce present today a number of opportunities and challenges for managers. With some employees choosing to work into their late 60s and 70s, four generational cohorts are currently working together: veterans, Baby Boomers, Generation X, and Generation Y. Although this diversity presents complexities in the management of human resource policies and systems, the basic objective is to fulfil the desire and different needs generations feel in their workplace environment.

Researchers have been, therefore, interested in intergenerational management for decades, especially because the workforce has never been more diverse with regard to age, race, gender, and ethnicity, as it is today (Crumpacker & Crumpacker 2007; Zemke, Raines, & Filipczak, 2000). The majority of research concerning generational differences in the workplace has assumed that differences between social generations should be evident in the work domain; therefore, better understanding of the generations cohabiting at the workplace can lead to better recruitment, retention, succession management, communication, employee engagement and conflict resolution (Dencker, Joshi, & Martocchio, 2008). To date, academic research on generational differences at work has been descriptive rather than explanatory (Joshi, Dencker, & Franz, 2011). Despite the recent explosion of research concerning generational differences in the workplace, scholars and practitioners presently face a variety of contexts, with different methodological and theoretical perspectives on the nature of generations. There is an intensive discussion about whether we can really distinguish a group of people – a generation in terms of different beliefs, values, and attitudes or is this just a question of the life stage an individual belongs to (Giancola, 2006). So we set the research question: Can we for achieving the competitive advantages of organizations develop a model of intergenerational cooperation?

In order to present the challenge and problem of generations and intergenerational management, we structured our paper into several chapters. Methodology of scientific research foregoes chapters where we examine the

theoretical foundations of generational differences and generations in the workplace. First, we argue key points of generation theory that have potential to advance our understanding of generations as a workplace phenomenon of generations and their characteristics. Second, we provide an up-to-date review of intergenerational cooperation at work. Third, we present the results of the model on intergenerational cooperation. We conclude the paper with a number of directions for future research of intergenerational cooperation and generations at work.

## Methodology

Based on a systematic literature search strategy, the databases dLib.si, ProQuest, and Cobbis.si were reviewed in 2016. For literature search, we used the following key words: intergenerational cooperation, generations, intergenerational learning, tacit knowledge, intergenerational gap. We broadened our search with the literature on the human resources management. Limitation: the study covered only publication since 2003; such restrictions were deliberately set because we wanted to obtain the latest and updated information on the studied issues. In the literature search, we focused on the literature in the Slovenian and English languages. There were no other restrictions.

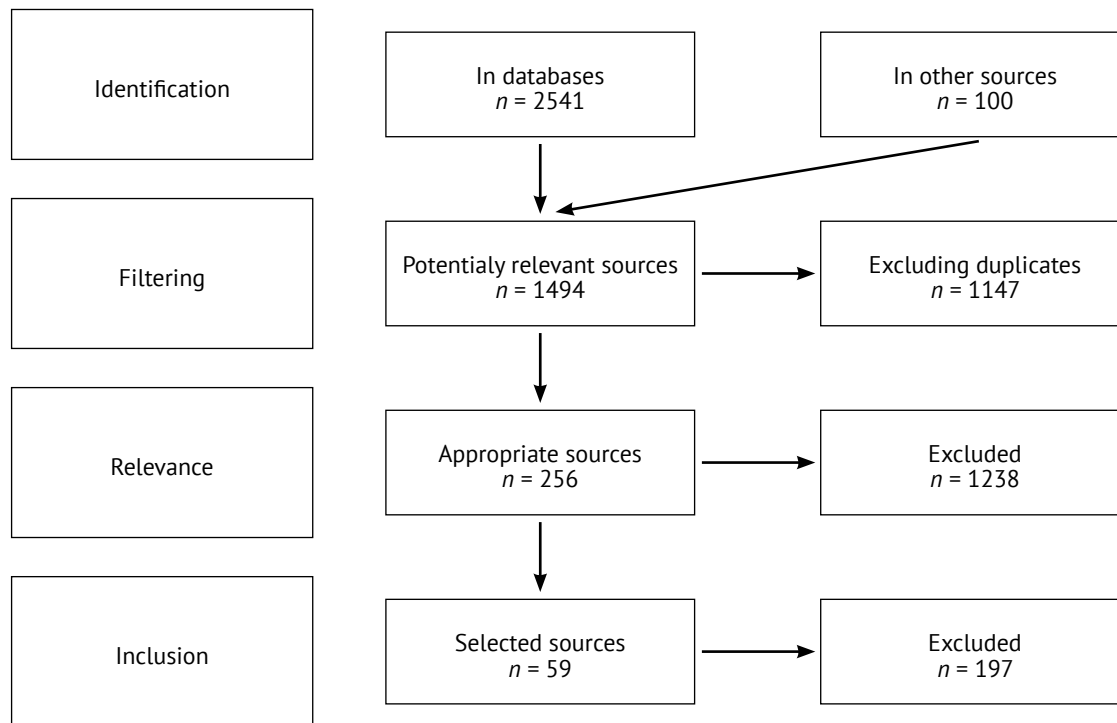
## Results of the literature review

Information was searched in the databases of the University of Maribor. Qualitative research methodology included desk research. The search in the databases of the University of Maribor resulted in 2541 hits. We selected 59 sources and researched them; see Figure 1.

## Quality Score review and description of the data processing

The selected sources were published between 2003 and 2016. We excluded the sources, which were double or we estimated the content has not been sufficiently connected with the subject, purpose, and objective of our research. For the analysis of the technical and scientific content, we conducted a synthesis of the results, and took into account the availability of the content and contextual relevance. We chose 59 sources that were appropriately connected with our topic and objectives and contributed with high quality to our qualitative research, which was based on qualitative research methods such as descriptive and comparative method, method of induction and deduction.

**Figure 1.** Research Process Flowchart



Source: (author's presentation)

## Generations at Workplace

Generational differences in work values, motives, and beliefs have an impact on all aspects of human resource management: recruitment, training, and development; career development, rewards, and working arrangements and management style; they can also cause serious conflicts within the workplace (Karp & Sirias 2001; Parry & Urwin, 2011).

Important foundations for the study of generations come from Karl Mannheim. He defined generation as a group of individuals of similar ages whose members have experienced noteworthy historical and social events within a set period and therefore share similar thoughts (Mannheim, 1952, in Parry & Urwin, 2011). Mannheim (Bonnin, 2006) believes that the source of the generation gap stems from the fact that people who are born in a particular society at different times, have different key lessons; thus, different time frames govern generations' social change. According to various authors (Vincent 2005; Spitzer in Lyon & others, 2006; Biggs, 2007), a generation is a group of people who share a certain social and historical characteristic. Members of various generations have the same set of common life experiences, values, views, attitudes, and beliefs, and these life experiences are so deterministic that they allow for separation generation from each other (De Meuse & Mlodzik, 2010). Although not all people from

one generation experienced exactly the same historical and social events, they share a common awareness and respect. Joshi et al. (2011) noted that inter-generational interaction is particularly important to the transmission of values, skills, and resources across generations. As noted previously, the majority of research concerning generational differences in the workplace proceeds from the cohort perspective and assumes that differences in the formative influences of various generations should be manifested in psychological and behavioral differences (Lyons & Kuron, 2014).

Although it is not possible to define a certain generation by the specified time frame, one does so in order to facilitate research and comparisons of generations of employees; in the context of a diverse workforce, the expert and scientific literature mentions various generations that make up today's workforce (Bonnin, 2006). In addition, many authors (Zemke et al., 2000; Patota et al., 2007) believe that the generational workforce diversity is an important factor in managing diverse workforce, as it affects the efficiency of managing generational diversity of the workforce.

In the literature, we can observe different concepts of generations and different time frames to which an individual generation belongs. At this point, it is worth to note that the generational characteristics are of a general nature and are not completely homogeneous, which means that those

characteristics cannot be attributed to each member of a particular generation (Patota et al., 2007). Along these lines, researchers have investigated generational differences in domains as diverse as work values (Smola & Sutton, 2002), learning orientation (D'Amato & Herzfeldt, 2008), the use of influence tactics (Landry, 2009) and narcissism (Trzesniewski & Donnellan, 2010b).

One setting in particular where generational differences have been widely written about is the workplace. In a work setting, such simplifications and generalized differences among groups of employees could have major implications for the way organizations recruit, hire, train, reward, promote, and terminate their employees. For example, if all Generation Xers want autonomy in their jobs, work may need to be redesigned to increase independence or if Millennials are attracted to organizations by their level of technological savvy, recruiting practices may need to be modified to include virtual recruiting fairs (Costanza et al., 2012).

Some researchers have investigated differences in work-related outcomes across the generations. For example, a study by Westerman and Yamamura (2007) looked at differences in job satisfaction between Baby Boomers and their younger counterparts of Generations X and Y, hypothesizing that Baby Boomers would have lower satisfaction than Generations X and Y. They found that there were no significant mean differences in satisfaction between generations.

Other researchers have looked at different work-related variables such as motivation (Wong et al., 2008), training (Sayers, 2007; Szamosi, 2006), work life conflict and spillover (Beutell & Wittig-Berman, 2008; Dilworth & Kingsbury, 2005), and leadership style (Collins et al., 2009) (in Costanza et al., 2012).

Nevertheless, we can say that the knowledge of the characteristics of generations and their intergenerational management is an important factor of organizational success and psychological well-being of employees because, more than ever in history, there is an increasing age gap between employees (Benson & Brown, 2011).

As mentioned before, today the organizations face generationally diverse workforce in their business environments. For the first time in history, four generations of employees are working together: (1) a generation born prior to the end of World War II, referred to as veterans or the "Silent Generation"; (2) those born between the end of World War II and the early- to mid-1960s, referred to consistently as Baby Boomers or the children of well-being (born 1946 – 1964); (3) those born between the early to mid-1960s and the mid- to late 1980s, commonly referred to as Generation X (1965 – 1979); and (4) those born between the late 1970s

to early 1980s and the late 1990s (1980 – 1999), referred to as Generation Y or Millennials. We have the fifth generation called Generation Z (also known as Post-Millennials, the iGeneration, Plurals, or the Homeland Generation) is the demographic cohort after the Millennials. There are no precise dates for when the Gen Z cohort starts or ends; demographers and researchers typically use starting birth years that range from the mid-1990s to early 2000s, but there is little consensus about ending birth years. In the context of generational differences, organizations have to adapt in order to meet the diverse needs of the four generations in today's workforce and marketplace (Seitel, 2005).

Each of these generations has its own attitude to work, which presents a challenge for HR professionals to coordinate the needs of different people in one organization. Baby boomers "live to work," Generation X "work to live," Generation Y "work to enjoy," and Generation Z "work to develop" (Fraone et al., 2008).

To really understand the generations, it's helpful to point out the workplace characteristics attributed to each generation that shape the way each generation behaves at the workplace.

The characteristics listed in the tables are a few that have been studied and reported by various authors (Zemke et al., 2000; Patota et al., 2007; Benson & Brown, 2011). Not every person in a generation will share all of the various characteristics shown in Table 1 with others in the same generation. However, these characteristics are indicative of general patterns in the relationships between people in the workplace. Individuals born at one end of the date range or the other may see overlapping characteristics with the preceding or succeeding generation.

There is a growing sense among a group of authors, about the substantive and meaningful generational differences between individuals in today's workplaces. These differences are often summarized in terms of descriptors on sets of characteristics that define each generation and differentiate it from others. In terms of the way the generations are sometimes described, members of the Silent (Traditional or Veteran) Generation are labeled conservative and disciplined (Costanza et al., 2012), Baby Boomers are called time-stressed and materialistic (ibid.), Generation Xers are identified as skeptical and individualistic (Kupperschmidt, 2000), and Millennials believe to be socially conscious, highly cynical, and narcissistic (Twenge et al., 2008). These differences affect outcomes and have effects on work-related outcomes such as commitment, satisfaction, motivation, risk-taking, and leadership style.

It is clear that employers and managers categorize some aspects of each group's behavior, needs, and working styles

**Table 1.** Differences Between Generations

Workplace characteristics	Veterans	Baby Boomers	Generation X	Generation Y
Work Ethic	Respect authority, hard work	Workaholics, desire quality, question authority	Eliminate the task, self-reliant, skeptical	Multitasking, Tenancy, Entrepreneurial
Work is...	An obligation	An exciting adventure	A difficult challenge	A means to an end
Communication	Formal Memo	In person	Direct, immediate	e-mail, voice mail
Motivation	Being respected	Being valued and needed	Freedom and removal of values	Working with other bright people
Work/life Balance	Keep them separate	No balance "Live to work"	Balance "Work to live"	Balance
Reward	A job well done	Money, title, recognition	Freedom	Meaningful work

Source: (Zemke et al., 2000)

to promote working relationships, built on mutual understanding of generation. On the other hand, they should not oversimplify the characteristic of some generations. However, it is important to recognize that individuals within each generation may characterize themselves by age, tenure within an organization, or stage of life in a way that does not mirror these classifications.

It is worth noting that the researchers agreed about the birth years of the Baby Boomers and Generation X but not for the other generations (Benson & Brown, 2011). Yet most researchers agree that there are currently four generations in the workplace, whose values, attitudes, and motivational mechanisms affect the way of working in the organization (Tate, 2011; Olson & Brescher, 2011).

### Problems and Obstacles from the Perspective of Generations

When one talks about intergenerational cooperation, one should note that the literature focuses more on the differences between generations, especially in relation to their values and attitudes, than the similarities between them. In this regard, a survey conducted by the Society for Human Resource Management (2007) found that people want to work with their counterparts. The research of Deal and co-authors (2010) added that the differences between the generations are essentially modest and that the younger and older generations have actually many similar values.

The constraints as to why still a few companies practice intergenerational cooperation reside in managers' opinion that intergenerational cooperation can favor disturbances, threatening the organization and employees, or there could be the danger of favoring only one generation (the one the

managers belong to). For sure, problems include unaware stereotypes and generalizations made by managers and employees (Giancola, 2006; Mazumder, 2014).

Thus, the biggest limit and barrier to successful intergenerational cooperation resides in stereotypes, which are a set of concepts that characterize each generation. Most of them are unsubstantiated and unverified beliefs or views on the properties belonging to a particular generation, these properties being accentuated to such an extent that they become derisory or offensive. They often attain a negative form because of the pre-assessment of justification for discriminatory behavior. The fact is that these stereotypes deepen the gap between the generations and create intergenerational conflicts, as they focus on the negative qualities of each generation; it often happens to begin with individuals, e.g., members of various generations viewed through the prism of this kind, which can close the door of cooperation between generations. Business environments carry many prejudices and stereotypes that influence the behavior of individuals performing the work and their psychological well-being; therefore, it is important to be aware of having each employee available the chance to prove himself/herself as an individual.

A way to overcome stereotypes comes from intergenerational cooperation activities: they affect the identification and elimination of stereotypes to generate greater tolerance, cooperation, and understanding between generations.

To summarize, many studies confirm that there are no significant differences between generations, mainly due to the fact that the older generations held similar values in their younger years as the younger generation of the time (De Meuse & Mlodzik, 2010; Montana & Petit, 2008). This finding supports the idea that the problems associated with the "generation gap" are much smaller than many claim. The

intergenerational conflict is therefore not a major concern for businesses today (Fraone et al., 2008). With this in mind, we need to consider a new perspective of intergenerational cooperation and inter-generational management. If generations are not so different, depending on their values and attitudes, and if there is not much opportunity for conflict between them, why then do generations not socialize to learn from each other and build on mutual strengths?

We do not specifically focus on detailed features of the different generations, as it is not the subject of this paper. We will therefore devote a few words to the inter-generational cooperation and the introduction of it into the business practice of companies.

## Intergenerational Cooperation

Individual characteristics of each generation raise the question of how to ensure the participation of generations that are very different, have different values and different views of the work, to successfully work together. To give a proper answer to this question, we have to look deeper into the intergenerational cooperation.

Intergenerational cooperation is the community and the equality of different generations, where the intergenerational dialogue, mutual understanding and listening between individuals is important (Bernik et al., 2012). Intergenerational cooperation is therefore aimed at bringing together different generations in order to provide opportunities for joint work both for the older as well as for the younger generation; at the same time, it brings benefit to all involved with promotion of mutual learning, respect, and understanding (Ramovš, 2013).

Intergenerational cooperation has a decisive role in reducing the intergenerational gap and conflicts at the workplace, but it is also crucial for active aging, career planning, development of individuals, and the transfer of knowledge. The aim of intergenerational cooperation is to promote closer integration and cooperation among different generations of employees in the workplace.

The point of establishing a system of intergenerational cooperation is to (Tomšič, 2010):

- provide learning from each other;
- one generation's help to another;
- create, maintain and expand social networks; and
- gain the effective functioning of the employees of different generations at workplace.

Intergenerational cooperation is based on inter-generational learning, which provides the transfer and exchange of knowledge and experience in the field of labor and solidarity between generational assistance. On the one hand, inter-generational learning provides knowledge transfer between generations and reduces the inter-generational stereotypes. With the transfer, the younger generation obtains knowledge, experience, and easier entrance to the labor market; older employees remain active longer in the labor market (Mazumder, 2014).

In the accordance with the foregoing, we can define holistic intergenerational cooperation as a working method and system of integration of different generations aimed to ensure mutual learning, cooperation, respect and understanding between them.

Intergenerational cooperation activities are classified into three groups (Age Concern England, 2014):

- Solidarity between generations (one generation provides the support to other);
- Intergenerational cooperation in the strict sense (different generations working together on a specific project with specific objectives); and
- Intergenerational learning (one generation learns from the other and vice versa; different generations at the same time learn together).

As previously outlined, generations have different values and different approaches to their work, which will present a challenge for the employer (Fraone et al., 2008). Establishing and managing intergenerational teams will become a key skill, as in the future the intergenerational cooperation will become a key factor for business success of companies (Srinivasan, 2012).

Theory and practice in the field of intergenerational cooperation provides several concepts, which may offer an appropriate way to combine and connect members of different generations in the workplace. Methods of how an organization can implement intergenerational cooperation in the workplace include (Foundation for the Improvement Of Employment Opportunities, Prizma, 2012):

- Mentoring schemes
- Job rotation
- Job sharing
- Intergenerational management
- Talent management
- Coaching

The organization should therefore devote significant attention to addressing inter-generational differences and adapt business processes in order to gain better results of several generations in intergenerational cooperation.

## Role of the Manager in the Implementation of Intergenerational Cooperation

There is little research concerned with the efficient management of a generationally diverse workforce. There are no guidelines in the area of generational diversity management at the workplace, or about the role of managers in this regard. The fact is that the most important and key factor in the successful implementation of intergenerational cooperation into practice is the commitment and support of management. Leadership that leads by example focuses on the strengths of each generation and creates an organizational climate and culture that supports intergenerational cooperation.

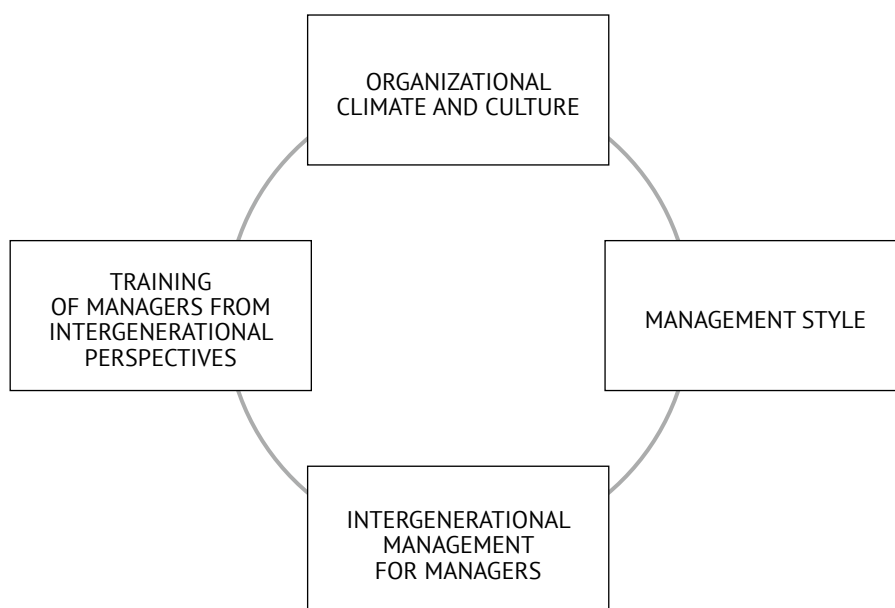
Areas of implementation of intergenerational cooperation are divided into two categories, either as describing the levels that generally affect the entire organization or the areas that are closely related to human resources management. Areas connected with the organization in general include organizational climate and culture, management style and communication from an intergenerational perspective; activities related to the field of human resources management on generations, e.g., adapted recruitment and talent management, training of managers and employees from an intergenerational perspective, intergenerational teams, volunteers, flexible forms of work/time, remuneration and career development tailored to specific generations.

As we are talking about management perspective, we focus on the management activities, which are aimed at better implementation of intergenerational cooperation (Figure 2).

Crucial for the successful implementation of intergenerational cooperation is the support of management, which reflects an appropriate style of management and the integration of intergenerational cooperation in policy, strategy and values of the company; all these, on the other hand, contribute to creating a favorable climate and a culture that supports intergenerational cooperation and the specificities and characteristics of individual generations in the workplace.

Studies have highlighted the general lack of awareness among executives about the management of a generationally diverse workforce (Strack et al, 2008; Mazumder, 2014). Managers should be aware that, with an appropriate management style and their own commitment to intergenerational cooperation, they develop organizational culture and climate that favor the intergenerational cooperation (GES, 2014). In this way, they are committed to form the employer brand, which can help a company to attract young people and retain the older generation (Leterme, 2014). Management should introduce intergenerational cooperation and include age diversity strategy, vision, and culture of the organization and of course in accordance with this adopt appropriate measures (Weggen et al., 2012). The first step toward the intergenerational cooperation is the training of managers from the intergenerational perspective to enable them to better understand the benefits and challenges associated with the issue of generations. In the above-mentioned context, the managers must improve their “soft” skills (Jenkins, 2008) to be more receptive and to understand the generational differences and similarities. Often, however, the leaders also appear in the role of mediators between the generations.

**Figure 2.** Important Areas Affected by Management in the Implementation of Intergenerational Cooperation



Source: Authors' perspective

Finally, management also must establish clear guidelines of intergenerational cooperation and management in a plain language that everyone understands and recognizes his/her role in this process (Greengard, 2011).

### Model of Proactive Intergenerational Management in an Organization

Intergenerational management is an important challenge that organizations face in an aging society. With it, organizations coordinate, control, and direct diversity of employees and successfully exploit the age diversity of their employees. Activities of intergenerational management should equally focus on all age groups and should be implemented during the entire of work life period. The activities of intergenerational management should be focused on reducing the intergenerational differences in the organization and on maintaining the diversity of generations. In this context, it is necessary to use the right approach for each of the generations in the workplace, to create an atmosphere of cooperation between different generations (Smith, 2007).

Intergenerational cooperation is a complex concept of implementation of the intergenerational cooperation activities to all areas of work. The first area, which is crucial for the successful implementation of the intergenerational cooperation, is management’s support, reflected in the appropriate style of management, and the integration of intergenerational

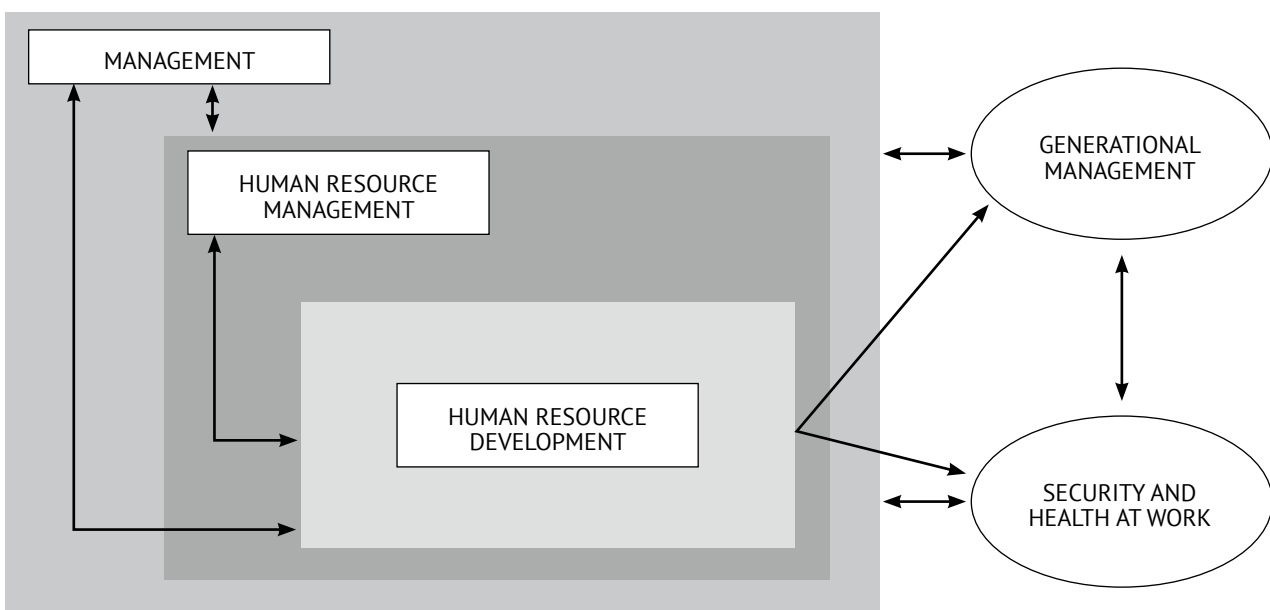
cooperation in policy, strategy, and values of the company. All this contributes to creating a favorable climate and culture that support the intergenerational cooperation and the specificities and characteristics of individual generation in the workplace.

Management with the impact on the intergenerational cooperation in working practices affects the next area: human resource management (HRM). The objectives of HRM in the proactive model of intergenerational management are the adaptation of HRM activities to the generationally diverse workforce and the implementation of other measures in accordance with the policy of intergenerational cooperation. HRM integrates different important areas that should be adapted to generationally diverse workforce. In this area, the main activities are: (1) adaptation of recruitment process of diverse work force; (2) sponsorship for new employees to facilitate integration into the working environment and faster socialization; and of course it is necessary to (3) adapt to generational diversity in the system of performance management and remuneration policy.

In fact, the main activities in HRM cover two fields: the acquisition of employees (in such a way that the company maintains an appropriate relationship between the generations) and maintaining or retaining employees.

The third area is employee development; it includes generationally diverse development methods and activities that help in retaining and maintaining the employees. This area

Figure 3. Integrated Model of Proactive Intergenerational Management in an Organization



Integrated Model of Proactive Intergenerational Management

Source: Authors’ perspective



integrates knowledge management, mentoring schemes, talent management, succession programs, career development, and coaching. The fourth area is closely linked to the individual generations and refers to the targeted and customized adjusting of the activities for generations, such as a suitable working environment. The main activities can include the generationally adapted working time or working task (on the job rotation, conversion, or extension of the job), the creation of intergenerational teams and setting up a system to ensure the transfer of the tacit knowledge and encouraging innovation and creativity.

The area of health and safety at the workplace is often overlooked. This area is important because it is closely connected with all previously listed areas. The last area relates to occupational safety and health and refers to the activities associated with the provision of psychological well-being in the workplace, health promotion programs, and safety at work. Improving intergenerational cooperation and management of generations can influence strengthening and maintaining the health and ensuring a greater work security.

However, the successful operationalization of the system of intergenerational cooperation depends on two important support functions: (1) internal communication supported with adequate resources and channels and (2) identifying individuals, i.e., volunteers who will promote the implementation of the intergenerational cooperation in the organization.

On the base of integrated model of proactive intergenerational management in organization the intergenerational cooperation is a challenge and an opportunity for the company. The fact is that companies take poor advantage of generation potential of its people. What to do? There is a need for a profound transformation in thinking about the importance of intergenerational cooperation; on the other hand, companies must plan the implementation of a system of intergenerational cooperation, and they have to motivate employees for intergenerational cooperation by offering them concrete tools to better understand intergenerational diversity, communication and cooperation.

How can organizations introduce a system of intergenerational cooperation and make changes in their practice with (EU OSHA, 2016)?

- adapting training methods and approaches to the specific learning characteristics and motivations of different age groups (e.g., Generation Y e-training; baby boomers, reverse mentoring);
- introducing a code of intergenerational cooperation, signed by all employees;
- facilitating succession planning;
- involving employees in the planning and development of job rotation programs;

- leading by example (leaders openly support intergenerational cooperation);
- training of managers from intergenerational perspective (identifying the characteristics of each generation, working methods and the motivation of each generation);
- application of various communication channels (e-mail, personal interview, written communication adapted to each generation);
- the introduction of intergenerational volunteering, i.e., promoters (people who spread a positive climate and information on intergenerational cooperation with the company);
- intergenerational teams;
- removing age limits for in-house training opportunities;
- introduction of new working roles that facilitate generation cooperation (coach, sponsor, mentor);
- employee development from an intergenerational perspective;
- creating a base of knowledge and experience (catalog of skills and experience);
- patronage of older to younger employees.

To maintain tacit knowledge of employees in the company is one of the important ways of intergenerational cooperation knowledge transfer between generations. Therefore, the methods for retaining and managing knowledge are becoming increasingly important. Examples of knowledge transfer programs are mentoring schemes and knowledge transfer to new recruits (e.g., hiring a new employee six months prior to the retirement of an older employee) can provide building skills and passing on valuable skills and knowledge. Retiring employees can act as supervisors and advisors to people taking up new positions (EU OSHA, 2016).

## Conclusion

Intergenerational cooperation is no new phenomenon, but many issues related to generations and the willingness of companies to introduce intergenerational cooperation as a strategic function remains unanswered. The fact is that, although the intergenerational generation is nothing new, most organizations do not include this important topic in the decision-making process, as it should. The reasons for this are twofold: first, the expectation that they cannot address significant changes in the company through intergenerational cooperation. In addition, the organizations are concerned that, if they do not properly manage generations, it can create tensions between generations of employees, which can result in fluctuation of young people (would lose the talent) and in the rejection of older employees (loss of tacit knowledge) may occur.

In paper we identified differences and dilemmas that arise in the field of intergenerational cooperation. We completed our thinking with the activities of management in the implementation of the intergenerational cooperation. It can be concluded that organizations need a system of intergenerational cooperation set as a strategic objective, which will include a new approach to the organization of work and provide the conditions for the transfer of knowledge and experience among employees.

It is important to be aware of the benefits coming from the intergenerational cooperation such as:

- identifying and eliminating stereotypes and generational gaps;
- improving lifelong learning and ensuring knowledge transfer between generations within intergenerational learning and intergenerational teams;
- gaining a greater solidarity between generations and volunteering which helps the generations strengthen their social ties and co-existence;
- improving the creative thinking and innovation and creativity of employees of all generations;
- facilitating the acceptance of organizational change and creating a friendlier working environment (favorable climate and culture);
- improving communication (from an intergenerational perspective);
- improving motivation, satisfaction and commitment of employees (motivational mechanisms tailored to each generation).

The situation, therefore, dictates that organizations must not only recognize the generational diversity, but they have to develop a working environment, which supports intergenerational cooperation of employees.

The employers are beginning to recognize what motivates each generation. They have to develop effective management styles, communication tools to minimize conflict, and use progressive HR and work-life strategies to attract and retain key talent; all this is aimed to enhance productivity of individuals and company.

Intergenerational cooperation is a challenge and an opportunity for an organization. The fact is that an organization may have exploited the generation potential of its people. What to do? On one hand we all need a profound transformation in thinking (about the importance of intergenerational cooperation); on the other hand, organizations must systematically introduce a system of intergenerational cooperation

and motivate employees for intergenerational cooperation, e.g., by offering them concrete tools to better understand intergenerational diversity, communication, and cooperation.

We found that, despite different views of researchers, one must take into account the individual characteristics of each generation, while people born in the same time, living during the same period, have parallels, as they, after all, have experienced and have been socialized in the same cultural and economic circumstances. Therefore, throughout the considerations about generations, there is still the question of how to ensure the cooperation of generations that are very different, have different values, and different views of the work. One-step toward this is certainly the intergenerational cooperation as the work system and the culture that supports the generational diversity tolerance and enhances the cooperation and intergenerational knowledge and learning transfer within organization.

Intergenerational cooperation has a decisive role in reducing the intergenerational gap and reducing conflicts in the workplace; it is essential for active aging, career planning, and the development of individuals and the transfer of knowledge. The aim of intergenerational cooperation in the organization is to promote closer integration and cooperation among different generations of employees in the workplace. Therefore, it is not a peculiarity but a necessity for organization.

Key areas that managers should take into account in the implementation of intergenerational cooperation are: (1) to treat the employees from intergenerational perspective; (2) to create a relaxed working environment that encourages employees; (3) to implement sophisticated and flexible management style; (4) to recruit the right people with the right competencies; and (5) creating good mutual relations.

Each generation brings diversity of experience, knowledge, and values at the workplace; for an organization, the recognition and observance of these differences are important and useful, as these differences determine how individuals of a certain generation perceive the organization and other aspects of life.

Implications for further research should be based on the development of the questionnaire (measurement instrument) with the aim to measure the state of intergenerational cooperation and the effects of the implementation of intergenerational management practices in organizations. Routine measurements should serve as the basis for improving the level of intergenerational cooperation in organizations.

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# Medgeneracijsko sodelovanje na delovnem mestu z vidika menedžmenta

## Izveček

Na trgu dela se trenutno srečujejo zaposleni štirih generacij. Vsaka generacija ima različne vedenjske vzorce, stališča, pričakovanja, navade in motivacijske mehanizme. Ker generacijske vrzeli igrajo pomembno vlogo v poslovnem procesu, morajo organizacije najti načine za uravnoteženje potreb in pogledov različnih starostnih skupin. Za premagovanje negativnih rezultatov, ki izhajajo iz generacijskih razlik in izkoriščanja moči vsake generacije, je potrebno izvajanje celovitega in proaktivnega modela medgeneracijskega sodelovanja, ki je predstavljen v članku in postaja zaradi koristi nujnost vsake organizacije.

**Ključne besede:** zaposleni, generacija, medgeneracijsko sodelovanje, medgeneracijsko učenje



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